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## Harriet Joint Venture Plug and Abandonment 5-Year Environment Plan Summary

|                                 |  |
|---------------------------------|--|
| <b>PROJECT / FACILITY</b>       | Harriet Joint Venture – Varanus Island Hub |
| <b>REVIEW INTERVAL (MONTHS)</b> | No Review Required                         |
| <b>SAFETY CRITICAL DOCUMENT</b> | NO   |

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## 1 Introduction

Santos WA Northwest Pty Ltd (Santos) have prepared a 5 year environment plan (EP) to allow Plug and Abandonment (P&A) activities to occur at any time during that 5 year period, in State Water Permit TL/1. The P&A activities are for the permanent P&A of platform wells at Harriet Alpha (Harriet A) platform, Simpson Alpha platform, Simpson Bravo platform (Simpson A and Simpson B) and Bambra Sea Pole (Bambra).

The permit area is within Western Australia state waters, approximately 114 kilometres (km) -west of the Dampier Archipelago, in water depths between approximately 6 – 27 metres (m).

The activity will be carried out utilising topside intervention methods, a jack-up mobile -offshore drilling unit (MODU) with support vessels and helicopters. The Environment Plan (EP) covers P&A activities and all MODU, vessel and helicopter operations within the operational area (the activity).

### 1.1 Operator

Santos WA Northwest Pty Ltd is the operator undertaking the activity within Permit TL/1. Operator details are provided in **Table 1-1**.

**Table 1-1: Joint Venture Participants in the VI Hub Operations**

| Operator                           | ACN / ABN                            | Permit % Interest | Address   |
|------------------------------------|--------------------------------------|-------------------|---|
| <b>Santos WA Northwest Pty Ltd</b> | 58 009 140 854<br>(ACN: 009 140 854) | 100%              | Business Address: Level 7, 100 St Georges Terrace, Perth, Western Australia 6000<br><br>Telephone number: (08) 6218 7100<br>Fax number: (08) 6218 7200<br>Email address: <a href="mailto:offshore.environment.admin@santos.com">offshore.environment.admin@santos.com</a> |

### 1.2 Compliance

| P(SL)(E)R 2012 Requirements   |
|---|
| Regulation 11 (7) & (8)   |
| <p>(7) Within 10 days after receiving a notification that the Minister has approved an environment plan under subregulation (5)(a) the operator must submit to the Minister for public disclosure a summary of the plan.</p> <p>Penalty: a fine of \$5,500.</p> <p>(8) A summary submitted under subregulation (7) must include the following:</p> <ul style="list-style-type: none"> <li>(a) the contact details of the operator of the petroleum activity or the operator's agent;</li> <li>(b) the location or locations of the petroleum activity;</li> <li>(c) a general description of the existing environment that may be affected by the petroleum activity;</li> <li>(d) a summary of; <ul style="list-style-type: none"> <li>(i) the details of the construction and layout of any facility; and</li> <li>(ii) the operational details of the petroleum activity and proposed timetables; and</li> <li>(iii) the environmental impacts and environmental risks of the petroleum activity; and</li> <li>(iv) the implementation strategy included in the environment plan; and</li> </ul> </li> </ul> |

|  |
|--|
| <p>(v) the consultation that has been undertaken during the development of the environment plan and that is to be undertaken in accordance with the implementation strategy;</p> <p>(e) any details required to be included in the implementation strategy under regulation 15(9).</p> |
|--|

Santos has developed the associated EP in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (P(SL)(E)R 2012).

This EP has also considered the 'Guidelines for the Preparation and Submission of an Environment Plan' released by the DMIRS in November 2016 (DMP, 2016).

The EP was submitted to the WA Department of Mines, Industry Regulations and Safety (DMIRS) for assessment on 20 09 2021.

An activity specific Oil Spill Contingency Plan (OSCP) has been submitted to DMIRS and acceptance will be aligned with acceptance of the revised EP.

### 1.3 Schedule

Timing and duration of the P&A campaigns are subject to change due to project schedule requirements, metocean conditions, vessel availability, unforeseen circumstances and adverse weather. The proposed program is expected to be completed within the 5 year term of this EP. The estimated durations to P&A all wells on each platform are: Harriet A (96 days), Simpson A (38 days), Simpson B (46 days), and Bambra (12 days).

Activities may not be continuous during these time frames, and the project vessels may depart and then re-enter the operational area on a number of occasions.

During each campaign, MODU activities will be conducted 24 hours per day, seven days per week. Unless indicated otherwise in controls identified in **Section 6.3**. This EP has been developed based on the activities occurring at any time during the year to ensure effective assessment and management of any project planning scenario.

## 2 Activity Location

Harriet A, Simpson A and Simpson B and Bambra lie within Production Licence TL/1 in the Carnarvon Basin, located on the North West Shelf of Western Australia. **Figure 2-1** shows the location of the operational area.

The proximity of the facilities to other key coastal or mainland features are provided in **Table 2-1**.

**Table 2-1: Approximate distances of offshore facilities to key regional features**

| Facility/<br>Structure | Approximate<br>Water Depth<br>(m) | Distance/<br>Direction to<br>closest<br>environmental<br>sensitivity | Distance/<br>Direction<br>from VI | Distance/<br>Direction<br>from<br>Barrow<br>Island | Distance/<br>Direction<br>from<br>Dampier |
|------------------------|-----------------------------------|--|-----------------------------------|--|---|
| Bambra Sea Pole        | 27                                | 6.9 km NNW to Montebello Islands                                     | 11.3 km NNE                       | 20.5 km NE   | 114 km W                                  |
| Harriet Alpha          | 22.8                              | 6.8 km SW to Abutilon Island   | 6.33 km NE                        | 17.42 km NE  | 114 km W                                  |
| Simpson Alpha          | 6                                 | 0.5 km NW to Abutilon Island   | 1.19 km S                         | 12.14 km W   | 116 km W                                  |
| Simpson Bravo          | 6                                 | 0.5 km NW to Abutilon Island   | 1.19 km S                         | 12.14 km W   | 116 km W                                  |

### 2.1 Operational Area

The operational area is defined as the area shown in **Figure 2-1**, comprising of a 500 m exclusion zone (petroleum safety zone surrounding each facility, for all P&A activities).

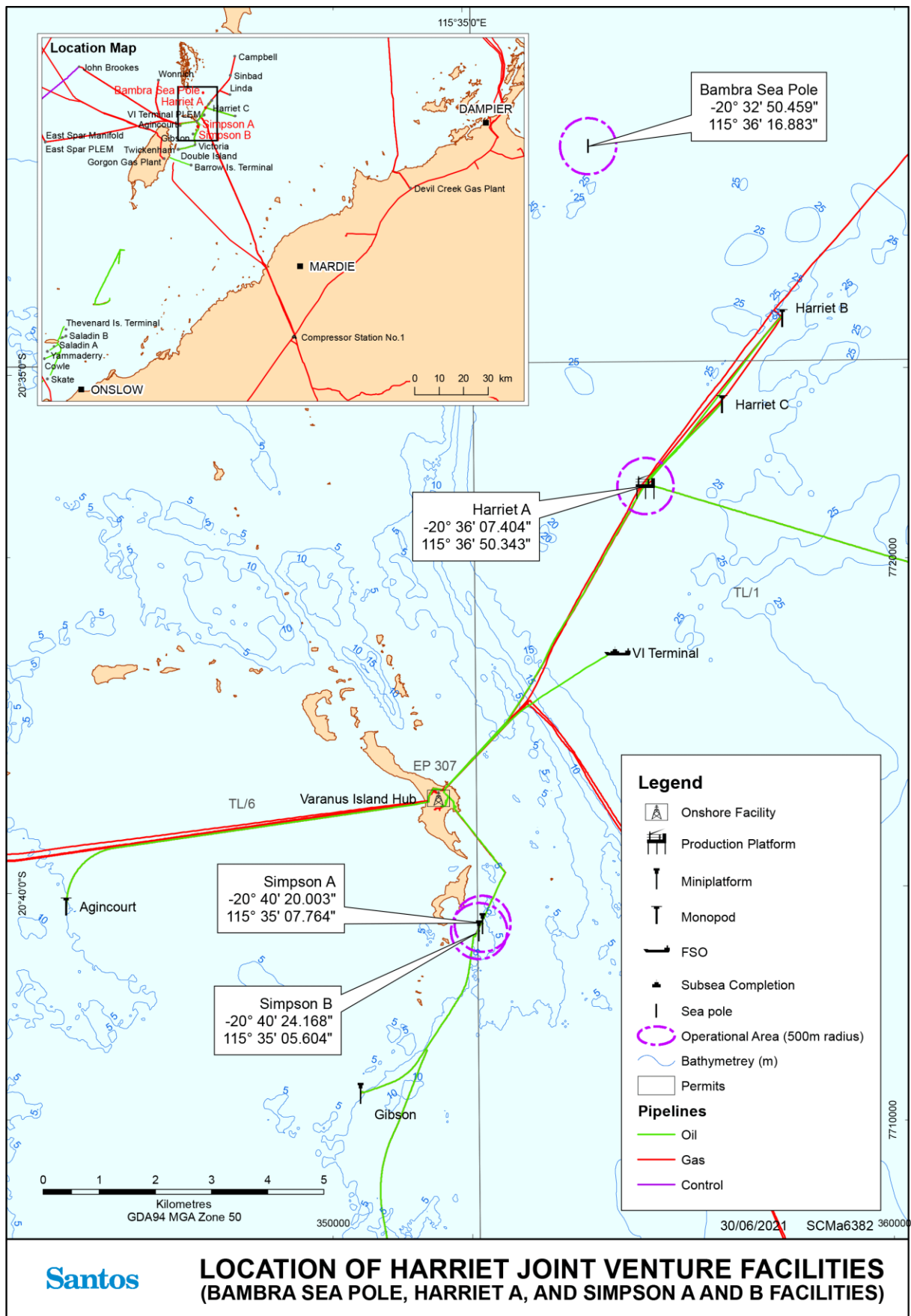


Figure 2-1: Location of offshore facilities and operational area



### 3 Description of Activity

Harriet A and Simpson A and Simpson B are not normally manned platforms. Production from the platforms has ceased and the Harriet A, Simpson A and Simpson B wells have had flowlines removed and blind flanges installed on each respective surface tree. There is no physical connection between the wells and the production plant on Varanus Island. Bambra is an exploration well (Bambra-3) initially drilled in 1988. The Bambra-3 well was never perforated or brought online.

To support the removal of the Harriet A, Simpson A and Simpson B and Bambra facilities wells as described in **Table 3-1** are to be permanently P&A'ed utilising topside intervention methods, MODU and support vessels as described below.

**Table 3-1: Activities that Support Varanus Island Operations**

| Activity   | Brief Description  |
|--|--|
| Pre/Post MODU Activities                         | <p>Pre/Post mobilisation activities may consist of:</p> <ul style="list-style-type: none"> <li>+ An inspection and operability tests of the platform equipment (e.g. valves and wellheads);</li> <li>+ Rig-less well intervention activities to temporarily suspend the well;</li> <li>+ Pre/post-MODU seabed survey;</li> <li>+ Removal of casing strings and/or conductor and setting of shallow cement; and</li> <li>+ Post-abandonment well monitoring.</li> </ul>   |
| Rig-less Well Intervention / Wireline Operations | <p>A general well intervention program may consist of:</p> <ul style="list-style-type: none"> <li>+ Mobilising equipment and personnel (likely around 10-30 people for non-rig based activities) to the well site by support vessel.</li> <li>+ Hydraulic work over unit (HWOU), electric line package, slickline package or coiled tubing equipment;</li> <li>+ Pumping and cementing equipment;</li> <li>+ Maintenance spread;</li> <li>+ Rigging up equipment onto the well;</li> <li>+ Hydro-test rigged-up equipment with seawater;</li> <li>+ Pressure testing of the well and if required reducing pressure by flowing liquid inventory down an available nearby well, or venting of hydrocarbon gas to atmosphere;</li> <li>+ Carrying out bullhead well kill by pumping treated seawater or brine (and if necessary lost circulation materials) downhole to displace a minimum of 1 tubing / open hole volume into the reservoir;</li> <li>+ Displace well annulus contents with treated seawater into reservoir if feasible;</li> <li>+ Venting of any residual hydrocarbon gases to atmosphere and management of residual liquid hydrocarbons via in-well disposal or containment and transportation for processing;</li> <li>+ Suspend the well with a mechanical or cement plug(s) set by slickline, coiled tubing or HWOU in the well tubing to prevent fluid flow;</li> </ul> |

| Activity  | Brief Description  |
|---|--|
|   | <ul style="list-style-type: none"> <li>+ Set cement reservoir abandonment plug(s) by HWO (the location and integrity of each plug will be verified in accordance with the WMP);</li> <li>+ Preparing the upper completion for recovery, inclusive of but not limited to cutting the production tubing or packer, punching the tubing, locking out the tubing-retrievable safety valve or installing a hold open sleeve;</li> <li>+ Pressure test suspension barrier with inhibited sea water or brine to confirm successful barrier;</li> <li>+ Removal of the Xmas tree from the wellhead; and</li> <li>+ Rig down equipment and demobilise from site.</li> </ul>   |
| MODU Operations   | <p>Well abandonment activities will involve the use of a jack-up MODU due to the shallow waters.</p> <p>A general MODU program may consist of:</p> <ul style="list-style-type: none"> <li>+ Move the MODU onto location and jack-up;</li> <li>+ Rig up the annulus riser and flowback package, establish annulus circulation path, bullhead kill the tubing (pumping kill fluid to force the well bore fluids back into the reservoir), lubricate and bleed or circulate the annulus (replacing the gas with kill fluid);</li> <li>+ Rig up wireline, set suspension plugs and cut the tubing;</li> <li>+ Rig up the drilling riser and blow-out preventers (BOPs);</li> <li>+ Remove the Xmas tree from the wellhead;</li> <li>+ Pull the completion;</li> <li>+ Abandon well subsurface through setting of abandonment plugs to isolate hydrocarbons and permeable zones from surface, this may include the use of annulus remediation techniques such as section milling;</li> <li>+ Cut and recover surface casings, conductor as required;</li> <li>+ Remove BOP;</li> <li>+ Removal of seabed infrastructure as required; and</li> <li>+ Skid in cantilever, jack down and move jack-up rig off location.</li> </ul> |
| Chemical Loading and Handling   | <p>The chemicals required for the duration of the well abandonment program will be loaded onto the facilities from the supply vessels by facility crane in containers or on pallets.</p>   |
| Support Vessels and Helicopters During Suspension or Abandonment Activities | <p>In general, only one support vessel is required for rig-less well intervention activities, and up to three Anchor Handling Tug and Supply (AHTS) vessels may be used for the duration of a MODU assisted well abandonment campaign.</p>   |
| Post Abandonment Activities including well monitoring                       | <p>The wells are to be abandoned in compliance with the DMIRS approved Well Management Plan (WMP), including</p>   |

| Activity            | Brief Description   |
|---------------------|---|
|                     | isolation of any shallow gas. Monitoring will be conducted either by ROV or topside inspection at the platform to verify the effectiveness of these isolations.   |
| Chemical Selection  | Santos, in conjunction with the drilling chemical providers have adopted a risk based approach to select the products to achieve the required fluid and cementing properties for successful suspension or abandonment of the well.  |
| Cyclone Preparation | In the event of a tropical cyclone while performing operations the well will be suspended with two barriers in accordance with Santos standards and the approved WMP, through the use of mechanical barriers such as cement plugs, bridge plugs and the BOPs. The location and movement of tropical cyclones will be monitored and tracked against the time required to safely suspend the well and down-man the rig. |

## 3.1 Campaign Details

P&A activities covered by this EP are planned to occur in two campaigns. The first campaign will P&A the Harriet and Bambra wells as described in **Section 3.1.1**. The second campaign will P&A the Simpson A and Simpson B wells. As campaign two details including timing, P&A methods and MODU and vessel details are not yet finalised they will be further detailed in a Bridging Document to be submitted to DMIRS for approval prior to the campaign.

### 3.1.1 Harriet and Bambra Campaign

Harriet and Bambra are planned to be abandoned in a single campaign beginning between March and July 2022 using the Noble Tom Prosser (NTP) MODU and Pacific Gannet and Pacific Centurion support vessels. An additional vessel is required for positioning, towing, and potentially ongoing support of the program. Depending on availability and suitability this may be The Toll Provider, CMV Athos or Svitzer Bunbury. If these three vessels are unavailable or unsuitable, other vessels will be considered using a guide of 300m<sup>2</sup> minimum deck area for supply operations and 50 tonnes minimum bollard pull for towing / positioning. The vessel may not be Australian flagged, though would be Australian based.

The wells are to be abandoned in line with the Santos DCMP Offshore and the Santos Offshore D&C Technical Standards, which includes the following requirements:

- + Over pressured permeable zones (hydrocarbon bearing or water wet) must be isolated from the seabed by two permanent barriers
- + Hydrostatically pressured, hydrocarbon bearing permeable zones must be isolated from the seabed by two permanent barriers
- + Hydrostatically pressured, water wet permeable zones drilled after the BOP's are installed must be isolated from the seabed by one permanent barrier
- + All distinct, permeable zones with different pressure regimes must be separated from each other by a minimum of one permanent barrier

A permanent cement barrier must:

- + Be set above the zone with flow potential across a suitable cap rock
- + Extend across the full cross section of the well including all annuli
- + Have formation fracture pressure at the base of the barrier in excess of the maximum anticipated pressure from the zone being isolated

A suitable cap rock is impermeable, laterally continuous and has adequate strength and thickness to contain the maximum anticipated pressure from the zone being isolated.

The specifics of the P&A for each well will be detailed in the DMIRS accepted Well Management Plan for the campaign.

## 4 Description of the Environment

This section provides a summary of the existing marine environment that may be affected by the planned and unplanned activities and includes details on the particular relevant values and sensitivities of that environment. The description of the environment applies to two areas:

- + The operational area, which is the area within which planned activities will occur; and
- + The EMBA, as shown in **Figure 4-1**.

The EMBA encompasses the environment that may be affected by planned and unplanned events. Most planned and unplanned events associated with the activity may affect the environment up to a few kilometres from the operational area e.g. from noise impacts (as identified in **Section 6.3**).

Stochastic hydrocarbon dispersion and fate modelling, applied to the worst-case spill scenario identified as relevant to the activity, was undertaken to inform the EMBA.

The EMBA is based on stochastic modelling, using the low exposure values (**Table 4-1**). The EMBA encompasses the outer most boundary of the overlaid worst-case spatial extent of the four hydrocarbon phases listed above for the worst case credible spill scenario.

- + The EMBA is defined by the low exposure values.
- + The Moderate Exposure Value Area (MEVA) is defined by the moderate exposure values.
- + The High Exposure Value Area (HEVA) is defined by the high exposure values.

These three exposure values are shown in **Figure 4-1**.

The low exposure values are used as a predictive tool to set the outer boundaries of an EMBA and may not necessarily result in ecologically significant impacts. To inform the evaluation of potential environmental consequences of a hydrocarbon release (impact assessment), modelling is undertaken using higher exposure values (i.e. the concentrations at which environmental consequences may result). The higher exposure values known as 'moderate' and 'high' are described and explained within **Section 6**.

**Table 4-1: Hydrocarbon Exposure Values (NOPSEMA Bulletin #1 Oil Spill Modelling (April 2019))**

| Hydrocarbon Phase                          | Exposure Value |          |       |
|--|----------------|----------|-------|
|  | Low            | Moderate | High  |
| Surface (g/m <sup>2</sup> )                | 1              | 10       | 50    |
| Shoreline accumulation (g/m <sup>2</sup> ) | 10             | 100      | 1,000 |
| Dissolved aromatics (ppb)                  | 10             | 50       | 400   |
| Entrained (ppb)                            | 10             | 100      | -     |

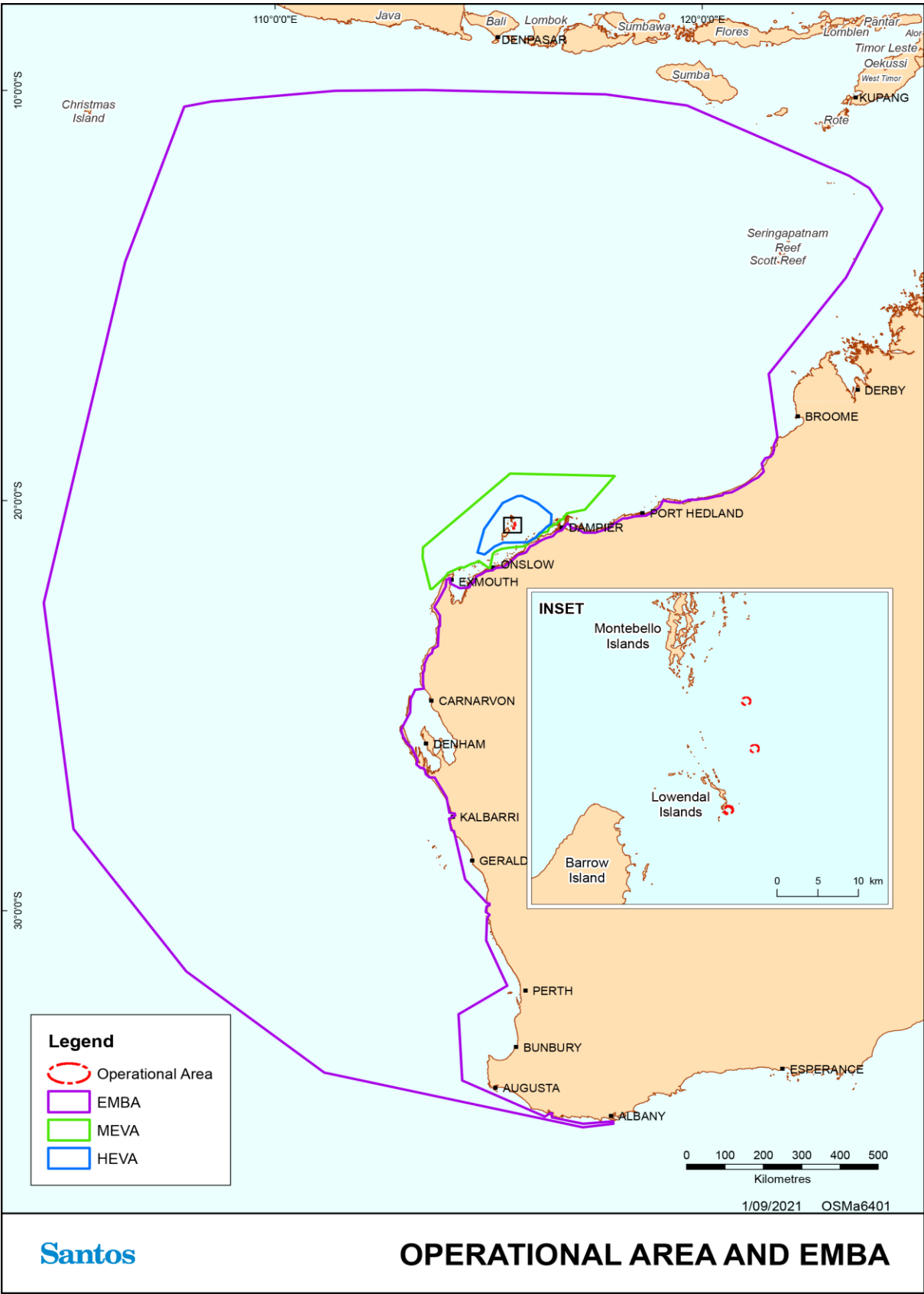


Figure 4-1: Operational area and EMBA (State and Commonwealth)

## 4.1 Regional Setting

The operational area is located within the Northwest Shelf Province, as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0. The operational area occurs in shallow-water tropical marine ecosystems with high species richness. Most of the region's species are tropical and are also found in other parts of the Indian and western Pacific oceans.

The EMBA overlaps thirteen IMCRA provincial bioregions including the Christmas Island Province, Timor Province, Northwest Shelf Transition, Northwest Transition, Northwest Shelf Province, Northwest Province, Central Western Transition, Central Western Shelf Province, Central Western Shelf Transition, Central Western Province, Southwest Transition, Southwest Shelf Province, and Southwest Shelf Transition. The southern part of the EMBA is a transition zone between tropical and temperate waters and includes the northern extent of the ranges of some temperate species that are more typical of the South-west Marine Region. High diversity is partly driven by the interaction between seafloor features and the currents of the region. The interaction of seafloor features and oceanographic processes also supports unique ecosystems and associated trophic interactions and communities (DSEWPac, 2012).

Key features of the EMBA are the Ningaloo Reef and North West Cape to the southwest of the operational area, the Montebello/Barrow/Lowendal Islands to the north east of the operational area and the Dampier Archipelago/Burru Peninsula to the south east of the operational area. Other notable features of the EMBA include Scott Reef, Rowley Shoals, Eighty Mile Beach, Shark Bay, and Kalbarri.

Barrow Island, the Montebello Islands, Lowendal Islands including VI and Airlie Island are part of a shallow submarine ridge, which extends north from the mainland near Onslow. The ridge contains extensive areas of intertidal and shallow subtidal limestone pavement surrounding the numerous, mostly small islands which are found in the region. The seabed is primarily less than 5 m deep and consists of sand veneered limestone pavement with patches of fringing coral reef. In addition to the mainland area surrounding Cape Range, key values of this subregion include Exmouth Gulf Islands, Muiron Islands, Lowendal Islands, Montebello Islands and Barrow Island.

## 4.2 Benthic Habitats

The seabed surrounding Harriet A is characterised into two types including, low relief unconsolidated carbonate silty fine to medium sand, and low relief unconsolidated carbonate silty medium to coarse sand. Benthic infauna (polychaete worms, small crustaceans, small mollusc) and sparsely distributed benthic macro fauna (sponges, sea whips, sea stars) are dominant within the Harriet facility.

The seabed around Bamba is relatively flat and featureless with medium to coarse sand with some shell fragments.

The seabed near the Simpson A and B are characterised by mainly limestone pavement with variable cover of macroalgae, occasional small coral colonies, sponges and sand veneer. A few low-profile outcrops and an area of fringing coral occurs about 300 m to the east of Abutilon Island (which is in close proximity to Simpson A). The low-profile outcrops slope up to approximately 2 m above the surrounding permanent reef and are covered with a denser macroalgal assemblage (Quadrant Energy, 2017). The marine habitat near Simpson A is characterised by sand sheets overlying flat limestone pavement reef, macroalgae communities and coral biota. The closest sensitive habitat is an area of scattered coral colonies with the closest coral bommie being 63m north west of Simpson A, and 29 m to the west of the Simpson B location (Apache Energy, 2004; Quadrant Energy, 2017). Areas of exposed reef are covered with macroalgal and low densities of corals and sponges. Rocky shores are the pre-dominant shoreline habitat adjacent to the locations of Simpson A and B. There are two small sandy beaches on the east side of the platforms and turtles nest on these beaches and seabirds use them primarily for foraging and resting. Wedge-tailed shearwaters and Bridled terns use the hard substrate and sandy beaches on Abutilon Island for nesting and breeding, which lies adjacent to Simpson A and B operational area (Astron 2017; 2017b).

**Table 4-2** and **Figure 4-2** provide an overview of the benthic habitats surrounding the operational area and within the EMBA.



**Table 4-2: Habitats Associated with Receptors Identified within the EMBA**

| Category         | Receptor                        | Operational Area Presence | EMBA Presence      |                          |                      |                            |                            |                                  |                                |                          |                            |                          |                      |                |                           | Relevant Events That May Impact on the Receptors   |
|------------------|---------------------------------|---------------------------|--------------------|--------------------------|----------------------|----------------------------|----------------------------|----------------------------------|--------------------------------|--------------------------|----------------------------|--------------------------|----------------------|----------------|---------------------------|--|
|                  |                                 |                           | Northwest Province | Northwest Shelf Province | Northwest Transition | Northwest Shelf Transition | Central Western Transition | Central Western Shelf Transition | Central Western Shelf Province | Central Western Province | Southwest Shelf Transition | Southwest Shelf Province | Southwest Transition | Timor Province | Christmas Island Province |  |
| Benthic Habitats | Coral reefs                     | ✓                         | X                  | ✓                        | ✓                    | ✓                          | X                          | ✓                                | ✓                              | X                        | ✓                          | ✓                        | X                    | ✓              | ✓                         | <u>Unplanned</u><br>Hydrocarbon release due to surface loss of well control.<br>Diesel release from vessel collision.                                    |
|                  | Seagrass                        | X                         | X                  | ✓                        | ✓                    | ✓                          | X                          | ✓                                | ✓                              | X                        | ✓                          | ✓                        | X                    | ✓              | ✓                         |  |
|                  | Macroalgae                      | ✓                         | X                  | ✓                        | ✓                    | ✓                          | X                          | ✓                                | ✓                              | X                        | ✓                          | ✓                        | X                    | ✓              | ✓                         |  |
|                  | Non-coral benthic invertebrates | ✓                         | ✓                  | ✓                        | ✓                    | ✓                          | ✓                          | ✓                                | ✓                              | ✓                        | ✓                          | ✓                        | ✓                    | ✓              | ✓                         | <u>Planned</u><br>Seabed disturbance.<br>Planned operational discharges.<br><u>Unplanned</u><br>Hydrocarbon release due to surface loss of well control. |

| Category           | Receptor             | Operational Area Presence | EMBA Presence      |                          |                      |                            |                            |                                  |                                |                          |                            |                          |                      |                |                           | Relevant Events That May Impact on the Receptors  |
|--------------------|----------------------|---------------------------|--------------------|--------------------------|----------------------|----------------------------|----------------------------|----------------------------------|--------------------------------|--------------------------|----------------------------|--------------------------|----------------------|----------------|---------------------------|---|
|                    |                      |                           | Northwest Province | Northwest Shelf Province | Northwest Transition | Northwest Shelf Transition | Central Western Transition | Central Western Shelf Transition | Central Western Shelf Province | Central Western Province | Southwest Shelf Transition | Southwest Shelf Province | Southwest Transition | Timor Province | Christmas Island Province |   |
|                    |                      |                           |                    |                          |                      |                            |                            |                                  |                                |                          |                            |                          |                      |                |                           | Diesel release from vessel collision.<br>Unplanned release of solids.                               |
| Shoreline Habitats | Mangroves            | ✓                         | X                  | ✓                        | X                    | ✓                          | X                          | ✓                                | ✓                              | X                        | X                          | X                        | X                    | ✓              | X                         | Unplanned Hydrocarbon release due to surface well release.<br>Diesel release from vessel collision. |
|                    | Intertidal platforms | ✓                         | X                  | ✓                        | ✓                    | ✓                          | X                          | ✓                                | ✓                              | X                        | ✓                          | ✓                        | X                    | X              | ✓                         |   |
|                    | Sandy beaches        | ✓                         | X                  | ✓                        | X                    | ✓                          | X                          | X                                | ✓                              | X                        | ✓                          | ✓                        | X                    | ✓              | ✓                         |   |
|                    | Rocky shorelines     | ✓                         | ✓                  | ✓                        | ✓                    | ✓                          | X                          | ✓                                | ✓                              | X                        | ✓                          | ✓                        | X                    | X              | ✓                         |   |

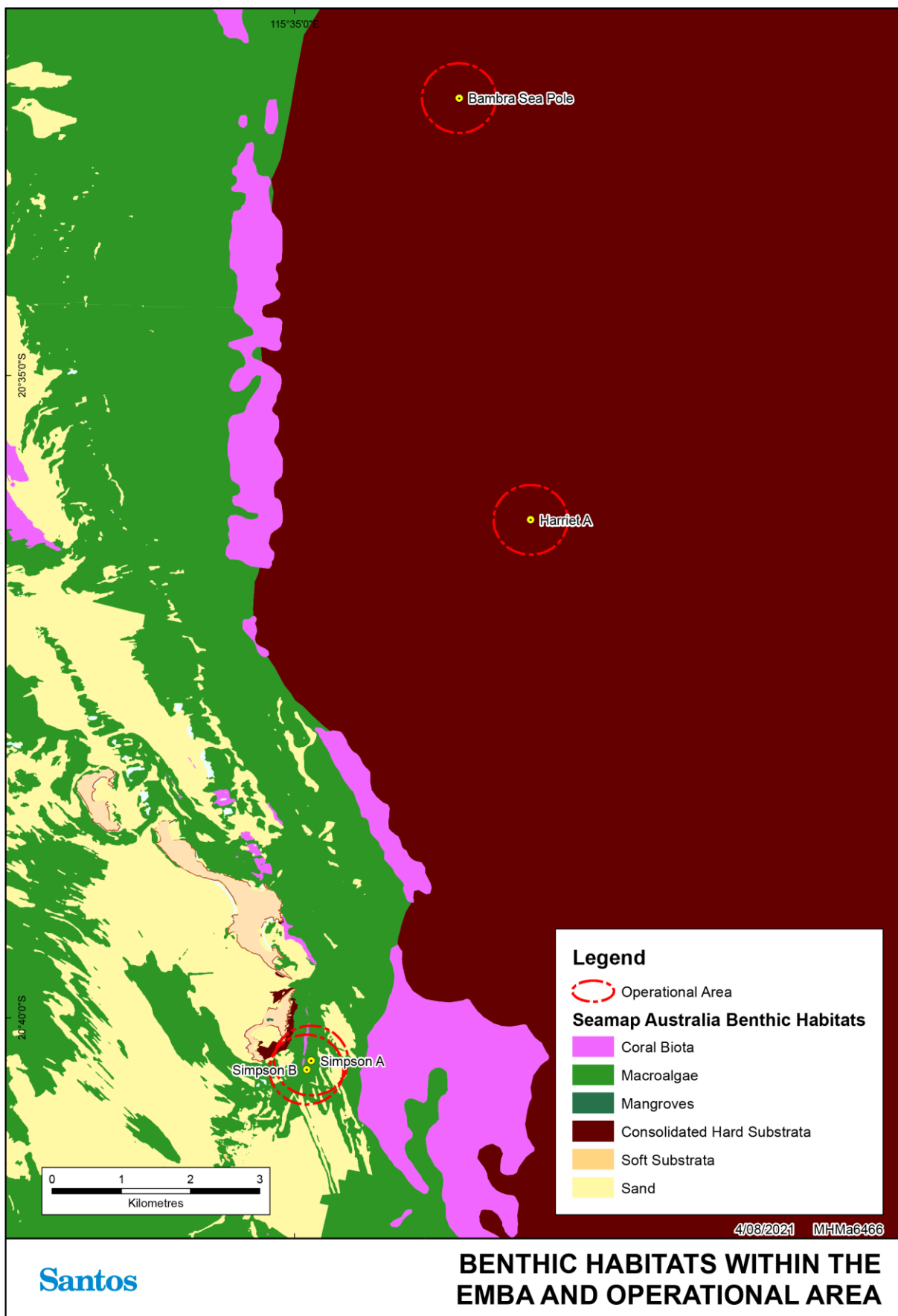


Figure 4-2: Benthic Habitats within the EMBA and Operational Area

### 4.3 Protected/Significant Areas

Protected/significant areas identified in the operational area and EMBA are detailed in **Table 4-3** and shown in Figure 4-3 and Figure 4-4.

The operational area does not intercept any marine protected areas, the closest to the operational area being the Barrow Island Australian Marine Park that is located approximately 0.07 km south-west of the operational area (Simpson B).

The operational area (Simpson A and B) does overlap the Lowendal Islands Nature Reserve, which is a Class C Nature Reserve. The Lowendal Islands comprise more than 46 limestone islands, islets, rocky stacks and fine white sandy beaches. Rocky shorelines up to 5 m in height are common on the Lowendal Islands. Wave erosion has undercut the rock creating notches on rock faces on the seaward side (DBCA 2020b). Currently, the Lowendal Islands Nature Reserve is an existing reserve in the planning area of the Pilbara inshore islands nature reserves and proposed additions draft management plan (DBCA 2020b). The Lowendal Islands Nature Reserve is a part of the Shire of Ashburton, and is approximately 178.85 ha in size. The islands that make up this reserve are Varanus, Bridled, Abutilon, Parakeelya, and 3-44 unnamed islands (DBCA, 2020a). Nature reserves are vested in the Conservation and Parks Commission and managed by the Department of Biodiversity, Conservation and Attractions (DBCA) in accordance with the Conservation and Land Management (CALM) Act, which provides for the management of conservation reserves and other specific lands and waters.

**Table 4-3: Marine Protected Areas Present within the Operational Area and EMBA**

| Value/Sensitivity name   | IUCN Classification | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|--|---------------------|-------------------------|------------------|------------------|---|
| <b>World Heritage Areas</b>  |                     |                         |                  |                  |   |
| Shark Bay  | -                   | No                      | X                | ✓                | 550 (Simpson B)                                       |
| Ningaloo Reef  | -                   | No                      | ✓                | ✓                | 169 (Simpson B)                                       |
| <b>National Heritage Areas</b>                                       |                     |                         |                  |                  |   |
| Shark Bay  | -                   | No                      | X                | ✓                | 549 (Simpson B)                                       |
| The Ningaloo Coast   | -                   | No                      | ✓                | ✓                | 169 (Simpson B)                                       |
| Dampier Archipelago (including Burrup Peninsula)                     | -                   | No                      | ✓                | ✓                | 94 (Harriet A)  |
| Batavia Shipwreck Site and Survivor Camps Area 1629-Houtman Abrolhos | -                   | No                      | X                | ✓                | 974 (Simpson B)                                       |
| Dirk Hartog Landing Site 1616- Cape Inscription Area                 | -                   | No                      | X                | ✓                | 649 (Simpson B)                                       |
| HMAS Sydney II and HSK Kormoran Shipwreck Sites                      | -                   | No                      | X                | ✓                | 832 (Simpson B)                                       |
| <b>Commonwealth Heritage Areas</b>                                   |                     |                         |                  |                  |   |
| Mermaid Reef – Rowley Shoals   | -                   | No                      | X                | ✓                | 597 (Bambra)  |
| Ningaloo Marine Area – Commonwealth Waters                           | -                   | No                      | ✓                | ✓                | 192 (Simpson B)                                       |
| Learmonth Air Weapons Range Facility                                 | -                   | No                      | X                | ✓                | 278 (Simpson B)                                       |
| HMAS Sydney II and HSK Kormoran Shipwreck Sites                      | -                   | No                      | X                | ✓                | 832 (Simpson B)                                       |
| Ashmore Reef National Nature Reserve                                 | -                   | No                      | X                | ✓                | 1,261 (Bambra)  |

| Value/Sensitivity name                       | IUCN Classification   | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|--|---|-------------------------|------------------|------------------|---|
| Scott Reef and Surrounds - Commonwealth Area | -   | No                      | X                | ✓                | 1,016 (Bambra)  |
| <b>Ramsar Wetlands</b>                       |   |                         |                  |                  |   |
| Ashmore Reef National Nature Reserve         | -   | No                      | X                | ✓                | 1,261 (Bambra)  |
| Eighty-mile Beach                            | -   | No                      | X                | ✓                | 466 (Harriet A)                                       |
| <b>Australian Marine Parks</b>               |   |                         |                  |                  |   |
| Montebello Australian Marine Park            | Multiple Use Zone (IUCN VI)   | No                      | ✓                | ✓                | 1 (Bambra)  |
| Mermaid Reef Australian Marine Park          | National Park Zone (IUCN II)  | No                      | X                | ✓                | 586 (Bambra)  |
| Argo-Rowley Terrace Australian Marine Park   | Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)<br>Special Purpose Zone (Trawl) (IUCN VI) | No                      | X                | ✓                | 371 (Bambra)  |
| Kimberley Australian Marine Park             | Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)   | No                      | X                | ✓                | 731 (Bambra)  |
| Eighty Mile Beach Australian Marine Park     | Multiple Use Zone (IUCN VI)   | No                      | X                | ✓                | 380 (Bambra)  |
| Dampier Australian Marine Park               | Multiple Use Zone (IUCN VI)<br>Habitat Protection Zone (IUCN IV)<br>National Park Zone (IUCN II)      | No                      | ✓                | ✓                | 139 (Bambra)  |

| Value/Sensitivity name                  | IUCN Classification  | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|---|--|-------------------------|------------------|------------------|---|
| Gascoyne Australian Marine Park         | Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)<br>Habitat Protection Zone (IUCN IV)                                   | No                      | ✓                | ✓                | 204 (Simpson B)                                       |
| Ningaloo Australian Marine Park         | Recreational Use Zone (IUCN IV)<br>National Park Zone (IUCN II)  | No                      | ✓                | ✓                | 192 (Simpson B)                                       |
| Carnarvon Canyon Australian Marine Park | Habitat Protection Zone (IUCN IV)  | No                      | X                | ✓                | 563 (Simpson B)                                       |
| Shark Bay Australian Marine Park        | Multiple Use Zone (IUCN VI)  | No                      | X                | ✓                | 649 (Simpson B)                                       |
| Abrolhos Australian Marine Park         | Habitat Protection Zone (IUCN IV)<br>Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)<br>Special Purpose Zone (IUCN VI) | No                      | X                | ✓                | 723 (Simpson B)                                       |
| Jurien Australian Marine Park           | Special Purpose Zone (IUCN VI)<br>National Park Zone (IUCN II)   | No                      | X                | ✓                | 1,175 (Simpson B)                                     |
| Ashmore Reef Australian Marine Park     | Recreational Use Zone (IUCN IV)  | No                      | X                | ✓                | 1,261 (Bambra)  |

| Value/Sensitivity name                                   | IUCN Classification  | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|--|--|-------------------------|------------------|------------------|---|
|  | Sanctuary Zone (IUCN Ia)   |                         |                  |                  |   |
| Cartier Island Australian Marine Park                    | Sanctuary Zone (IUCN Ia)   | No                      | X                | ✓                | 1,276 (Bambra)  |
| Perth Canyon Australian Marine Park                      | Habitat Protection Zone (IUCN IV)<br>Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)                               | No                      | X                | ✓                | 1,373 (Simpson B)                                     |
| South-west Corner Australian Marine Park                 | Multiple Use Zone (IUCN VI)<br>National Park Zone (IUCN II)<br>Special Purpose Zone (IUCN VI)<br>Special Purpose Zone (Mining) | No                      | X                | ✓                | 1,614 (Simpson B)                                     |
| Two Rocks  | Multiple Use Zone (IUCN VI)  | No                      | X                | ✓                | 1,344 (Simpson B)                                     |
| <b>State Marine Parks, Management Areas and Reserves</b> |  |                         |                  |                  |   |
| Rowley Shoals Marine Park                                | Sanctuary Zone (IUCN IA)<br>Recreation Zone (IUCN II)<br>General Use Zone (IUCN II)  | No                      | X                | ✓                | 496 (Bambra)  |
| Eighty Mile Beach Marine Park                            | Multiple Use Zone (IUCN VI)  | No                      | X                | ✓                | 435 (Bambra)  |
| Montebello Islands Marine Park                           | National Park (IUCN II)  | No                      | ✓                | ✓                | 1 (Bambra)  |



| Value/Sensitivity name                | IUCN Classification  | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|---------------------------------------|--|-------------------------|------------------|------------------|---|
|                                       | Sanctuary Zone (IUCN IA)   |                         |                  |                  |   |
| Barrow Island Marine Park             | Sanctuary Zone (IUCN IA)   | No                      | ✓                | ✓                | 24 (Simpson B)  |
| Barrow Island Marine Management Area  | Conservation Area (IUCN IA)<br>Unzoned Area  | No                      | ✓                | ✓                | 0.07 (Simpson B)                                      |
| Ningaloo Marine Park                  | National Park (IUCN II)<br>Sanctuary Zone (IUCN IA)<br>Special Purpose Zone (IUCN VI)<br>Recreation Zone (IUCN II)<br>General Use Zone (IUCN II) | No                      | ✓                | ✓                | 192 (Simpson B)                                       |
| Muiron Islands Marine Management Area | Sanctuary Zone (IUCN IA)<br>Special Purpose Zone (IUCN VI)<br>Recreation Zone (IUCN II)<br>General Use Zone (IUCN II)                            | No                      | ✓                | ✓                | 169 (Simpson B)                                       |
| Shark Bay Marine Park                 | Multiple Use Zone (IUNC VI)<br>Sanctuary Zone (IUCN IA)  | No                      | X                | ✓                | 648 (Simpson B)                                       |
| Jurien Bay Marine Park                | General Use Zone (IUCN II)   | No                      | X                | ✓                | 1,161 (Simpson B)                                     |
| Key Ecological Features               |  |                         |                  |                  |   |

| Value/Sensitivity name  | IUCN Classification | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|---|---------------------|-------------------------|------------------|------------------|---|
| Glomar shoals   | -                   | No                      | ✓                | ✓                | 146 (Bambra)  |
| Ancient coastline at 125 m depth contour  | -                   | No                      | ✓                | ✓                | 72 (Bambra)   |
| Continental slope demersal fish communities   | -                   | No                      | ✓                | ✓                | 85 (Bambra)   |
| Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula                               | -                   | No                      | ✓                | ✓                | 142 (Simpson B)                                       |
| Exmouth Plateau   | -                   | No                      | X                | ✓                | 219 (Simpson B)                                       |
| Mermaid Reef and Commonwealth waters surrounding Rowley Shoals                                      | -                   | No                      | X                | ✓                | 486 (Bambra)  |
| Canyons linking the Argo Abyssal Plain with the Scott Plateau                                       | -                   | No                      | X                | ✓                | 826 (Bambra)  |
| Western demersal slope and associated fish communities  | -                   | No                      | X                | ✓                | 693 (Simpson B)                                       |
| Wallaby Saddle  | -                   | No                      | X                | ✓                | 739 (Simpson B)                                       |
| Seringapatam Reef and Commonwealth waters in the Scott Reef Complex                                 | -                   | No                      | X                | ✓                | 1,003 (Bambra)  |
| Western rock lobster  | -                   | No                      | X                | ✓                | 891 (Simpson B)                                       |
| Ancient coastline at 90-120m depth  | -                   | No                      | X                | ✓                | 947 (Simpson B)                                       |
| Commonwealth waters adjacent to Ningaloo Reef   | -                   | No                      | ✓                | ✓                | 192 (Simpson B)                                       |
| Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break) | -                   | No                      | X                | ✓                | 931 (Simpson B)                                       |

| Value/Sensitivity name  | IUCN Classification | Within operational area | Presence in MEVA | Presence in EMBA | Approximate distance to closest operational area (km) |
|---|---------------------|-------------------------|------------------|------------------|---|
| Perth Canyon and adjacent shelf break, and other west coast canyons                   | -                   | No                      | X                | ✓                | 937 (Simpson B)                                       |
| Ashmore Reef and Cartier Island and surrounding                                       | -                   | No                      | X                | ✓                | 1,272 (Bambra)  |
| Cape Mentelle upwelling   | -                   | No                      | X                | ✓                | 1,613 (Simpson B)                                     |
| Commonwealth marine environment within and adjacent to the west-coast inshore lagoons | -                   | No                      | X                | ✓                | 919 (Simpson B)                                       |
| Naturaliste Plateau   | -                   | No                      | X                | ✓                | 1,625 (Simpson B)                                     |

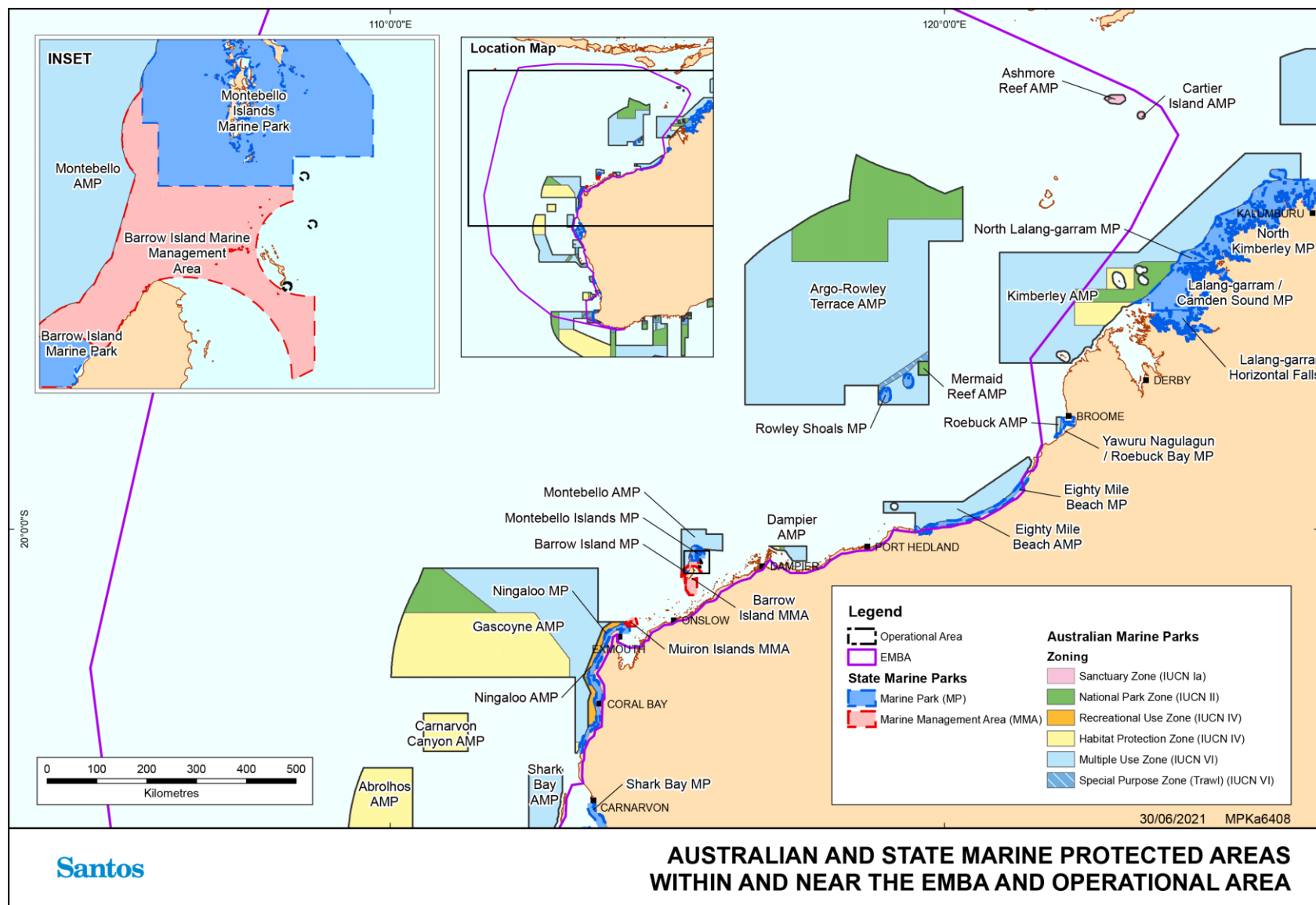
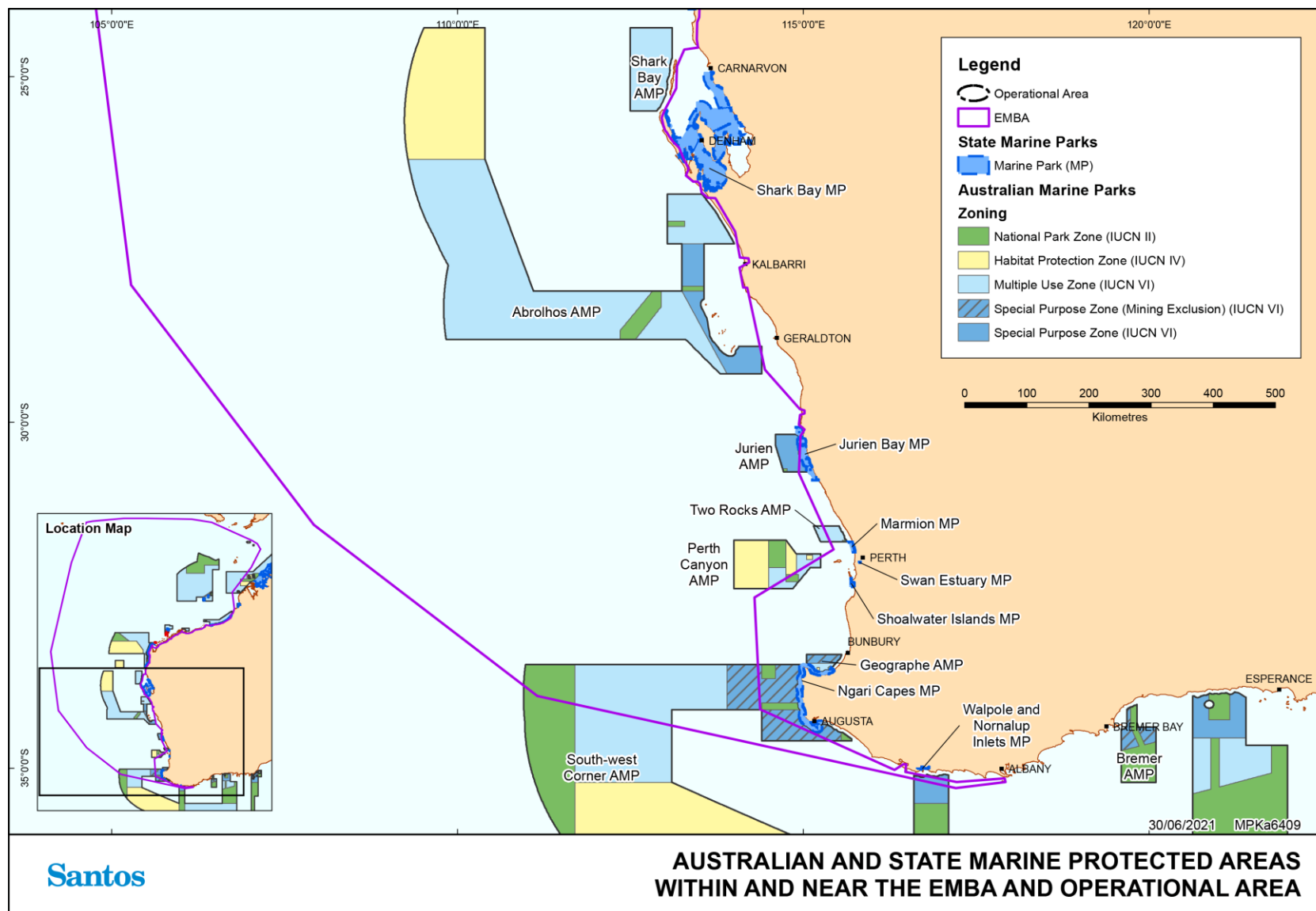


Figure 4-3: Australian and State Marine Parks within the EMBA and operational area (north)



**Figure 4-4: Australian and State Marine Parks within the EMBA and operational area (south)**

#### 4.4 Threatened and Migratory Fauna

The EPBC Act lists threatened and migratory fauna species that are protected under Commonwealth legislation and various international conventions and treaties. A search of the EPBC Act Protected Matters Database was conducted using the coordinates of the EMBA to identify these species (**Table 4-4**).

**Table 4-4: Summary of Protected Species and Communities within the Operational Area and EMBA**

| Value           | Description  | Recovery Plan/Conservation Advice/Management Plan   | Threats/strategies identified as relevant to the activity   |
|-----------------|--|---|---|
| Fish and sharks | <ul style="list-style-type: none"> <li>+ 18 species of fish and sharks listed as threatened and/or migratory under the EPBC Act could occur within the EMBA (9 of which could occur within the operational area)</li> </ul>  | <ul style="list-style-type: none"> <li>+ Threat Abatement Plan for Impacts of Marine Debris on Vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)</li> <li>+ Conservation Advice <i>Galaxiella nigrostriata</i> black-stripe minnow (2018)</li> <li>+ Approved Conservation Advice for <i>Nannatherina balstoni</i> (Balston's Pygmy Perch) (2008)</li> <li>+ Sawfish and River Sharks Multispecies Recovery Plan (2015)</li> <li>+ Commonwealth Conservation Advice on <i>Pristis zijsron</i> (green sawfish) (2008)</li> <li>+ Approved Conservation Advice for <i>Glyphis garricki</i> (northern river shark) 2014</li> <li>+ Recovery plan for the White Shark (<i>Carcharodon carcharias</i>) (2013)</li> <li>+ Recovery Plan for the Grey Nurse Shark (<i>Carcharias taurus</i>) (2014)</li> <li>+ Approved Conservation Advice for <i>Rhincodon typus</i> (whale shark) (2015)</li> </ul> | <ul style="list-style-type: none"> <li>+ Marine debris</li> <li>+ Habitat degradation and modification</li> <li>+ Introduction of invasive marine species</li> <li>+ Ecosystem effects as a result of habitat modification and climate change</li> <li>+ Pollution and disease</li> <li>+ Ecosystem effects - habitat modification and climate change</li> <li>+ Boat strike from large vessels.</li> </ul> |
| Marine Reptiles | <ul style="list-style-type: none"> <li>+ 9 marine reptile species could occur within the operational area and EMBA (6 turtle species, 1 seasnake, one crocodile) that are listed as threatened and/or migratory under the EPBC Act</li> <li>+ The following Biologically Important Areas (BIAs) intersect the operational area: <ul style="list-style-type: none"> <li>- Internesting (internesting buffer) (loggerhead, green, hawksbill and flatback turtles)</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>+ Threat Abatement Plan for Impacts of Marine Debris on Vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)</li> <li>+ Approved Conservation Advice for <i>Aipysurus foliosquama</i> (Leaf-scaled Sea Snake) (2010)</li> <li>+ Approved Conservation Advice for <i>Liasis olivaceus barroni</i> (Olive Python - Pilbara subspecies) (2008)</li> </ul>  | <ul style="list-style-type: none"> <li>+ Marine debris</li> <li>+ Habitat degradation</li> <li>+ Light pollution</li> <li>+ Vessel disturbance</li> <li>+ Deteriorating water quality</li> <li>+ Boat strike</li> <li>+ Loss of habitat</li> </ul>  |

| Value          | Description   | Recovery Plan/Conservation Advice/Management Plan  | Threats/strategies identified as relevant to the activity   |
|----------------|---|--|---|
|                | <ul style="list-style-type: none"> <li>- Basking (loggerhead, green, hawksbill and flatback turtles)</li> <li>- Foraging (loggerhead, green, hawksbill and flatback turtles)</li> <li>- Nesting (loggerhead, green, hawksbill and flatback turtles)</li> <li>- Mating (loggerhead, green, hawksbill and flatback turtles).</li> </ul> <p>+ Habitat mapped as 'habitat critical (nesting)' for green, hawksbill, loggerhead and flatback turtles also occur within the EMBA.</p>   | <ul style="list-style-type: none"> <li>+ Approved Conservation Advice for <i>Aipysurus apraefrontalis</i> (Short-nosed Sea Snake)</li> <li>+ National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DoEE, 2020)</li> <li>+ Recovery plan for marine turtles in Australia 2017 – 2027 (Commonwealth of Australia 2017)</li> <li>+ Commonwealth Conservation Advice on <i>Dermochelys coriacea</i> (2008).</li> </ul>   | <ul style="list-style-type: none"> <li>+ Noise interference.</li> </ul>   |
| Marine Mammals | <ul style="list-style-type: none"> <li>+ 16 species of marine mammals listed as threatened and/or migratory under the EPBC Act could occur within the EMBA (7 of which could occur within the operational area)</li> <li>+ The following BIAs intersect the operational area: <ul style="list-style-type: none"> <li>- Migration (humpback whale, pygmy blue whale)</li> <li>- Distribution (pygmy blue whale)</li> <li>- Foraging (Australian Sea Lion, pygmy blue whale, Dugong, Whale Shark, White Shark)</li> <li>- Breeding (Dugong)</li> <li>- Nursing (Dugong)</li> <li>- Calving (Dugong).</li> </ul> </li> <li>+ A number of marine mammals are known to occur in the local region around the EMBA, including dolphins, whales and the dugong. Some species are seasonal visitors, migrating through NWS waters, while others occur all year round.</li> </ul> | <ul style="list-style-type: none"> <li>+ Threat Abatement Plan for Impacts of Marine Debris on Vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)</li> <li>+ Blue Whale Conservation Management Plan 2015 - 2025 (2015)</li> <li>+ Conservation Management Plan for the Southern Right Whale 2011 – 2021 (2012)</li> <li>+ Approved Conservation Advice for <i>Balaenoptera physalus</i> (fin whale) (2015)</li> <li>+ Approved Conservation Advice for <i>Balaenoptera borealis</i> (sei whale) (2015)</li> <li>+ Approved Conservation Advice for <i>Megaptera novaeangliae</i> (humpback whale) (2015).</li> </ul> | <ul style="list-style-type: none"> <li>+ Marine debris</li> <li>+ Noise interference</li> <li>+ Habitat modification</li> <li>+ Vessel disturbance</li> <li>+ Pollution</li> <li>+ Vessel strike</li> <li>+ Habitat degradation including pollution.</li> </ul> |



| Value    | Description   | Recovery Plan/Conservation Advice/Management Plan   | Threats/strategies identified as relevant to the activity  |
|----------|---|---|--|
| Seabirds | <ul style="list-style-type: none"> <li>+ 72 species of birds listed as threatened and/or migratory under the EPBC Act could occur within the EMBA (14 of which could occur within the operational area).</li> <li>+ Breeding BIAs intersect the operational area for the following species; Australian Lesser Noddy, Bridled Tern, Brown Booby, Caspian Tern, Fairy Tern, Flesh-footed Shearwater, Great-winged Petrel, Indian Yellow-nosed Albatross, Lesser crested tern, Lesser Frigatebird, Little Penguin, Little Shearwater, Little Tern, Pacific Gull, Red Footed Booby, Roseate Tern, Soft-plumaged Petrel, Sooty Tern, Wedge-tailed Shearwater, White-faced Storm petrel, and White-tailed Tropicbird.</li> <li>+ Seabird colonies and nesting sites (primarily for the wedge-tailed shearwater) occur on Varanus and Airlie Islands.</li> </ul> | <ul style="list-style-type: none"> <li>+ Threat Abatement Plan for Impacts of Marine Debris on Vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)</li> <li>+ National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DoEE, 2020)</li> <li>+ Draft Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2019)</li> <li>+ Conservation Advice <i>Charadrius mongolus</i> Lesser sand plover (2016)</li> <li>+ Conservation Advice for the Christmas Island Frigatebird - <i>Fregata andrewsi</i> (2020)</li> <li>+ Conservation Advice <i>Halobaena caerulea</i> blue petrel (2015)</li> <li>+ Commonwealth Conservation Advice on <i>Sternula nereis nereis</i> (Fairy Tern) (2011)</li> <li>+ Approved Conservation Advice for <i>Calidris ferruginea</i> (Curlew Sandpiper) (2015)</li> <li>+ Approved Conservation Advice for <i>Numenius madagascariensis</i> (Eastern Curlew) (2015)</li> <li>+ Approved Conservation Advice for <i>Calidris canutus</i> (Red knot) (2016)</li> <li>+ National recovery plan for threatened albatrosses and giant petrels 2011-2016 (2011)</li> <li>+ Approved Conservation Advice for <i>Pterodroma Mollis</i> (soft-plumaged Petrel) (2015)</li> </ul> | <ul style="list-style-type: none"> <li>+ Marine debris</li> <li>+ Light pollution</li> <li>+ Habitat loss and degradation from pollution</li> <li>+ Pollution</li> <li>+ Climate change</li> <li>+ Habitat disturbance</li> <li>+ Oil spills</li> <li>+ Marine pollution</li> <li>+ Habitat loss disturbance and modifications.</li> </ul> |

| Value | Description | Recovery Plan/Conservation Advice/Management Plan  | Threats/strategies identified as relevant to the activity |
|-------|-------------|--|---|
|       |             | <ul style="list-style-type: none"> <li>+ Conservation Advice <i>Limosa lapponica menzbieri</i> (Bar-tailed godwit (northern Siberian))</li> <li>+ Approved Conservation Advice for <i>Rostratula australis</i> (Australian Painted Snipe) (2013).</li> </ul> |   |

## 4.5 Socio-Economic Receptors

Socio-economic activities that may occur within the operational area and surrounds include commercial fishing, oil and gas exploration and production; and to a lesser extent, recreational fishing and tourism, are summarised below in **Table 4-5**.

**Table 4-5: Socio-economic activities in the vicinity of the operational area and EMBA**

| Value/<br>sensitivity                     | Description   | Operational<br>area<br>presence | MEVA<br>Presence | EMBA<br>Presence | Relevant events<br>within<br>operational area         | Relevant events<br>within EMBA                   |
|---|---|---------------------------------|------------------|------------------|---|--|
| Commercial<br>fisheries -<br>Commonwealth | <p>Three Commonwealth fisheries overlap the operational area:</p> <ul style="list-style-type: none"> <li>+ the Western Tuna and Billfish Fishery</li> <li>+ Southern Bluefin Tuna Fisher</li> <li>+ Western Skipjack Tuna Fishery.</li> </ul> <p>Since 2005, there has been fewer than five vessels active in the Western Tuna and Billfish Fishery each year, down from 50 active vessels in 2000 (ABARES Fishery Status Reports, 2020).</p> <p>The Southern Bluefin Tuna Fishery is only active in waters offshore of south and south eastern Australia, confirmed in consultation with the Australia Southern Bluefin Tuna Association in consultation for previous Santos offshore activities (ABARES Fishery Status Reports, 2020).</p> <p>There has been no fishing effort in the Skipjack Tuna Fishery since the 2009 season, and in that season, activity concentrated off South Australia (ABARES Fishery Status Reports, 2020).</p> | ✓                               | ✓                | ✓                | <u>Planned</u><br>Interaction with other marine users | <u>Unplanned</u><br>Unplanned hydrocarbon spills |
| Commercial<br>fisheries - State           | <p>State fisheries that intersect the operational area are:</p> <ul style="list-style-type: none"> <li>+ the Pilbara Trap, Pilbara Line and Pilbara Fish Trawl Managed Fisheries</li> <li>+ Abalone Fishery</li> <li>+ Marine Aquarium Fish Managed Fishery</li> <li>+ Mackerel Managed fishery</li> <li>+ Onslow Prawn Limited Entry Fishery</li> </ul>  | ✓                               | ✓                | ✓                | <u>Planned</u><br>Interaction with other marine users | <u>Unplanned</u><br>Unplanned hydrocarbon spills |

| Value/<br>sensitivity | Description  | Operational<br>area<br>presence | MEVA<br>Presence | EMBA<br>Presence | Relevant events<br>within<br>operational area         | Relevant events<br>within EMBA                    |
|-----------------------|--|---------------------------------|------------------|------------------|---|---|
|                       | <ul style="list-style-type: none"> <li>+ Specimen Shell Managed Fishery</li> <li>+ South-West Coast Salmon Fishery</li> <li>+ West Coast Deep Sea Crustacean Managed Fishery.</li> </ul>   |                                 |                  |                  |   |   |
| Shipping              | <p>Shipping using North West Shelf (NWS) waters includes iron ore carriers, LNG and oil tankers and other vessels proceeding to or from the ports of Barrow Island, Varanus Island, Dampier, Port Walcott and Port Hedland.</p> <p>The operational area does not overlap any shipping fairways. Some vessel traffic may be encountered throughout the operational area as commercial vessels transit around Barrow Island and Montebello Islands and support vessel(s) conduct operations with the offshore infrastructure .</p> | ✓                               | ✓                | ✓                | <u>Planned</u><br>Interaction with other marine users | <u>Unplanned</u><br>Unplanned hydrocarbon spills) |
| Recreational fishing  | <p>Within the operational area, natural seabed features include, seagrass and macroalgae. These habitats provide protection, food and habitat for a large diversity of fish species, which are typically targeted by recreational fishers. It is unlikely recreational fishing would occur in the operational area, but it may occur in around the nearby Barrow and Montebello Islands.</p> <p>Recreational fishing may occur within the EMBA, and therefore could be impacted by a spill arising from a vessel collision.</p>  | X                               | ✓                | ✓                | N/A   | <u>Unplanned</u><br>Unplanned hydrocarbon spills) |
| Defence               | The nearest Defence area is a training area located 5 km from the operational area (Simpson B).  | X                               | ✓                | ✓                | N/A   | N/A   |

| Value/<br>sensitivity | Description  | Operational<br>area<br>presence | MEVA<br>Presence | EMBA<br>Presence | Relevant events<br>within<br>operational area         | Relevant events<br>within EMBA                   |
|-----------------------|--|---------------------------------|------------------|------------------|---|--|
| Shipwrecks            | There are no shipwrecks within the operational area. The nearest historic shipwreck (Parks Lugger) is located 11 km from the operational area in the Montebello Islands (Bambra).  | X                               | ✓                | ✓                | <u>Planned</u><br>Interaction with other marine users | <u>Unplanned</u><br>Unplanned hydrocarbon spills |
| Oil and gas           | Various petroleum exploration and production activities have been undertaken within the NWS; including in the vicinity of the operational area. The nearest operating facility to the operational area is Santos' Harriet B, located approximately 3.9 km north east of the operational area (Harriet A; closest facility). Vessels servicing oil and gas operations in the region may pass through the area en route to facilities. However, since vessel transit is not classed as a petroleum activity, potential impacts to vessels are discussed under 'Shipping' below.<br><br>Oil and gas facilities occur within the EMBA as do permits operated by other operators. Thus, oil and gas activities could be impacted by unplanned events. | X                               | ✓                | ✓                | <u>Planned</u><br>Interaction with other marine users | <u>Unplanned</u><br>Unplanned hydrocarbon spills |
| Tourism               | Owing to the water depths of the operational area, planned events may have an impact on tourism.<br><br>There are sources of marine-based tourism within the EMBA. Aquatic recreational activities, such as boating, diving and fishing, occur near the coast and Montebello Islands. These activities are concentrated in the vicinity of the population centres, such as Exmouth, Dampier and Onslow.<br><br>The EMBA encompasses a number of marine parks and reserves where shoreline accumulation of oil may also occur. Thus, ecotourism based on specific   | X                               | ✓                | ✓                | N/A   | <u>Unplanned</u><br>Unplanned hydrocarbon spills |

| Value/<br>sensitivity | Description  | Operational<br>area<br>presence | MEVA<br>Presence | EMBA<br>Presence | Relevant events<br>within<br>operational area | Relevant events<br>within EMBA                              |
|-----------------------|--|---------------------------------|------------------|------------------|---|---|
|                       | local values (game fish, nearshore reef snorkelling and diving) could be impacted by unplanned events.   |                                 |                  |                  |   |   |
| Cultural<br>Heritage  | <p>No known sites of Aboriginal Heritage significance occur within the operational area.</p> <p>Multiple registered Aboriginal Heritage sites occur within the EMBA.</p> <p>Aboriginal heritage sites in WA are protected under the Aboriginal Heritage Act 1972, whether or not they are registered with the Department of Planning, Lands and Heritage.</p> <p>While sea country is a recognised value, the registered site list is land-based sites, therefore could be impacted by shoreline accumulation of unplanned hydrocarbon releases.</p> | X                               | ✓                | ✓                | N/A   | <p><u>Unplanned</u></p> <p>Unplanned hydrocarbon spills</p> |

## 5 Stakeholder Consultation

The Varanus Island Hub has been in operation since 1986, and stakeholders have been engaged regarding activities related to this facility since its development.

Recent engagement has included consultation on the following:

- + Routine quarterly consultation regarding Varanus Island Hub Operations EP activities;
- + Vessel Based Activity EP during 2020; and
- + Ongoing consultation in relation to the Varanus Island Asset Removal Program (Sinbad and Campbell Platforms).

In addition, a number of the stakeholders identified in this EP receive Santos' regular Quarterly Consultation Update which provides an overview of Santos' proposed and current activities offshore WA.

With this history, Santos is familiar with local community stakeholders and other users of the marine environment in these areas.

Stakeholders (**Table 5-1**) were informed of activities covered in this EP via several channels of engagement commencing in June 2021, including:

- + Harriet Joint Venture (HJV) Plug and Abandonment consultation package distributed to identified stakeholders on 25 June 2021,
- + Harriet Joint Venture (HJV) Plug and Abandonment Commercial Fisher Consultation package distributed to identified fishing licence holders on 30 June 2021,
- + Follow-up emails sent to selected stakeholders in July 2020, and
- + Santos' Quarterly Consultation Update, issued on 8 July 2021 and November 2021.

Based on Santos' experience with previous EPs, and from subsequent stakeholder feedback and regulator discussions, the primary stakeholder issue of concern for this activity is:

- + interaction with other marine users and commercial fishers.

Santos has considered all stakeholder responses and assessed the merits of all comments about the potential impact of the proposed Plug and Abandonment program. A summary of Santos' response statements to the comments is provided in Table 4 2.

Santos considers that consultation with relevant stakeholders has been adequate to inform the development of this EP. Notwithstanding this, Santos recognises the importance of ongoing stakeholder consultation and notification.

**Table 5-1: Assessment of relevance of identified stakeholders for the proposed activity**

| Stakeholder                                  | Relevance/ Reason for Engagement   |
|--|--|
| Commonwealth government departments/agencies |  |
| Australian Hydrographic Office (AHO)         | The AHO is the part of the Commonwealth DoD responsible for maintaining and disseminating nautical charts, including the distribution of Notice to Mariners.   |
| Australian Maritime Safety Authority (AMSA)  | AMSA is the statutory and control agency for maritime safety and vessel emergencies in Commonwealth Waters. AMSA is a relevant agency when proposed offshore activities may impact on the safe navigation of commercial shipping in Australian waters. |
| Department of Defence (Defence)              | Defence is a relevant agency where the proposed activity may impact operational requirements; encroach on known training areas and/or  |



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|  | restricted airspace, or when nautical products or other maritime safety information is required to be updated.  |
| Australian Fisheries Management Authority (AFMA)   | AFMA is responsible for managing Commonwealth fisheries and is a relevant agency where the activity has the potential to impact on fisheries resources in AFMA managed fisheries.   |
| Department of Agriculture, Water and the Environment (DAWE) – Biosecurity (marine pests)                   | <p>The DAWE (marine pests) has primary policy and regulatory responsibility for managing biosecurity for incoming goods and conveyances, including biosecurity for marine pests.</p> <p>The Department is the relevant agency where an offshore activity has the potential to transfer marine pests between installations and mainland Australia.</p>   |
| Department of Agriculture, Water and the Environment (DAWE) – Fisheries                                    | <p>DAWE (fisheries) has primary policy responsibility for promoting the biological, economic and social sustainability of Australian fisheries. The Department is the relevant agency where the activity has the potential to negatively impact fishing operations and/or fishing habitats in Commonwealth waters.</p> <p>The operational areas intersect with commonwealth managed fisheries.</p>  |
| Department of Agriculture, Water and the Environment (DAWE) –Biosecurity (vessels, aircraft and personnel) | <p>DAWE (vessels and aircraft) has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. The department is the relevant agency where the operator's activity involves:</p> <ul style="list-style-type: none"> <li>+ the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory</li> <li>+ the exposure of an aircraft or vessel (which leaves Australian territory not subject to biosecurity control) to offshore petroleum activities.</li> </ul> |
| Australian Marine Oil Spill Centre (AMOSC)   | AMOSC operates the Australian oil industry's major oil spill response facility.   |
| <b>State government departments/agencies</b>   |   |
| Department of Transport (DoT)  | DoT is the control agency for marine pollution emergencies in State waters.   |
| Department of Primary Industries and Regional Development (DPIRD)  | <p>DPIRD is responsible for managed West Australian State fisheries.</p> <p>The operational area intersects with state managed fisheries.</p>   |
| Department of Biodiversity, Conservation and Attractions (DBCA)  | <p>DBCA is a relevant State agency responsible for the management of State marine parks and reserves and protected marine fauna and flora.</p> <p>The operational area is adjacent to state marine reserves.</p>  |
| Department of Water and Environmental Regulation (DWER)  | Responsible agency for all environment and water regulation in WA including all Part IV and V approvals associated with the Varanus Island Hub. Areas such as waste generation from the development once it lands ashore will be regulated by DWER.   |
| Pilbara Port Authority   | Pilbara Ports Authority manages port land at Dampier, Port Hedland, Ashburton and Cape Preston East and the Varanus Island port, and  |

|  |  |
|--|--|
|  | facilitates the development of land and leases to support port-related industries.   |
| <b>Neighbouring operators</b>                                  |  |
| Chevron  | Neighbouring Operator.   |
| <b>Community</b>   |  |
| Pilbara Development Commission                                 | Reporting to the WA Minister for Regional Development, the Commission is the regional link between government policy and planning and regional aspirations and needs   |
| City of Karratha   | The City of Karratha is one of the local government bodies for the region.   |
| Karratha CCI   | The Karratha Districts CCI is a member driven organisation providing information, professional services and support for businesses in the local area.  |
| Kings Bay Fishing Club   | Recreational fishing may occur near the operational area. The Club may be able to assist in reaching its membership to inform of activity timing should this be requested.   |
| Shire of Ashburton   | The Shire of Ashburton is one of the local government bodies for the region.   |
| Nickol Bay Game Fishing Club)                                  | Recreational fishing may occur near the operational area. The Club may be able to assist in reaching its membership to inform of activity timing should this be requested  |
| Yamatji Marlpa Aboriginal Corporation (YMAC)                   | Representative Aboriginal / Torres Strait Islander Body as per the NNTT  |
| <b>Industry Bodies</b>   |  |
| Western Australian Fishing Industry Council (WAFIC)            | WAFIC is the peak industry body representing the interests of the WA commercial fishing, pearling and aquaculture sector. The operational area intersects with several State-managed fisheries.  |
| Commonwealth Fisheries Association (CFA)                       | The CFA was engaged as a representative body for Commonwealth fisheries. The operational areas intersect with several Commonwealth-managed fisheries. The CFA is also listed on the AFMA website as a contact for petroleum operators to use when consultation with fishing operators is required. |
| Australian Southern Bluefin Tuna Industry Association (ASBTIA) | ASBTIA represents the Australian southern bluefin tuna industry. ASBTIA is also listed on the AFMA website as a contact for petroleum operators to use when consultation with Commonwealth fishing operators is required.  |
| Tuna Australia   | Represents statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern & Western tuna and billfish fisheries.   |
| Pearl Producers Association (PPA)                              | The PPA is the peak representative organisation of The Australian South Sea Pearling Industry. PPA membership includes all Pinctada maxima pearl oyster licensees that operate within the Australian North-west Bioregion. Via WAFIC, the PPA has requested engagement on all EPs.                 |

|  |   |
|--|---|
| Recfishwest  | Recfishwest is the peak body representing recreational fishers in WA. Recfishwest is identified as being able to assist in reaching its membership to inform of activity timing should this be requested.   |
| Marine Tourism WA (MTWA)   | MTWA represents the charter sector in WA. As charter fishing may occur near the proposed areas of activity the MTWA was identified as being able to assist in reaching its membership to inform them of activity timing should this be requested. |
| <b>Tourism Operators</b>   |   |
| Montebello and Barrow Island Tourism Operators   | Charter operators may operate near the proposed areas of activity.  |
| <b>Commercial Fisheries (State)</b>  |   |
| Onslow Prawn Managed Fishery   | Based on a review of DPIRD fishery information and consultation with WAFIC, the Onslow Prawn Fishery boundary overlaps the operational area and the licence holders in this fishery should be consulted.  |
| Mackerel Managed Fishery (Area 2)  | Based on a review of DPIRD fishery information and consultation with WAFIC, the Mackerel Managed Fishery (Area 2) boundary overlaps the operational area and the licence holders in this fishery should be consulted.                             |
| Pilbara Line Fishery   | Based on a review of DPIRD fishery information and consultation with WAFIC, the Pilbara Line Fishery boundary overlaps the operational area and the licence holders in this fishery should be consulted.  |
| Pilbara Trap Managed Fishery   | Based on a review of DPIRD fishery information and consultation with WAFIC, the Pilbara Trap Managed Fishery boundary overlaps the operational area and the licence holders in this fishery should be consulted.                                  |
| Pearl Oyster Managed Fishery   | Based on a review of DPIRD fishery information and consultation with WAFIC, the Pearl Oyster Managed Fishery boundary overlaps the operational area and the licence holders should be consulted via their industry body (PPA).                    |
| Pilbara Crab Managed Fishery   | Based on a review of DPIRD fishery information and consultation with WAFIC, the Pilbara Crab Fishery boundary overlaps the operational area and the relevant licence holders in this fishery should be consulted.                                 |
| Developmental Octopus Exemption Licence Holders  | Based on a review of DPIRD fishery information the Development Octopus Fishery does not overlap the operational area, however based on consultation with WAFIC, the identified Exemption Licence Holders in this fishery should be consulted.     |
| Other Fisheries: Marine Aquarium; Specimen Shell, Sea Cucumber, Development Sea Urchin | Based on a review of DPIRD fishery information and consultation with WAFIC, these fishery boundaries overlap the operational area and the licence holders in this fishery should be consulted.  |
| <b>Commercial Fisheries (Commonwealth)</b>   |   |

|                               |  |
|-------------------------------|--|
| Western Tuna and Bill Fish    | This fishery overlaps the proposed operational area and the licence holders in this fishery should be consulted via their industry bodies ASBTIA and Tuna Australia. |
| Southern Bluefin Tuna Fishery | This fishery overlaps the proposed operational area and the licence holders in this fishery should be consulted via their industry body ASBTIA.                      |
| Western Skipjack Fishery      | This fishery overlaps the proposed operational area and the licence holders in this fishery should be consulted via their industry body ASBTIA.                      |

## 5.1 Addressing consultation feedback

Santos's Consultation Coordinator is available before, during and after the activity to ensure opportunities for stakeholders to provide feedback are available. Consultation material is provided to relevant internal, activity personnel to ensure the Santos business has a thorough understanding of how the activity is being received by relevant persons.

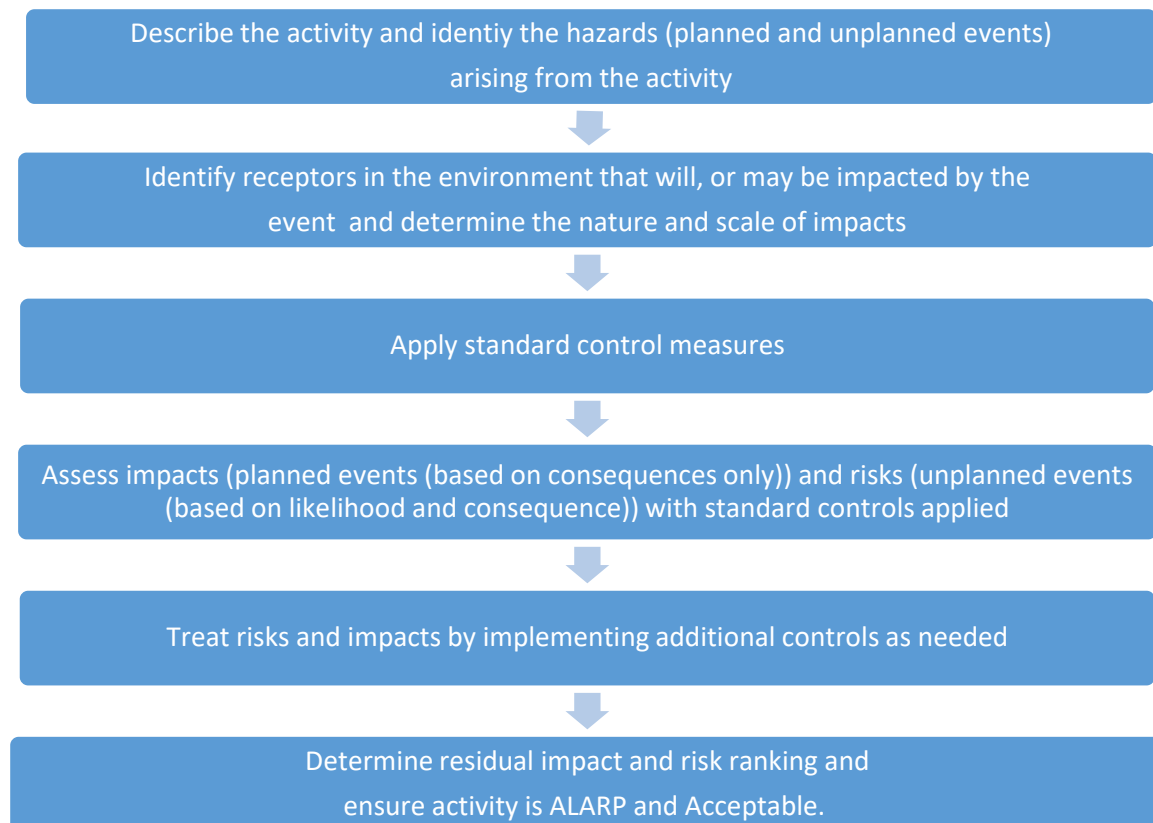
If in stakeholder consultation a change to any control measure or activity outlined in this EP is required, Santos would undertake an internal assessment using the management of change (MoC) process.

## 6 Environmental Hazards and Controls

### 6.1 Overview of process

Santos operates under an overarching Risk Management Policy. The company Risk Procedure (SMS MS1 ST01) underpins the Risk Management Policy and is consistent with the requirements of AS/NZS ISO 31000:2018, Risk Management – Guidelines (ISO, 2018).

The key steps to risk management are illustrated in **Figure 6-1**.



**Figure 6-1: Environmental impact and risk assessment process**

Santos has undertaken environmental impact and risk assessments for the operational activities planned events (including any routine, non-routine and contingency activities) and unplanned events in accordance with the P(SL)(E)R 2012.

The extent of actual or potential impacts from each planned or unplanned event is assessed using, where required, modelling (e.g., hydrocarbon spills) and scientific reports. The duration of the event is also described, including the potential duration of any impacts should they occur. For each planned and unplanned event, a set of Environmental Performance Objective(s), Control Measures, Environmental Performance Standards and Measurement Criteria are identified. The definitions of the performance objectives, environmental performance standards and measurement criteria are consistent with P(SL)(E)R 2012.

Impact mechanisms and any thresholds for impacts are determined and described, using scientific literature and modelling where required. Impact thresholds for different critical life stages are also identified where relevant. The consequence level of the impact is then determined for each planned and unplanned event based on the severity of the impact to relevant receptors.

This process determines a consequence level based on set criteria for each receptor category and takes into consideration the duration and extent of the impact, receptor recovery time and the effect of the impact at a population, ecosystem or industry level. The consequence definitions are outlined in **Table 6-1**.

**Table 6-1: Consequence level description**

| Consequence Level | Consequence Level Description |  |
|-------------------|-------------------------------|--|
| I                 | Negligible                    | No impact or negligible impact.  |
| II                | Minor                         | Detectable but insignificant change to local population, industry or ecosystem factors.                                |
| III               | Moderate                      | Significant impact to local population, industry or ecosystem factors.   |
| IV                | Major                         | Major long-term effect on local population, industry or ecosystem factors.   |
| V                 | Critical                      | Complete loss of local population, industry or ecosystem factors AND/OR extensive regional impacts with slow recovery. |

Note: Injury or mortality to a protected species is included as a moderate consequence level

For unplanned events, in addition to the consequence level of the impact, a risk ranking is also determined using an assessment of the likelihood (likelihood ranking) of the impact occurring from an unplanned event. For oil spill events, potential impacts to environmental receptors are assessed where they occur within the EMBA using results from modelling. The Santos risk matrix is provided in **Table 6-2**.

**Table 6-2: Likelihood description**

| No. | Matrix         | Description   |
|-----|----------------|---|
| f   | Almost Certain | Occurs in almost all circumstances OR could occur <i>within days to weeks</i>       |
| e   | Likely         | Occurs in most circumstances OR could occur <i>within weeks to months</i>           |
| d   | Occasional     | Has occurred before in Santos OR could occur <i>within months to years</i>          |
| c   | Possible       | Has occurred before in the industry OR could occur <i>within the next few years</i> |
| b   | Unlikely       | Has occurred elsewhere OR could occur <i>within decades</i>                         |
| a   | Remote         | Requires exceptional circumstances and is unlikely even in the long term            |

|            |   | Consequence |          |          |           |           |           |
|------------|---|-------------|----------|----------|-----------|-----------|-----------|
|            |   | I           | II       | III      | IV        | V         | VI        |
| Likelihood | f | Low         | Medium   | High     | Very High | Very High | Very High |
|            | e | Low         | Medium   | High     | High      | Very High | Very High |
|            | d | Low         | Low      | Medium   | High      | High      | Very High |
|            | c | Very Low    | Low      | Low      | Medium    | High      | Very High |
|            | b | Very Low    | Very Low | Low      | Low       | Medium    | High      |
|            | a | Very Low    | Very Low | Very Low | Low       | Medium    | Medium    |

**Figure 6-2: Santos Risk Matrix**

## 6.2 ALARP and Acceptability Evaluation

For planned and unplanned events, an ALARP assessment is undertaken to demonstrate that the standard control measures adopted reduce the impact (consequence level) or risk to ALARP. This process relies on demonstrating that further potential control measures would require a disproportionate level of cost/effort in order to reduce the level of impact or risk. If this cannot be demonstrated, then further control measures are adopted. The level of detail included within the ALARP assessment is based upon the nature and scale of the potential impact or risk. For example, more detail is required for a risk ranked as 'Medium' compared to a risk ranked as 'Low'.

Santos considers an impact or risk associated with the proposed activity to be acceptable if the following criteria are met:

- + The consequence of a planned event is ranked as I or II; or a risk of impact from an unplanned event is ranked Very Low to Medium;
- + An assessment has been completed to determine whether further information or studies are required to support or validate the consequence assessment;
- + Assessment and management of risks has addressed the principles of ecologically sustainable development;
- + The acceptable levels of impact and risks have been informed by relevant species recovery plans, threat abatement plans and conservation advice can be demonstrated;
- + Performance standards are consistent with legal and regulatory requirements;
- + Performance standards are consistent with the Santos' Environment, Health & Safety (EHS) Policy;
- + Performance standards are consistent with industry standards and best practice guidance (e.g., National Biofouling Management Guidance Guidelines for the Petroleum Production and Exploration Industry (Marine Pest Sectoral Committee, 2018));
- + Performance outcomes and standards are consistent with stakeholder expectations; and
- + Performance standards have been demonstrated to reduce the impact or risk to ALARP.

## 6.3 Summary of Risks

**Table 6-3** and **Table 6-4** summarise the identified hazards and the final consequence ranking (for planned events) and residual risk ranking (for unplanned events) respectively. Planned and unplanned events are all considered acceptable using Santos consequence ranking process.

**Table 6-5** summarises the potential impacts, risks and control measures for planned events and **Table 6-6** summarises the potential impacts, risks and control measures for unplanned events.

**Table 6-3: Summary of the residual risk rankings associated with planned events**

| Hazard                               | Final Consequence level |
|--------------------------------------|-------------------------|
| Interactions with other marine users | I - Negligible          |
| Seabed disturbance                   | II - Minor              |
| Light emissions                      | II - Minor              |
| Noise emissions                      | II - Minor              |
| Atmospheric emissions                | I - Negligible          |
| Operational Discharges               | I - Negligible          |
| Drilling Discharges                  | II - Minor              |
| Spill Response Operations            | II - Minor              |

**Table 6-4: Summary of the environmental risks for events associated with unplanned events**

| Hazard/Risk   | Consequence   | Likelihood   | Residual risk ranking |
|---|---------------|--------------|-----------------------|
| Hydrocarbon release (surface and subsea) from Loss of Well Control (LOWC) | IV - Major    | b – Unlikely | Low                   |
| Hydrocarbon release (surface) of MDO                                      | III- Moderate | b- Unlikely  | Low                   |
| Minor hydrocarbon releases (surface and subsurface)                       | II- Minor     | b- Unlikely  | Very Low              |
| Non-hydrocarbon and chemicals release (surface) - liquids                 | II- Minor     | c- Possible  | Very Low              |
| Release of Solid Objects  | I- Negligible | c- Possible  | Very low              |
| Introduction of invasive species  | IV- Major     | b- Unlikely  | Low                   |
| Marine fauna interaction  | II- Minor     | b- Unlikely  | Very Low              |



**Table 6-5: Potential Impacts, Risks and Control Measures for Planned Events**

| Event                                | Potential Impacts   | Management Controls/ Performance Standards   |
|--------------------------------------|---|--|
| Interactions with other marine users | The movement of vessels within the operational area has the potential to result in interactions with other marine users.  | <ul style="list-style-type: none"> <li>+ MODU identification system - MODU has a RACON (radar transponder) or Automatic Identification System (AIS) to aid in its detection at sea. Reduces risk of environmental impact from vessel collisions.</li> <li>+ No fishing from MODU or vessel - Reduce potential impacts to fisheries in the vicinity of the activity</li> <li>+ Santos stakeholder consultation strategy - Ensures other marine users, such as commercial fishers, are aware of upcoming operations so they can plan their business accordingly</li> <li>+ Maritime Notices - Ensures other marine users are aware of the presence of the MODU and support vessels</li> <li>+ Petroleum Safety Zone (PSZ) - Maintain PSZ around the MODU prevents other vessels from getting too close and causing damage to equipment of either party</li> <li>+ Lighting will be used as required for safe work conditions and navigational purposes - Reduces the risk of collisions with other marine users.</li> <li>+ Reduces risk of environmental impact from vessel collisions due to ensuring maritime safety requirements are fulfilled.</li> <li>+ Marine Order Part 30: Prevention of Collisions, and with Marine Order Part 21: Safety of Navigation and Emergency Procedures requires vessels to have navigational equipment to avoid collisions</li> <li>+ Support vessel(s) - AIS requirement and crew of support vessels will maintain constant bridge watch on designated vessel, including for third party vessels which may be approaching or enter the PSZ.</li> </ul> |
| Seabed disturbance                   | Potential seabed disturbance (temporary) may occur in the operational area as a result of: <ul style="list-style-type: none"> <li>+ Extension of jack-up rig legs (cans) to the seabed (spudding);</li> <li>+ Vessel anchoring or mooring; and</li> <li>+ Temporary wet storage of suspension equipment.</li> </ul> | <ul style="list-style-type: none"> <li>+ MODU move procedure - No unplanned contact with the seabed and subsea infrastructure during the MODU moves including during approach and demobilisation limiting seabed disturbance.</li> <li>+ Anchoring, mooring and equipment deployment procedure - No unplanned contact with sensitive seabed features or subsea infrastructure during anchoring limiting seabed disturbance.</li> <li>+ Pre MODU mobilisation seabed survey – No unplanned contact with sensitive seabed features during MODU spudding and vessel anchoring.</li> </ul>   |
| Light emissions                      | Light emissions will occur as a result of: <ul style="list-style-type: none"> <li>+ Vessel operations</li> </ul>  | <ul style="list-style-type: none"> <li>+ Lighting will be used as required for safe work conditions and navigational purposes – Reducing the potential from additional light pollution to the environment, thus reducing the potential impacts to fauna.</li> </ul>  |

| Event                 | Potential Impacts   | Management Controls/ Performance Standards  |
|-----------------------|---|---|
|                       | <ul style="list-style-type: none"> <li>+ Rig-less Operations;</li> <li>+ ROV Operations; and</li> <li>+ MODU Operations including flaring during well bleed-off.</li> </ul>   | <ul style="list-style-type: none"> <li>+ Premobilisation review and planning of lighting, including lighting type undertaken prior to activity commencing - Reducing the potential from additional light pollution to the environment, thus reducing the potential impacts to fauna</li> <li>+ Lighting Management - Manage the timing of the activity at Simpson A and Simpson B to avoid peak turtle and Wedge-tailed Shearwater nesting season (1 October – 30 April) - Reduce risk of impacts from light emissions during environmentally sensitive periods for listed marine fauna (e.g. turtle nesting/ hatching).</li> <li>+ Management of support vessel lighting within the operational area - Reducing the potential from additional light pollution to the environment, thus reducing the potential impacts to fauna</li> </ul>  |
| Noise emissions       | <p>Potential impacts from noise emissions may occur in the operational area from the following sources:</p> <ul style="list-style-type: none"> <li>+ ROV activities;</li> <li>+ Support vessel activities (e.g., vessel engines, thrusters and other machinery);</li> <li>+ MODU activities (e.g. drilling and machinery);</li> <li>+ Helicopter activities (crew change requirements); ;</li> <li>+ Flaring (during well bleed-off); and</li> <li>+ Side Scan Sonar during pre-activity debris clearance survey</li> </ul> | <ul style="list-style-type: none"> <li>+ Procedure for interacting with marine fauna - Reduces risk of physical and behavioural impacts to marine fauna from support vessels, geophysical surveys and helicopters because if marine fauna are sighted, then support vessels can slow down or move away</li> <li>+ Support vessel - Monitoring of surrounding marine environment to identify potential collision risks (and reducing harm) to cetaceans and other marine fauna</li> <li>+ MODU Planned Maintenance System - Reduces noise emissions from the MODU because equipment is operating within its parameters</li> <li>+ Vessel Planned Maintenance System (PMS) to maintain vessel DP, engines and machinery - Ensures equipment which generates noise is operating optimally and sound sources levels are appropriately verified and within desired operating range.</li> </ul> |
| Atmospheric emissions | <p>Potential impacts from atmospheric emissions may occur in the operational area from the following sources:</p> <ul style="list-style-type: none"> <li>+ Combustion through the MODU flare during well</li> </ul>   | <ul style="list-style-type: none"> <li>+ International Air pollution prevention certification - Ensure vessels are operating with acceptable emissions as per international standards. Ensure compliance with Australian Marine Orders as appropriate for vessel class.</li> <li>+ Fuel oil quality - Ensure vessels are operating with acceptable emissions for vessel class as per Australian standards.</li> </ul>   |

| Event                  | Potential Impacts   | Management Controls/ Performance Standards  |
|------------------------|---|---|
|                        | <p>bleed-off (oil and/or gas). Other gasses (CO<sub>2</sub> and H<sub>2</sub>S) may also be produced from the reservoir.</p> <ul style="list-style-type: none"> <li>+ Cold venting during wireline pressure control equipment bleed-off and well annuli</li> <li>+ Operation of MODU and vessel engines, helicopters, generators, mobile and fixed plant and equipment. These emissions will include greenhouse gas (GHG) emissions, such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), and non-GHG emissions, such as sulphur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>).</li> <li>+ When transferring dry bulk products used for drilling (e.g., barite, bentonite, cement), tank venting is necessary to prevent tank overpressure. The vent air will contain minor quantities of product particles, which will suspend in the air or settle on the sea surface.</li> </ul> | <ul style="list-style-type: none"> <li>+ Ozone-depleting substance (ODS) handling procedures - Reduces probability of potential impacts to air quality due to ozone-depleting substance emissions.</li> <li>+ Vessel machinery, equipment and maintenance - Ensure vessel is running efficiency and are per manufacture specifications. As such routine maintenance endeavours to ensure emissions are minimal.</li> <li>+ Bulk solid transfer procedure</li> <li>+ Waste incineration - No incineration within the 500 m PSZ shall occur.</li> </ul> |
| Operational discharges | <p>Planned operational discharges will occur as a result of:</p> <ul style="list-style-type: none"> <li>+ Vessel Operations; and</li> <li>+ MODU Operations.</li> </ul>   | <ul style="list-style-type: none"> <li>+ Waste (garbage) management procedure - Reduces probability of garbage being discharged to sea, reducing potential impacts to marine fauna. Stipulates putrescible waste disposal conditions and limitations. Provides compliance with Marine Order 95 (Marine pollution prevention – garbage).</li> </ul>  |

| Event               | Potential Impacts  | Management Controls/ Performance Standards   |
|---------------------|--|--|
|                     |  | <ul style="list-style-type: none"> <li>+ Chemical selection procedure - Aids in the process of chemical management that reduces the impact of operational chemical discharges to sea from the facilities, MODU and vessels (excluding drilling, completions and cement chemicals). Only environmentally acceptable products are used.</li> <li>+ Deck cleaning and product selection - Improves water quality discharge (reduced toxicity) to the marine environment. Those deck cleaning products planned to be released to sea meet the criteria for not being harmful to the marine environment according to Australian Marine Orders.</li> <li>+ Sewage treatment system - Reduces potential impacts of inappropriate discharge of sewage. Provides compliance with Marine Order 96 (Marine pollution prevention – sewage).</li> <li>+ Oily water treatment system - Reduces potential impacts of planned discharge of oily water to the environment. Provides compliance with Marine Order 91 (Marine pollution prevention - oil).</li> <li>+ General chemical management procedures - Reduces potential for inappropriate discharge of water at sea, through appropriate handling, to maintain planned discharges to sea meet the criteria for not being harmful to the marine environment.</li> <li>+ Shipboard Oil Pollution Emergency Plan (SOPEP) - Clean up of hydrocarbon spills to deck in accordance with vessel SOPEP reduces potential impacts of inappropriate discharge of water to sea.</li> <li>+ Storage of all wastes on-board support vessels for disposal onshore during P&amp;A activities at Simpson A and Simpson B - Eliminates any discharge to sea, reducing potential impacts to the marine environment.</li> <li>+ Scupper plugs available on support vessels– Reduces the potential impacts of contaminants being discharged to sea.</li> </ul> |
| Drilling discharges | During P&A activities, well fluids used and potentially discharged are similar in nature (but of lesser quantities) to those discharged during the drilling of a conventional well and include brines, seawater, water based drilling/milling fluid, lost circulation materials, Hi-Vis pills, cements (set or unset) and other chemicals and additives (e.g. Tracer dyes, cement spacer). | <ul style="list-style-type: none"> <li>+ Chemical selection procedure - Aids in the process of chemical management that reduces the impact of drilling discharges to sea. Only environmentally acceptable products are used.</li> <li>+ Cuttings management system - Reduces the concentration of drilling mud on cuttings prior to discharge while drilling with a closed circulating system, thereby reducing the total volume of mud lost to sea.</li> <li>+ Inventory control procedure - Requirements on what residual fluids / materials can be diverted overboard. A decision log will be prepared demonstrating that disposal option is ALARP and acceptable.</li> <li>+ Oil content measurement procedure - Accounts for potential for oil contamination from reservoir.</li> <li>+ Well bleed-off procedures - Ensures well bleed-off fluids are appropriately managed and that oil-water content in formation water, if produced, is below 30 mg/L operating facilities produced water discharges on the NWS).</li> <li>+ Skip and ship to shore of bulk product for activities at Simpson A and Simpson B. - Would eliminate discharges to sea, reducing potential impacts to marine environment.</li> </ul>   |

| Event                     | Potential Impacts  | Management Controls/ Performance Standards   |
|---------------------------|--|--|
| Spill response operations | In the event of a hydrocarbon spill, response strategies will be implemented where possible to reduce environmental impacts to ALARP. The selection of strategies will be undertaken through the Net Environmental Benefit Analysis (NEBA) process, outlined in the Harriet JV Plug and Abandonment Oil Spill Contingency Plan (OSCP). | <ul style="list-style-type: none"> <li>+ Competent Incident Management Team (IMT) and oil spill responder personnel - Ensures that spill response strategy selection and operational activities consider the potential for additional environmental impacts.</li> <li>+ Use of competent vessel crew and personnel - Reduces potential for environmental impacts from vessel usage.</li> <li>+ Vessels and aircraft compliant with Santos' Protected Marine Fauna Interaction and Sighting Procedure - Reduces potential for behavioural disturbance to cetaceans.</li> <li>+ Select temporary base camps in consultation with Department of Transport (DoT) and Department of Biodiversity, Conservation and Attractions (DBCA) - Reduce coastal habitat and fauna disturbance.</li> <li>+ If required under Australian Marine Orders, vessels will maintain a current International Air Pollution Prevention (IAPP) Certificate - Reduces level of air quality impacts.</li> <li>+ Stakeholder consultation - Promotes awareness and reduces potential impacts from response to socio-economic activities</li> <li>+ Vessels meet applicable Australian Marine Orders and Marine Park sewage disposal requirements - Reduces potential for water quality impacts.</li> <li>+ Vessel meet applicable Australian Marine Orders requirements for oily water (bilge) discharges - Reduces potential for water quality impacts.</li> <li>+ Approved oily water decanting - Reduces impact from discharge of oily water from storage. Frees up space in liquid waste containers to allow further waste collection.</li> <li>+ Compliance with controlled waste, unauthorised discharge and landfill regulations - Ensures correct handling and disposal of oily wastes.</li> <li>+ Spill response activities selected on basis of a net environmental benefit analysis - Provides a systematic and repeatable process for evaluating strategies with net least environmental impact.</li> <li>+ Use of shallow draft vessels for shoreline and nearshore operations - Reduce seabed and shoreline disturbance.</li> <li>+ OSR Team Leader assesses and selects vehicles appropriate to shoreline conditions - Reduce coastal habitat and fauna disturbance.</li> <li>+ Conduct shoreline, nearshore habitat, bathymetry assessment - Reduce shoreline habitat disturbance.</li> <li>+ Establish demarcation zones for vehicle and personnel movement considering sensitive vegetation, bird nesting and roosting areas and turtle nesting habitat - Reduce coastal habitat and fauna disturbance.</li> <li>+ Operational restriction of vehicle and personnel movement to limit erosion and compaction - Reduce coastal habitat erosion and compaction.</li> </ul> |

| Event | Potential Impacts | Management Controls/ Performance Standards   |
|-------|-------------------|--|
|       |                   | <ul style="list-style-type: none"> <li>+ Prioritise use of existing roads and tracks - Reduce coastal habitat and fauna disturbance.</li> <li>+ Soil profile assessment prior to earthworks - Reduce habitat disruption and erosion.</li> <li>+ Use of Heritage Advisor if spill response activities overlap with potential areas of cultural significance - Reduce disturbance to culturally significant sites.</li> <li>+ Pre-cleaning and inspection of equipment (quarantine) - Reduces potential for invasive species to offshore islands.</li> </ul> |

**Table 6-6: Environmental Impact Summary for Unplanned Events**

| Event   | Potential Impacts  | Management Controls / Performance Standards   |
|---|--|---|
| Hydrocarbon release (surface and subsea) from Loss of Well Control (LOWC) | <p>LOWC during P&amp;A may occur due to a number of reasons, including:</p> <ul style="list-style-type: none"> <li>+ Failure of well equipment or well management processes</li> </ul> <p>In the event of a LOWC, Crude may be released to the marine environment.</p> | <ul style="list-style-type: none"> <li>+ Accepted Well Management Plan - Includes control measures for well integrity and well control that reduce the risk of unplanned discharges to the marine environment.</li> <li>+ Accepted Safety Case - Includes the MODU Safety Case that reduce the risk of unplanned discharges to the marine environment</li> <li>+ Santos Critical Acceptance Criteria (CAC) for critical well operations and integrity aspects are achieved.</li> <li>+ Source Control Plan - Implements response plans to deal with an unplanned hydrocarbon release quickly and efficiently to reduce impacts to the marine environment.</li> <li>+ Accepted Oil Spill Contingency Plan (OSCP) - Implements response plans to deal with an unplanned hydrocarbon release quickly and efficiently to reduce impacts to the marine environment.</li> </ul>   |
| Hydrocarbon release (surface) of MDO                                      | <p>Diesel spills have the potential to impact on the marine environment through reductions in water quality and exposure to fauna and habitats.</p>  | <ul style="list-style-type: none"> <li>+ MODU move procedure - MODU move procedure contains a passage plan to reduce risk of collision.</li> <li>+ Bulk liquid transfer procedure - Bulk liquid (hydrocarbon) transferred in accordance with bulk transfer procedure to reduce the risk of an unintentional release to the marine environment.</li> <li>+ MODU and support vessel spill response plans - Implements response plans on board vessels to deal with unplanned hydrocarbon releases and spills quickly and efficiently to reduce impacts to the marine environment.</li> <li>+ Maritime notices - Ensure other marine users are aware of the presence of the MODU/support vessels and are provided with information on timings of the activity, including MODU arrival and departure, so that the maritime industry is aware of the petroleum activities and to reduce risk of vessel collision.</li> <li>+ Support vessel(s) - Monitor the MODU 500 m Petroleum Safety Zone (PSZ) and be equipped with an AIS to aid in its detection at sea, and radar to aid in the detection of approaching third party vessels. Reduces risk of vessel collision and subsequent unplanned release of hydrocarbons causing potential harm to the marine environment.</li> <li>+ Accepted OSCP - Implements response plans to deal with an unplanned hydrocarbon release quickly and efficiently to reduce impacts to the marine environment.</li> <li>+ MODU identification system - MODU has an Automatic Identification System (AIS) to aid in its detection at sea that is only active while under tow. Reduces risk of environmental impact from vessel collisions through ensuring safety requirements are fulfilled.</li> </ul> |

| Event   | Potential Impacts  | Management Controls / Performance Standards  |
|---|--|--|
| Minor hydrocarbon releases (surface and subsurface)       | <p>Sources of risk from a minor hydrocarbon release may occur as a result of:</p> <ul style="list-style-type: none"> <li>+ MODU Operations</li> <li>+ Vessel Operations</li> <li>+ ROV Operations</li> </ul>                   | <ul style="list-style-type: none"> <li>+ Dropped object prevention procedures - Impacts to environment are reduced by preventing dropped objects and by retrieving dropped objects where possible. Minimises drop risk during MODU lifting operations. Ensures lifting equipment certified and inspected.</li> <li>+ Hazardous chemical management procedures - Reduces the risk of spills and leaks (discharges) to sea by controlling the storage, handling and clean-up.</li> <li>+ General chemical management procedures - Potential impacts to the environment are reduced through following correct procedures for the safe handling and storage of chemicals.</li> <li>+ Maritime Dangerous Goods Code - Dangerous goods managed in accordance with International Maritime Dangerous Goods Code (IMDG Code) to reduce the risk of an environmental incident, such as an accidental release to sea or unintended chemical reaction.</li> <li>+ MODU and support vessel spill response plans - Potential impacts to the environment are reduced through effective management of an accidental spill (discharge to sea).</li> <li>+ Remotely operated vehicle (ROV) inspection and maintenance procedures - Maintenance and pre-deployment inspection on ROV completed as scheduled to reduce the risk of hydraulic fluid releases to the marine environment.</li> <li>+ Bulk liquid transfer procedure - Bulk liquid (hydrocarbon) transferred in accordance with bulk transfer procedure to reduce the risk of an unintentional release to the marine environment.</li> <li>+ Oil spill contingency plan (OSCP) - Implements response plan to deal with an unplanned hydrocarbon spills quickly and efficiently in order to reduce impacts to the marine environment.</li> <li>+ Chemical selection procedure - Reduced toxicity to marine environment through ensuring only environmentally acceptable chemicals discharged to sea.</li> </ul> |
| Non-hydrocarbon and chemicals release (surface) - liquids | <p>Sources of risk from an accidental release of non-hydrocarbon and chemical release (liquids) may occur as a result of:</p> <ul style="list-style-type: none"> <li>+ Vessel Operations</li> <li>+ MODU Operations</li> </ul> | <ul style="list-style-type: none"> <li>+ Dropped object prevention procedure - Minimises dropped object risk during MODU/ vessel lifting operations that may cause secondary spill resulting in reduction in water quality. Ensures lifting equipment certified and inspected.</li> <li>+ Hazardous chemical management procedures - Reduces the risk of spills and leaks (discharges) to the sea by controlling the storage, handling and clean-up of hazardous chemicals.</li> <li>+ Deck cleaning and product selection - Improves water quality discharge (reduced toxicity) to the marine environment. Those deck cleaning products planned to be released to sea meet the criteria for not being harmful to the marine environment according to Australian Marine Orders.</li> <li>+ General chemical management procedures - Potential impacts to the environment are reduced through following correct procedures for the safe handling and storage of chemicals.</li> </ul>   |



| Event                    | Potential Impacts   | Management Controls / Performance Standards  |
|--------------------------|---|--|
|                          |   | <ul style="list-style-type: none"> <li>+ Maritime Dangerous Goods Code - Dangerous goods managed in accordance with International Maritime Dangerous Goods Code (IMDG Code) to reduce the risk of an environmental incident, such as an accidental release to sea or unintended chemical reaction.</li> <li>+ Bulk liquid transfer procedure - Bulk liquid transferred in accordance with bulk transfer procedures to reduce the risk of an unintentional release to the sea.</li> <li>+ MODU and support vessel spill response plans - Effective management of an accidental spill (discharge to sea) to reduce impact to the environment.</li> <li>+ Chemical selection procedure - Reduced toxicity to marine environment. Only environmentally acceptable chemicals would be released in the event of an accidental discharge to sea.</li> <li>+ Vessel PMS to maintain vessel DP, engines and machinery - Reduces discharges from the support vessels because equipment is operating within its parameters</li> <li>+ MODU Planned Maintenance System (PMS). - Reduces discharges from the MODU because equipment is operating within its parameters</li> </ul>   |
| Release of solid objects | <p>Sources of risks from an accidental release of solid waste (non-hydrocarbon) may occur as a result of:</p> <ul style="list-style-type: none"> <li>+ MODU Operations</li> <li>+ Vessel Operations</li> </ul> <p>Solid objects can be accidentally released to the marine environment, and potentially impact on sensitive receptors</p> | <ul style="list-style-type: none"> <li>+ Dropped object prevention procedures - Impacts to environment are reduced by preventing dropped objects and by retrieving dropped objects unless the environmental consequences are negligible or there are risks to safety. Minimises drop risk during MODU lifting operations. Ensures lifting equipment certified and inspected.</li> <li>+ Waste (Garbage) Management Plan - Reduces probability of garbage being discharged to sea, reducing potential impacts to marine fauna. Stipulates putrescible waste disposal conditions and limitations. Marine Order 95 (Marine pollution prevention – garbage).</li> <li>+ Hazardous chemical management procedures - Reduces the risk of spills and leaks (discharges) to sea by controlling the storage, handling and clean-up.</li> <li>+ General chemical management procedures - Aids in the process of chemical management that reduces the risk of accidental discharge to sea by controlling the storage, handling and clean-up of chemicals.</li> <li>+ Maritime Dangerous Goods Code - Dangerous goods managed in accordance with International Maritime Dangerous Goods Code (IMDG Code) to reduce the risk of an environmental incident, such as an accidental release to sea or unintended chemical reaction.</li> <li>+ Bulk solid transfer procedure - Bulk solids transferred in accordance with bulk transfer procedure to reduce the risk of an unintentional release to sea.</li> <li>+ Chemical selection procedure - Aids in the process of chemical management that reduces the impact of drilling discharges to sea. Only environmentally acceptable products are used.</li> </ul> |

| Event                            | Potential Impacts   | Management Controls / Performance Standards  |
|----------------------------------|---|--|
| Introduction of invasive species | <p>Introduction of invasive marine species (IMS) may occur due to:</p> <ul style="list-style-type: none"> <li>+ Biofouling on support vessels and external/internal (e.g., sea chests, seawater systems) niches;</li> <li>+ Biofouling on equipment that is routinely submerged in water (e.g., ROVs);</li> <li>+ Discharge of high-risk ballast water; and</li> <li>+ Cross contamination between vessels and the MODU.</li> </ul> <p>Introduction of terrestrial non-indigenous flora and fauna may occur due to:</p> <ul style="list-style-type: none"> <li>+ Non-indigenous flora and fauna being present on vessels entering the operational area.</li> <li>+ Once established, invasive species have the potential to out-compete indigenous species and affect overall native ecosystem function.</li> </ul> | <ul style="list-style-type: none"> <li>+ Compliance with the Biosecurity Act 2015 - Reduces the risk of introducing IMS through implementation of the vessel assessments and requirement for immersible equipment to be cleaned in accordance with the Santos Invasive Marine Species Management Plan (EA-00-RI-10172).</li> <li>+ Vessel anti-foulant system - The risk of introducing IMS are reduced due to anti-foulant systems.</li> <li>+ Quarantine management - Monitoring for the presence of vermin and the use of baits and traps on support vessels to reduce likelihood for introduction to the islands.</li> </ul> |
| Marine fauna interaction         | <p>Marine fauna interactions may occur as a result of:</p> <ul style="list-style-type: none"> <li>+ MODU operations</li> <li>+ Vessel operations</li> </ul>   | <ul style="list-style-type: none"> <li>+ Procedures for interacting with marine fauna - Reduces risk of physical and behavioural impacts to marine fauna from support vessels and helicopters. If marine fauna are sighted, then support vessels can slow down or move away, and helicopters can increase distances from sighted fauna if required.</li> </ul>   |

## 7 Management Approach

The Harriet JV P&A activities will be managed in accordance with the Santos Environment, Health and Safety Management Policy and with all measures and controls detailed within the EP accepted by DMIRS.

The objective of the EP is to ensure that potential adverse environmental impacts from planned and unplanned events associated with the activity are identified and assessed, and to stipulate mitigation measures to avoid and/or reduce any adverse impacts to the environment to ALARP and acceptable levels.

The EP details specific performance objectives, standards and procedures, and identifies the range of controls to be implemented (consistent with the standards) to achieve the performance outcomes. The EP also identifies the specific measurement criteria and records to be kept to demonstrate the achievement of each performance outcome.

As described in the EP, the implementation strategy includes the relevant details of the following:

- + Environmental Management System;
- + Environmental Management Policy;
- + Hazard identification, risk and impact assessment and controls;
- + Environmental performance objectives, control measures and performance standards;
- + Leadership, accountability and responsibility;
- + Workforce training and competency;
- + Maintenance management system;
- + Emergency preparedness and response;
- + Incident reporting, investigation and follow-ups;
- + Document management; and
- + Audits and inspections.

During the period of the activity described in the EP being undertaken, Santos will ensure environmental performance is monitored and managed through an inspection and monitoring regime undertaken by Santos representatives or delegates.

During an activity, weekly HSE inspections will be conducted to verify compliance against selected environmental performance objectives and standards of the EP. Any in-field opportunities for improvement or corrective actions will be discussed during the inspection with the work area supervisor and/or crew and may also be entered into the action tracking management system until closed out, as for non-conformance actions. Inspection reports will be distributed to Santos's relevant personnel (e.g. operations superintendent, Santos on-board representatives), and HSE Department representatives, for review.

EP non-conformances will be addressed and resolved by a systematic corrective action process as outlined in Santos' Management Standard for Assurance (MS015) and the Assurance Procedure (ST01). Non-conformances arising from audits and inspections will be entered into Santos' incident and action tracking management system (i.e., 'HSE Toolbox'). Once entered, corrective actions, time frames and responsible persons (including action owners and event validators) will be assigned. Corrective action 'close out' will be monitored using a management escalation process. Environmental recordable and reportable incidents will be reported to DMIRS, and other regulators as required. The incident reporting requirements will be provided to all crew on board the facilities and support vessels with special attention to the reporting time-frames to provide for accurate and timely reporting.

## 8 Hydrocarbon Spill Response Arrangements

The risk assessment for the activity has identified credible spill scenarios as provided in **Table 8-1** below. The worst-case spill, requiring the greatest potential level of response in an offshore/nearshore environment is a surface release from a Loss of Well Containment (122,408 STB of Harriet crude oil).

**Table 8-1: Summary of Maximum Credible Spill (MCS) Scenarios**

| Maximum Credible Spill Scenario  | Hydrocarbon Type | Maximum Credible Volume  | Comment   |
|--|------------------|--|---|
| Surface release of crude oil from a loss of well control   | Harriet Crude    | Harriet A<br>122,408 STB of crude oil, 3,098,865 STB of water and 1,224 MMscf of gas | Maximum credible volume modelled – with highest flow potential derived by combining the highest reservoir flow parameters for the well. |
|  |                  | Simpson B<br>14,596 STB of crude oil, 471,929 STB of water, 7 MMscf of gas.          |   |
| Surface release of MDO from refuelling of the MODU or from the MODU or vessel as a result of an external impact (vessel collision) which ruptures an MDO tank. | MDO              | 329 m <sup>3</sup> released over 20 minutes  | Maximum credible volume based of MDO bunker tanks, with the largest tank having a capacity of 329 m <sup>3</sup> .                      |

The Harriet JV P&A OSCP is considered fit for purpose for the activity and will be referred to in response to accidental hydrocarbon spills, providing guidance on notification and spill response requirements. The response strategies and support arrangements included within the Harriet Joint Venture Plug and Abandonment 5-Year Environment Plan are appropriate for the worst scale spill associated with Plug and Abandonment activities.

Given that the activity is contained within State waters, any spill requiring Level 2/3 activation will require notification to DoT as the relevant Control Agency. Santos will provide initial control of the incident and then necessary resources and assistance to support DoT once DoT assumes control of the incident as defined in the OSCP

## 9 Contact Details

Details for Santos' Nominated Liaison Person for the activity is as follows:

Name: Dawn MacInnes  
 Business address: Level 7, 100 St Georges Terrace, Perth, WA 6000  
 Telephone number: (08) 6218 7100  
 Email address: [offshore.environment.admin@santos.com](mailto:offshore.environment.admin@santos.com)

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## Appendix A: Chemical Disclosure & Safety Data Sheets

## 1. WATER BASED DRILLING FLUID SYSTEM

### A. SYSTEM DETAILS

|                         |   |
|-------------------------|---|
| OPERATOR:               | Santos WA                                     |
| PROJECT / WELL:         | Harriet Joint Venture Plug and Abandonment    |
| SYSTEM:                 | Well Abandonment – Water Based Drilling Fluid |
| TOTAL VOLUME OF SYSTEM: | 3930 m <sup>3</sup>                           |

### B. PRODUCT LIST

| Fluid Name<br>(and Volume)                           | Product Name                                | Supplier              | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|--|---|-----------------------|------------|--|--|--------------|
| Water Based Drilling Fluid<br>(3930 m <sup>3</sup> ) | Water                                       | Locally sourced       | Base fluid | 68.84%                                 | Natural product - exempted under chemical disclosure guidelines  | N/A          |
|  | Caustic Soda M2<br>(OCNS non-CHARM rated E) | Schlumberger          | Alkalinity | 0.04%                                  | <p><b><u>Sodium hydroxide (60-100%)</u></b><br/> <b><u>Acute Mammalian Toxicity</u></b><br/>           LD50 Dermal (Rabbit): 1350mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>           No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproduction hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>           LC50 (96h) <i>Oncorhynchus mykiss</i>: 45.4 mg/L</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>           Not applicable to inorganic material</p> | Yes          |
|  | NUOSEPT 78 (OCNS CHARM rated GOLD)          | IMCD Australia (Troy) | Biocide    | 0.06%                                  | <p><b><u>Whole Product Data</u></b><br/> <b><u>Acute Mammalian Toxicity</u></b><br/>           LD50 Dermal (Rat) &gt; 2000 mg/kg<br/>           LD50 Oral (Rat – Female): 1009 to 3950 mg/kg<br/>           Irritation/Corrosion (Rabbit) Score 59 in 21 days</p> <p><b><u>Chronic Toxicity</u></b><br/>           No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproduction hazards (Cat 1, 2 &amp; 3)</p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|----------|-----------------|--|---|--------------|
|                            |  |          |                 |  | <p><b><u>Aquatic Toxicity</u></b><br/> EC50 (48h): 10-100 mg/L <i>Daphnia magna</i><br/> LC50 (96h): 10-100 mg/L Fish</p> <p><b><u>Biodegradation</u></b><br/> Readily biodegradable &gt;60% in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/> Log Pow: - 1.3 (OECD 117)</p>   |              |
|                            | M-I BAR*<br>(All Grades)<br>(OCNS non-CHARM rated E) | MI SWACO | Density Control | 13.61%                                 | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Barite</i></b><br/> LD50 Oral (Rat): &gt; 15000 mg/kg</p> <p><b><i>Crystalline silica (impurity)</i></b><br/> LD50 Oral (Rat): 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/> <b><i>Barite</i></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><i>Crystalline silica (impurity)</i></b><br/> Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Barite</i></b><br/> OSPAR PLONOR Listed</p> <p><b><i>Crystalline silica (impurity)</i></b><br/> OSPAR PLONOR Listed<br/> LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/> EC50 (72h): &gt; 1000 mg/L Algae<br/> LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/> Not applicable to inorganic material</p> | Yes          |



| Fluid Name<br>(and Volume) | Product Name                             | Supplier | Purpose     | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|----------|-------------|--|---|--------------|
|                            |  |          |             |  | OSPAR PLONOR Listed for the ingredients, barite and quartz crystalline silica   |              |
|                            | DUO-VIS<br>(OCNS<br>CHARM<br>rated Gold) | MI SWACO | Viscosifier | 0.30%                                  | <p>There is no data available for the whole product, only data for the hazardous ingredient. The remainder of the product contains non-hazardous ingredients which are entirely OSPAR PLONOR Listed.</p> <p><b><u>Glyoxal (&lt; 1)</u></b><br/> <b><u>Acute Mammalian Toxicity</u></b></p> <p>LD50 Oral (Rat): 200 mg/kg<br/> LD50 Dermal (Rabbit): 12700 mg/kg<br/> LD50 Inhalation: 2410 mg/m<sup>3</sup> (3-4 h)</p> <p><b><u>Chronic Toxicity</u></b><br/> Contains a known mutagen. This product does not contain any known or suspected carcinogens (Cat 1 &amp; 2) or reproductive hazards (1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/> LC50 (96h) <i>Pimephales promelas</i>: 215 mg/L<br/> LC50 (96h) <i>Leuciscus idus</i>: 460-680 mg/L<br/> EC50 (96h) <i>Pseudokirchneriella subcapitata</i>: &gt; 500 mg/L<br/> EC50 (96h) <i>Desmodesmus subpicatus</i>: &gt; 500 mg/L<br/> EC50 (48h) <i>Daphnia magna</i>: 404 mg/L</p> <p><i>Skeletonema costatum</i> EC50 (72h): 207 mg/L<br/> <i>Acartia tonsa</i> LC50 (48h): 259 mg/L<br/> <i>Scophthalmus maximus</i> LC50 (96h): &gt;1000 mg/L</p> <p><b><u>Biodegradation</u></b><br/> 49% in 28 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/> Log Pow: &lt;0 (OECD 117)<br/> BCF: 2.155</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                          | Supplier | Purpose     | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---------------------------------------|----------|-------------|--|---|--------------|
|                            | Bentonite<br>(OCNS non-CHARM rated E) | MI SWACO | Viscosifier | 2.20%                                  | <p>There is no data available for the whole product, only data for the hazardous ingredient. The remainder of the product contains a non-hazardous ingredient which is OSPAR PLONOR Listed and a naturally occurring mineral.</p> <p>Natural occurring material is exempted under the chemical disclosure guidelines.</p> <p><b><u>Acute Mammalian Toxicity</u></b></p> <p><b><i>Crystalline silica impurity (1-5%)</i></b><br/>Rat (oral) LD50 :500 mg/kg</p> <p><b><i>Bentonite (60-100%)</i></b><br/>Rat (oral) LD50 &gt; 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. Does not contain any known mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b></p> <p><b><i>Crystalline silica impurity (1-5%)</i></b><br/>LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/>EC50 (72h): &gt; 1000 mg/L Algae<br/>LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><i>Bentonite (60-100%)</i></b><br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation / Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
|                            | DEFOAM PLUS NS<br>(OCNS CHARM         | MI SWACO | Defoamer    | 0.14%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): &gt; 2000 mg/kg (based on components)</p> <p><b><u>Chronic Toxicity</u></b></p>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name      | Supplier       | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|-------------------|----------------|-----------------|--|--|--------------|
|                            | rated GOLD)       |                |                 |  | <p>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b>Component 1 (60-100%)</b><br/>           Acute Fish Toxicity 96h LC50: &gt;100 mg/L (Turbot)<br/>           Acute Crustacean Toxicity 48h LC50: &gt;200mg/L (<i>Acartia tonsa</i>)<br/>           Acute Algae Toxicity 72h EC50: 104mg/L (<i>Skeletonema costatum</i>)</p> <p><b>Component 2 (1-5%)</b><br/>           Acute Fish Toxicity 96h LC50: &gt;11.25 mg/L (Sheepshead minnow)<br/>           Acute Crustacean Toxicity 48h LC50: 14.2 mg/L (<i>Acartia tonsa</i>)<br/>           Acute Algae Toxicity 72h EC50: 42.5 mg/L (<i>Skeletonema costatum</i>)</p> <p><b><u>Biodegradation</u></b><br/> <b>Component 1 (60-100%)</b><br/>           OECD 306: 40% degraded in 28 days in seawater<br/> <b>Component 2 (1-5%)</b><br/>           OECD 306: 89% degraded in 28 days in seawater</p> <p><b><u>Bioaccumulation</u></b><br/> <b>Component 1 (60-100%)</b><br/>           Bioaccumulation Log Pow: &lt;0 (estimated due to large molecular weight of this substance, it is unlikely to bioaccumulate)</p> <p><b>Component 2 (1-5%)</b><br/>           Bioaccumulation Log Pow (OECD 117): &gt;6 (wt. avg. Log Pow)</p> |              |
|                            | Calcium Carbonate | Omya Australia | Density Control | 2.12%                                  | <b>Whole Product Data</b>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|-----------------|--|---|--------------|
|                            | (OSPAR PLONOR Listed)  |              |                 |  | <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): &gt; 5000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50(96h): &gt;10 000 mg/L <i>Oncorhynchus mykiss</i> (Rainbow trout)<br/>EC50 (48h): &gt;1000 mg/L <i>Daphnia magna</i><br/>NOEC (72h): 75 mg/L <i>Desmodesmus subspicatus</i> (green algae)<br/>EC50 (72h): 289 mg/L <i>Desmodesmus subspicatus</i><br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>   |              |
|                            | Potassium Chloride M117 (OCNS non-CHARM rated E/OSPAR PLONOR Listed) | Schlumberger | Shale Inhibitor | 5.98%                                  | <p><b><u>Whole Product Data</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): 2600 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Pimephales promelas</i>: 750-1020 mg/L<br/>LC50 (96h) <i>Lepomis macrochirus</i>: 1060 mg/L<br/>EC50 (72h) <i>Desmodesmus subspicatus</i>: 2500 mg/L<br/>EC50 (48h) <i>Daphnia magna</i>: 83 mg/L<br/>EC50 (48h) <i>Daphnia magna</i>: 825mg/L<br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |

| Fluid Name (and Volume) | Product Name                     | Supplier | Purpose            | Product in System (Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|-------------------------|----------------------------------|----------|--------------------|-------------------------------------|---|--------------|
|                         | IDCAP D (OCNS CHARM rated Gold)  | MI SWACO | Shale Encapsulator | 0.48%                               | <p><b>Whole Product Data</b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 rat (oral): &gt; 2000 mg/kg<br/>Does not contain any hazardous ingredients</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproduction hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/><i>Skeletonema costatum</i> EC50 (72h): 639 mg/L<br/><i>Acartia tonsa</i> LC50 (48h): 449 mg/L<br/><i>Scophthalmus maximus</i> LC50 (96h): &gt;1000 mg/L<br/><i>Corophium volutator</i> LC50 (10 d): 4900 mg/kg dry sediment</p> <p><b><u>Biodegradation</u></b><br/>OECD 306: 0% in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/>Log Pow (OECD 117) -5.84 to 0.58</p> | Yes          |
|                         | KLA-STOP (OCNS CHARM rated Gold) | MI SWACO | Shale Inhibitor    | 2.50%                               | <p><b>Component 1 (60-100%)</b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): 2885 mg/kg (OECD 401)<br/>LD50 Dermal (Rabbit): 2979 mg/kg (OECD 402)<br/>LC50 Inhalation (Rat): &gt;0.74 mg/L (OECD 403)</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/><i>Skeletonema costatum</i> EC50 (72h): 695 mg/L<br/><i>Acartia tonsa</i> LC50 (48h): 380 mg/L</p>   | Yes          |

| Fluid Name (and Volume) | Product Name                                  | Supplier | Purpose            | Product in System (Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|-------------------------|---|----------|--------------------|-------------------------------------|---|--------------|
|                         |   |          |                    |                                     | <i>Scophthalmus maximus</i> LC50 (96h): >1000 mg/L<br><i>Corophium volutator</i> LC50 (10 d) 7148 mg/L<br><i>Cyprinodon variegatus</i> LC50 (96h): > 752 mg/L<br><br><u><b>Biodegradation</b></u><br>Method: OECD 306: 10.7% in 28 days<br><br><u><b>Bioaccumulation</b></u><br>Log Pow = -0.38 (OECD 117)  |              |
|                         | POLYPAC (All Grades) (OCNS non-CHARM rated E) | MI SWACO | Filtration Control | 0.48%                               | <b>Component 1 (60-100%)</b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50 Oral (Rat): 27000 mg/kg<br>LD50 Dermal (Rabbit): >2000 mg/kg<br>LC50 Inhalation (Rat): > 5800 mg/m <sup>3</sup> (4h)<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br>Entirely OSPAR PLONOR Listed ingredients<br><br><u><b>Biodegradation/ Bioaccumulation</b></u><br>Entirely OSPAR PLONOR Listed ingredients | Yes          |
|                         | Soda Ash Dense (OSPAR PLONOR Listed)          | REDOX    | Alkalinity         | 0.06%                               | <b>Whole Product Data</b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50 Oral (Rat): > 2000 mg/kg bw<br>LC50 Dermal (Rat): > 2000 mg/kg bw<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><u><b>Aquatic Toxicity</b></u><br>LC50 (96h) <i>Lepomis macrochirus</i> : 300 mg/L<br>LC50 (96h) <i>Pimephales promelas</i> : 310-1220 mg/L   | Yes          |

| Fluid Name<br>(and Volume) | Product Name                            | Supplier | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|----------|------------------|--|--|--------------|
|                            |   |          |                  |  | <p>EC50 (120h) <i>Nitzschia</i>: 242 mg/L<br/> EC50 (48h) <i>Daphnia magna</i>: 265 mg/L<br/> OSPAR PLONOR Listed</p> <p>The hazard of sodium carbonate for the environment is mainly caused by the pH effect of the carbonate ion. For this reason, the effect of sodium carbonate on the organisms depends on the buffer capacity of the aquatic ecosystem. Seawater has a large buffering capacity. If emissions of wastewater are controlled by appropriate pH limits and/or dilutions in relation to the natural pH and buffering capacity of the receiving water, adverse effects on the aquatic environment are not expected due to production or use of sodium carbonate.</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/> Not applicable to inorganic material</p> |              |
|                            | SAFE-SCAVNA<br>(OCNS non-CHARM rated E) | MI SWACO | Oxygen Scavenger | 0.22%                                  | <p><b><u>Ammonium bisulphite (30-60%)</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/> LD50: 2746 mg/kg (analogy to product with similar composition)<br/> LD50 (24h): &gt; 2000 mg/kg (analogy to product with similar composition)<br/> LC50: &gt; 5.5 mg/L (4h) (analogy to product with similar composition)</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproduction hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> LC50 (96h): &gt; 464 mg/L Fish (analogy to product with similar composition)<br/> EC50 (72h): 43.8 mg/L Algae (analogy to product with similar composition)<br/> EC50 (48h): 89 mg/L <i>Daphnia magna</i></p>   | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name                               | Supplier | Purpose   | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS<br>Attached |
|-------------------------------|---|----------|-----------|--|---|-----------------|
|                               |   |          |           |  | OSPAR PLONOR Listed (Ammonium bisulphite)<br><br><u><b>Biodegradation/ Bioaccumulation</b></u><br>Not applicable to inorganic material<br><br>The remainder of the product is a natural ingredient which is exempt from the chemical disclosure guidelines.<br>Sulfur dioxide (<1%) is not present as an ingredient in the product, it is a by-product formed during decomposition.   |                 |
|                               | STARGLIDE<br>(OCNS<br>CHARM<br>rated<br>GOLD) | MI SWACO | Lubricant | 3.00%                                  | <u><b>Acute Mammalian Toxicity</b></u><br><u><b>Component 1 (30-60%)</b></u><br>LC50 Oral (Rat) 2630<br>LD50 Dermal (Rabbit): 3540 mg/kg bw<br><br>No mammalian data available for the remaining components.<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproduction hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br><u><b>Component 1 (30-60%)</b></u><br>Acute Fish Toxicity 96h LC50: > 1800 mg/L<br>( <i>Scophthalmus maximus</i> )<br>Acute Crustacean Toxicity 48h LC50: 310 mg/L ( <i>Acartia tonsa</i> )<br>Acute Algae Toxicity 72h EC50: 391 mg/L<br>( <i>Skeletonema costatum</i> )<br><br><u><b>Component 2 (30-60%)</b></u><br>Acute Fish Toxicity 96h LC50: >1000 mg/L<br>( <i>Scophthalmus maximus</i> )<br>Acute Crustacean Toxicity 48h LC50: >1000 mg/L<br>( <i>Acartia tonsa</i> ) | Yes             |



| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p>Acute Algae Toxicity 72h EC50: &gt;1000 mg/L<br/>(<i>Skeletonema costatum</i>)</p> <p><b>Component 3 (5-10%)</b><br/>           Acute Fish Toxicity 96h LC50: &gt;11.25 mg/L<br/>(<i>Scophthalmus maximus</i>)<br/>           Acute Crustacean Toxicity 48h LC50: 14.5 mg/L<br/>(<i>Acartia tonsa</i>)<br/>           Acute Algae Toxicity 72h EC50: 42.5 mg/L<br/>(<i>Skeletonema costatum</i>)</p> <p><b>Component 4 (10-30%)</b><br/>           Acute Fish Toxicity 96h LC50: &gt;31.6 mg/L<br/>(<i>Scophthalmus maximus</i>)<br/>           Acute Crustacean Toxicity 48h LC50: 271.4 mg/L<br/>(<i>Acartia tonsa</i>)<br/>           Acute Algae Toxicity 72h EC50: 50.5 mg/L<br/>(<i>Skeletonema costatum</i>)</p> <p><b>Component 5 (1-5%)</b><br/>           Acute Fish Toxicity 96h LC50: &gt;3.56 mg/L<br/>(<i>Scophthalmus maximus</i>)<br/>           Acute Crustacean Toxicity 48h LC50: &gt;5.49 mg/L<br/>(<i>Acartia tonsa</i>)<br/>           Acute Algae Toxicity 72h EC50: 183.7 mg/L<br/>(<i>Skeletonema costatum</i>)</p> <p><b>Biodegradation</b><br/> <b>Component 1 (30-60%)</b><br/>           Biodegradation (OECD 306): 70% degraded in 28 days<br/>in seawater</p> <p><b>Component 2 (30-60%)</b><br/>           Biodegradation (OECD 306): 70% degraded in 28 days<br/>in seawater</p> <p><b>Component 3 (5-10%)</b></p> |                 |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p>Biodegradation (OECD 306): 89% degraded in 28 days in seawater</p> <p><b>Component 4 (10-30%)</b><br/>Biodegradation (OECD 306): 74.4% degraded in 28 days in seawater</p> <p><b>Component 5 (1-5%)</b><br/>Biodegradation (OECD 306): 73% degraded in 28 days in seawater</p> <p><u><b>Bioaccumulation</b></u><br/> <b>Component 1 (30-60%)</b><br/>Bioaccumulation Log Pow (OECD 117): 0.436</p> <p><b>Component 2 (30-60%)</b><br/>Bioaccumulation Log Pow (OECD 117): 1.76-4.51</p> <p><b>Component 3 (5-10%)</b><br/>Bioaccumulation Log Pow (OECD 117): DAD (0.99-6.93), RI (4.20-7.74)</p> <p><b>Component 4 (10-30%)</b><br/>Bioaccumulation Log Pow (OECD 117): 3.7</p> <p><b>Component 5 (1-5%)</b><br/>Bioaccumulation Log Pow (OECD 117): -4.42 to 4.89</p> |                 |
| Total                         |                 |          |         | ~100                                   |  |                 |

## C. CHEMICAL LIST

| System                     | Chemicals Within Systems  | CAS number  | Mass fraction (%) |
|----------------------------|---|-------------|-------------------|
| Water Based Drilling Fluid | Water   | 7732-18-5   | ~ 51              |
|                            | Barite (Ba(SO <sub>4</sub> ))   | 13462-86-7  | ~ 11              |
|                            | Potassium chloride  | 7447-40-7   | ~ 10              |
|                            | Calcium carbonate   | 1317-65-3   | ~ 5               |
|                            | Bentonite   | 1302-78-9   | ~ 4               |
|                            | Crystalline silica (impurity)   | 14808-60-7  | ~ 3               |
|                            | Rapeseed oil  | 8002-13-9   | ~ 3               |
|                            | Poly(oxy-1,2-ethanediyl), a-butyl-w-hydroxy-  | 9004-77-7   | ~ 2               |
|                            | Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups  | 9046-10-0   | ~ 1               |
|                            | Fatty acids, tall oil, 2-ethylhexyl esters  | 68334-13-4  | < 1               |
|                            | Silica, crystalline, Cristobalite   | 14464-46-1  | < 1               |
|                            | Polyether amine acetate*  | 0-00-0      | < 1               |
|                            | Sodium carboxymethylcellulose   | 9004-32-4   | < 1               |
|                            | Xanthan Gum   | 11138-66-2  | < 1               |
|                            | Fatty acids, tall-oil   | 61790-12-3  | < 1               |
|                            | Hydroxypropyl acetate, sodium acrylate, acrylic acid terpolymer   | 86864-96-2  | < 1               |
|                            | Castor oil  | 8001-79-4   | < 1               |
|                            | Ammonium hydrogensulfite  | 10192-30-0  | < 1               |
|                            | Sodium carbonate  | 497-19-8    | < 1               |
|                            | Oxirane, 2-methyl-, polymer with oxirane, di-(9Z)-9-octadecenoate   | 67167-17-3  | < 1               |
|                            | Silica, crystalline, Tridymite  | 15468-32-3  | < 0.1             |
|                            | Sodium hydroxide  | 1310-73-2   | < 0.1             |
|                            | Gypsum (Calcium sulfate)  | 13397-24-5  | < 0.1             |
|                            | 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol   | 4719-04-4   | < 0.1             |
|                            | Glyoxal   | 107-22-2    | < 0.01            |
|                            | 2-aminoethanol  | 141-43-5    | < 0.01            |
|                            | 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate, octadecyl 2-methyl-2-propenoate and 2-propenoic acid (Impurity) | 145417-45-4 | < 0.01            |
|                            | Acrylic Acid (Impurity)   | 79-10-7     | < 0.001           |
|                            | Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]-, pentasodium salt (Impurity)  | 140-01-2    | < 0.001           |
|                            | Sulphur Dioxide (Impurity)  | 7446-09-5   | < 0.001           |
|                            | <b>Total of System</b>  |             | <b>~100%</b>      |

\*This material is a partially neutralized polymer. The neutralization is by glacial acetic acid to form a poly ether amine acetate salt. The starting monomers are listed in EINECS, therefore the polymer has a polymer exemption from EINECS listing, as do the subsequent salts.

The acetate salt of the poly ether amine is exempt from TSCA registration under the exemption regulation in 40 CFR720.30(h)(7), therefore the salt does not have a CAS number

## 2. INHIBITED BRINE SYSTEM

### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA                                |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment |
| SYSTEM:                 | Well Abandonment – Inhibited Brine       |
| TOTAL VOLUME OF SYSTEM: | 3930 m <sup>3</sup>                      |

### B. PRODUCT LIST

| Fluid Name (and Volume)                | Product Name                       | Supplier              | Purpose    | Product in System (Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|--|------------------------------------|-----------------------|------------|-------------------------------------|--|--------------|
| Inhibited Brine (3930 m <sup>3</sup> ) | Water                              | Locally sourced       | Base fluid | 73.97%                              | Natural product - exempted under chemical disclosure guidelines.   | N/A          |
|  | Caustic Soda M2 (OCNS non-CHARM E) | Schlumberger          | Alkalinity | 0.04%                               | <p><b><i>Sodium hydroxide (60-100%)</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rabbit): 1350mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Oncorhynchus mykiss</i>: 45.4 mg/L</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
|  | NUOSEPT 78 (OCNS CHARM rated GOLD) | IMCD Australia (Troy) | Biocide    | 0.06%                               | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rat) &gt; 2000 mg/kg<br/>LD50 Oral (Rat – Female): 1009 to 3950 mg/kg<br/>Irritation/Corrosion (Rabbit) Score 59 in 21 days</p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose             | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|---------------------|--|---|--------------|
|                            |   |              |                     |  | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>EC50 (48h): 10-100 mg/L <i>Daphnia magna</i><br/>LC50 (96h): 10-100 mg/L Fish</p> <p><b><u>Biodegradation</u></b><br/>Readily biodegradable &gt;60% in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/>Log Pow (OECD 117): - 1.3</p>   |              |
|                            | Potassium Chloride M117<br>(OCNS non-CHARM rated E/OSPAR PLONOR Listed) | Schlumberger | Shale Inhibition    | 10.46%                                 | <p><b><u>Whole Product Data</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): 2600 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Pimephales promelas</i>: 750-1020 mg/L<br/>LC50 (96h) <i>Lepomis macrochirus</i>: 1060 mg/L<br/>EC50 (72h) <i>Desmodesmus subspicatus</i>: 2500 mg/L<br/>EC50 (48h) <i>Daphnia magna</i>: 83 mg/L<br/>EC50 (48h) <i>Daphnia magna</i>: 825mg/L<br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
|                            | SAFE-COR (OCNS)   | MI SWACO     | Corrosion Inhibitor | 1.37%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/><b><u>Component 1 30-60%</u></b><br/>LD50 Oral (Rat): 5000 mg/kg</p>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name                          | Supplier | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---------------------------------------|----------|------------------|--|--|--------------|
|                            | CHARM rated Gold)                     |          |                  |  | <p>LD50 Dermal (Rat): &gt; 2000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/><b>Component 1 30-60%)</b><br/>LC50 (96h): &gt; 45 ug/L Fish<br/>ErC50 (72h): 45 mg/kg Algae<br/>NOECr (72h): 3.2 mg/L Algae<br/>EC50 (48h): &gt; 100 g/L <i>Daphnia magna</i></p> <p><b><u>Whole Product Data</u></b><br/><i>Scophthalmus maximus</i> Fish LC50(96hr): &gt;1000 mg/L<br/><i>Acartia tonsa</i> LC50(48hr): 432.9 mg/L<br/><i>Skeletonema costatum</i> EC50(72hr): 509 mg/L</p> <p><b><u>Whole Product Data</u></b><br/><b><u>Biodegradation</u></b><br/>OECD 306: 69% in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/>Log Pow: &lt; 3 (OECD 117)</p> |              |
|                            | SAFE-SCAV NA (OCNS non-CHARM rated E) | MI SWACO | Oxygen Scavenger | 0.22%                                  | <p><b><u>Ammonium bisulphite (30-60%)</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50: 2746 mg/kg (analogy to product with similar composition)<br/>LD50 (24h): &gt; 2000 mg/kg (analogy to product with similar composition)<br/>LC50: &gt; 5.5 mg/L (4h) (analogy to product with similar composition)</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name  | Supplier      | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|---------------|-----------------|--|---|--------------|
|                            |   |               |                 |  | <p><b><u>Aquatic Toxicity</u></b><br/> LC50 (96h): &gt; 464 mg/L Fish (analogy to product with similar composition)<br/> EC50 (72h): 43.8 mg/L Algae (analogy to product with similar composition)<br/> EC50 (48h): 89 mg/L <i>Daphnia magna</i><br/> OSPAR PLONOR Listed (Ammonium bisulphite)</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/> Not applicable to inorganic material</p> <p>The remainder of the product is a natural ingredient which is exempt from the chemical disclosure guidelines.<br/> Sulfur dioxide (&lt;1%) is not present as an ingredient in the product, it is a by-product formed during decomposition.</p>  |              |
|                            | Graded Salt<br>(Sodium Chloride -<br>OSPAR<br>PLONOR<br>Listed) | WA Salt Group | Density Control | 13.89%                                 | <p><b><u>Whole Product Data</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/> LD50 Oral (Rat): 3g/kg<br/> LD50 Dermal (Rabbit): &gt; 10g/kg<br/> LC50 Inhalation (Rat): &gt; 42 g/m<sup>3</sup> (1 h)</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> LC50 (96h) <i>Lepomis macrochirus</i>: 5560-6080 mg/L<br/> LC50 (96h) <i>Pimephales promelas</i>: 6420-6700 mg/L<br/> LC50 (96h) <i>Oncorhynchus mykiss</i>: 4747-7824 mg/L<br/> EC50 (48h) <i>Daphnia magna</i>: 340.7-496.2 mg/L<br/> OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/> Not applicable to inorganic material</p> | Yes          |



# C. CHEMICAL LIST

| System          | Chemicals Within Systems                                  | CAS number | Mass fraction (%) |
|-----------------|---|------------|-------------------|
| Inhibited Brine | Water   | 7732-18-5  | ~ 51              |
|                 | Sodium chloride   | 7647-14-5  | ~ 27              |
|                 | Potassium chloride  | 7447-40-7  | ~ 17              |
|                 | Aliphatic heterocyclic amines                             | 68909-77-3 | < 1               |
|                 | Ammonium hydrogensulfite                                  | 10192-30-0 | < 1               |
|                 | Sodium hydroxide  | 1310-73-2  | < 0.1             |
|                 | 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol | 4719-04-4  | < 0.1             |
|                 | 2-aminoethanol  | 141-43-5   | < 0.01            |
|                 | Sulphur Dioxide (Impurity)                                | 7446-09-5  | < 0.001           |
| Total of System |   |            | ~100%             |

### 3. HI-VIS PILL SYSTEM

#### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA                                |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment |
| SYSTEM:                 | Well Abandonment – Hi-Vis Pill           |
| TOTAL VOLUME OF SYSTEM: | 4840 m <sup>3</sup>                      |

#### B. PRODUCT LIST

| Fluid name<br>(and Volume)            | Product Name                          | Supplier              | Purpose    | Product in system<br>(concentration<br>kg/m <sup>3</sup> or %) | Toxicity & Ecotoxicity Info  | SDS<br>Attached |
|---------------------------------------|---------------------------------------|-----------------------|------------|--|--|-----------------|
| Hi-Vis Pill<br>(4840 m <sup>3</sup> ) | Water                                 | Locally sourced       | Base fluid | 92.57%   | Natural product - exempted under chemical disclosure guidelines.   | N/A             |
|                                       | Caustic Soda M2<br>(OCNS non-CHARM E) | Schlumberger          | Alkalinity | 0.04%  | <p><b><i>Sodium hydroxide (60-100%)</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rabbit): 1350mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Oncorhynchus mykiss</i>: 45.4 mg/L</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes             |
|                                       | NUOSEPT 78 (OCNS CHARM rated GOLD)    | IMCD Australia (Troy) | Biocide    | 0.06%  | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rat) &gt; 2000 mg/kg<br/>LD50 Oral (Rat – Female): 1009 to 3950 mg/kg<br/>Irritation/Corrosion (Rabbit) Score 59 in 21 days</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p>   | Yes             |

| Fluid name<br>(and<br>Volume) | Product<br>Name                          | Supplier | Purpose     | Product in system<br>(concentration<br>kg/m <sup>3</sup> or %) | Toxicity & Ecotoxicity Info   | SDS<br>Attached |
|-------------------------------|--|----------|-------------|--|---|-----------------|
|                               |  |          |             |  | <p><b><u>Aquatic Toxicity</u></b><br/>           EC50 (48h): 10-100 mg/L <i>Daphnia magna</i><br/>           LC50 (96h): 10-100 mg/L Fish</p> <p><b><u>Biodegradation</u></b><br/>           &gt;60% in 28 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/>           Log Pow: - 1.3 (OECD 117)</p>  |                 |
|                               | DUO-VIS<br>(OCNS<br>CHARM<br>rated Gold) | Mi SWACO | Viscosifier | 0.30%  | <p>There is no data available for the whole product, only data for the hazardous ingredient. The remainder of the product contains non-hazardous ingredients which are entirely OSPAR PLONOR Listed.</p> <p><b><u>Glyoxal (&lt;1%)</u></b><br/> <b><u>Acute Mammalian Toxicity</u></b></p> <p>LD50 Oral (Rat): 200 mg/kg<br/>           LD50 Dermal (Rabbit): 12700 mg/kg<br/>           LD50 Inhalation: 2410 mg/m<sup>3</sup> (3-4 h)</p> <p><b><u>Chronic Toxicity</u></b><br/>           Contains a known mutagen. This product does not contain any known or suspected carcinogens (Cat 1 &amp; 2) or reproductive hazards (1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>           LC50 (96h) <i>Pimephales promelas</i>: 215 mg/L<br/>           LC50 (96h) <i>Leuciscus idus</i>: 460-680 mg/L<br/>           EC50 (96h) <i>Pseudokirchneriella subcapitata</i>: &gt; 500 mg/L<br/>           EC50 (96h) <i>Desmodesmus subpicatus</i>: &gt; 500 mg/L<br/>           EC50 (48h) <i>Daphnia magna</i>: 404 mg/L<br/> <i>Skeletonema costatum</i> EC50 (72h): 207 mg/L<br/> <i>Acartia tonsa</i> LC50 (48h): 259 mg/L<br/> <i>Scophthalmus maximus</i> LC50 (96h): &gt;1000 mg/L</p> | Yes             |

| Fluid name<br>(and Volume) | Product Name  | Supplier      | Purpose         | Product in system<br>(concentration kg/m <sup>3</sup> or %) | Toxicity & Ecotoxicity Info   | SDS Attached |
|----------------------------|---|---------------|-----------------|---|---|--------------|
|                            |   |               |                 |   | <u><b>Biodegradation</b></u><br>OECD 306: 49% in 28 days<br><br><u><b>Bioaccumulation</b></u><br>Log Pow (OECD 117): <0<br>BCF: 2.155   |              |
|                            | Graded Salt (Sodium Chloride - OSPAR PLONOR Listed) | WA Salt Group | Density Control | 6.94%   | <b><i>Whole Product Data</i></b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50 Oral (Rat): 3g/kg<br>LD50 Dermal (Rabbit): > 10g/kg<br>LC50 Inhalation (Rat): > 42 g/m <sup>3</sup> (1 h)<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br>LC50 (96h) <i>Lepomis macrochirus</i> : 5560-6080 mg/L<br>LC50 (96h) <i>Pimephales promelas</i> : 6420-6700 mg/L<br>LC50 (96h) <i>Oncorhynchus mykiss</i> : 4747-7824 mg/L<br>EC50 (48h) <i>Daphnia magna</i> : 340.7-496.2 mg/L<br>OSPAR PLONOR Listed<br><br><u><b>Biodegradation/ Bioaccumulation</b></u><br>Not Applicable to inorganic material | Yes          |
|                            | FORTA SUPER-SWEEP (OCNS CHARM rated Gold)           | FORTA         | Fibre Sweep     | 0.09%   | <b><i>Polypropylene (&gt;60%)</i></b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>Rat (oral) LD50 > 5000 mg/kg<br>Rabbit (dermal) LD50 > 2000 mg/kg<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproduction hazards (Cat 1, 2 & 3)   | Yes          |

| Fluid name<br>(and Volume) | Product Name | Supplier | Purpose | Product in system<br>(concentration kg/m <sup>3</sup> or %) | Toxicity & Ecotoxicity Info   | SDS Attached |
|----------------------------|--------------|----------|---------|---|---|--------------|
|                            |              |          |         |   | <p><b><u>Aquatic Toxicity</u></b><br/> <i>Skeletonema costatum</i> EC50 (72h): 393.6 mg/L<br/> <i>Acartia tonsa</i> LC50 (48h): &gt;2000 mg/L<br/> <i>Scophthalmus maximus</i> LC50 (96h): &gt;393.6 mg/L<br/> <i>Corophium volutator</i> LC50 (10 days): &gt;10000 mg/kg</p> <p><b><u>Biodegradation</u></b><br/> OECD 306: 0% in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/> Not measurable, however, the MW is &gt; 700 therefore considered non-bioaccumulating.</p> <p>The remainder of the product is a natural ingredient which is exempted from chemical disclosure guidelines.</p> |              |

#### C. CHEMICAL LIST

| System      | Chemicals Within Systems                                  | CAS number             | Mass fraction (%) |
|-------------|---|------------------------|-------------------|
| Hi-Vis Pill | Water   | 7732-18-5              | ~ 84              |
|             | Sodium chloride   | 7647-14-5              | ~ 15              |
|             | Xanthan Gum   | 11138-66-2             | < 1               |
|             | Polypropylene   | 9003-07-0              | < 0.1             |
|             | Sodium hydroxide  | 1310-73-2              | < 0.1             |
|             | 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol | 4719-04-4              | < 0.1             |
|             | Glyoxal   | 107-22-2               | < 0.01            |
|             | 2-aminoethanol  | 141-43-5               | < 0.01            |
|             |   | <b>Total of System</b> | <b>~100%</b>      |

#### 4. LCM PILL SYSTEM

##### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos Energy                            |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment |
| SYSTEM:                 | Well Abandonment – LCM Pill              |
| TOTAL VOLUME OF SYSTEM: | 260 m <sup>3</sup>                       |

##### B. PRODUCT LIST

| Fluid Name<br>(and Volume)        | Product Name                          | Supplier              | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|-----------------------------------|---------------------------------------|-----------------------|------------|--|--|--------------|
| LCM Pill<br>(260 m <sup>3</sup> ) | Water                                 | Locally sourced       | Base fluid | 68.84%                                 | Natural product - exempted under chemical disclosure guidelines.   | N/A          |
|                                   | Caustic Soda M2<br>(OCNS non-CHARM E) | Schlumberger          | Alkalinity | 0.04%                                  | <p><b><i>Sodium hydroxide (60-100%)</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rabbit): 1350mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Oncorhynchus mykiss</i>: 45.4 mg/L</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
|                                   | NUOSEPT 78 (OCNS CHARM rated GOLD)    | IMCD Australia (Troy) | Biocide    | 0.06%                                  | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Dermal (Rat) &gt; 2000 mg/kg<br/>LD50 Oral (Rat – Female): 1009 to 3950 mg/kg<br/>Irritation/Corrosion (Rabbit) Score 59 in 21 days</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|----------|-----------------|--|--|--------------|
|                            |  |          |                 |  | <p><b><u>Aquatic Toxicity</u></b><br/>           EC50 (48h): 10-100 mg/L <i>Daphnia magna</i><br/>           LC50 (96h): 10-100 mg/L Fish</p> <p><b><u>Biodegradation</u></b><br/>           &gt;60% in 28 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/>           Log Pow = - 1.3 (OECD 117)</p>  |              |
|                            | M-I BAR*<br>(All Grades)<br>(OCNS non-CHARM rated E) | MI SWACO | Density Control | 6.80%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><u>Barite</u></b><br/>           LD50 Oral (Rat) &gt; 15000 mg/kg</p> <p><b><u>Crystalline silica (impurity)</u></b><br/>           LD50 Oral (Rat): 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/> <b><u>Barite</u></b><br/>           No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Crystalline silica (impurity)</u></b><br/>           Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><u>Barite</u></b><br/>           OSPAR PLONOR Listed</p> <p><b><u>Crystalline silica (impurity)</u></b><br/>           OSPAR PLONOR Listed<br/>           LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/>           EC50 (72h): &gt; 1000 mg/L Algae<br/>           LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>           Not applicable to inorganic material</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                             | Supplier | Purpose     | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|----------|-------------|--|--|--------------|
|                            |  |          |             |  | OSPAR PLONOR Listed for the ingredients, barite and quartz crystalline silica  |              |
|                            | DUO-VIS<br>(OCNS<br>CHARM<br>rated Gold) | MI SWACO | Viscosifier | 0.18%                                  | <p>There is no data available for the whole product, only data for the hazardous ingredient. The remainder of the product contains non-hazardous ingredients which are entirely OSPAR PLONOR Listed.</p> <p><b><u>Glyoxal (&lt;1%)</u></b><br/> <b><u>Acute Mammalian Toxicity</u></b><br/> LD50 Oral (Rat): 200 mg/kg<br/> LD50 Dermal (Rabbit): 12700 mg/kg<br/> LD50 Inhalation: 2410 mg/m<sup>3</sup> (3-4 h)</p> <p><b><u>Chronic Toxicity</u></b><br/> Contains a known mutagen. This product does not contain any known or suspected carcinogens (Cat 1 &amp; 2) or reproductive hazards (1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> LC50 (96h) <i>Pimephales promelas</i>: 215 mg/L<br/> LC50 (96h) <i>Leuciscus idus</i>: 460-680 mg/L<br/> EC50 (96h) <i>Pseudokirchneriella subcapitata</i>: &gt; 500 mg/L<br/> EC50 (96h) <i>Desmodesmus subpicatus</i>: &gt; 500 mg/L<br/> EC50 (48h) <i>Daphnia magna</i>: 404 mg/L<br/> <i>Skeletonema costatum</i> EC50 (72h): 207 mg/L<br/> <i>Acartia tonsa</i> LC50 (48h): 259 mg/L<br/> <i>Scophthalmus maximus</i> LC50 (96h): &gt;1000 mg/L</p> <p><b><u>Biodegradation</u></b><br/> 49% in 28 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/> Log Pow (OECD 117): &lt;0<br/> BCF: 2.155</p> | Yes          |



| Fluid Name<br>(and Volume) | Product Name                                       | Supplier            | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|---------------------|------------------|--|---|--------------|
|                            | G-SEAL (all Grades)<br>(OCNS non-CHARM rated E)    | Mi SWACO            | Lost Circulation | 2.14%                                  | <p><b>Graphite (60-100%)</b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 &gt;2000mg/kg bw, Rat (OECD 423)<br/>LD50 &gt;2000mg/m<sup>3</sup>, Rat (OECD 403)</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96hr) Fish: &gt;100mg/L<br/>EC50 (72hr) Algae: &gt;100mg/L<br/>EC50 (48hr) Crustacean &gt;100mg/L<br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
|                            | Kwik-Seal (All Grades)<br>(OCNS non-CHARM rated E) | Mi SWACO (CP Kelco) | Lost Circulation | 3.81%                                  | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 (Rat): &gt; 2000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>96-hr LC50 mysid shrimp, in standard drilling mud:<br/>&gt;1,000,000 ppm suspended particulate phase.<br/>Microtox Toxicity: <i>Photobacterium phosphoreum</i>: Non-toxic.<br/>OSPAR PLONOR Listed for the ingredients, nutshell, wood fibre and cellulose fibre</p>                  | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                      | Supplier       | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|----------------|------------------|--|--|--------------|
|                            |   |                |                  |  | <u><b>Biodegradation/ Bioaccumulation</b></u><br>Not applicable to inorganic material  |              |
|                            | M-I-X II (All Grades)<br>(OCNS non-CHARM rated E) | Mi SWACO       | Lost Circulation | 3.81%                                  | <u><b>Acute Mammalian Toxicity</b></u><br><b>Cellulose fibre</b><br>LD50 Oral (Rat): > 5 g/kg<br>LD50 Dermal (Rabbit): > 2 g/kg<br>LC50 Inhalation (Rat): > 5800 mg/m <sup>3</sup> (4h)<br><br><b>Crystalline silica (impurity)</b><br>LD50 Oral (Rat): 500mg/kg<br><br><u><b>Chronic Toxicity</b></u><br><b>Cellulose fibre</b><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><b>Crystalline silica (impurity)</b><br>Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.<br><br><u><b>Aquatic Toxicity</b></u><br><b>Cellulose fibre</b><br>OSPAR PLONOR Listed<br><br><b>Crystalline silica (impurity)</b><br>OSPAR PLONOR Listed<br>LC50 (96h): > 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br>EC50 (72h): > 1000 mg/L Algae<br>LC50 (24h): > 10 000 mg/L <i>Daphnia magna</i> (water flea)<br><br><u><b>Biodegradation/ Bioaccumulation</b></u><br>Not applicable to inorganic material | Yes          |
|                            | Calcium Carbonate (OSPAR)                         | Omya Australia | Lost Circulation | 5.29%                                  | <b>Whole Product Data</b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50 Oral (Rat): > 5000 mg/kg   | Yes          |

| Fluid Name (and Volume) | Product Name   | Supplier | Purpose          | Product in System (Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|-------------------------|----------------|----------|------------------|-------------------------------------|---|--------------|
|                         | PLONOR Listed) |          |                  |                                     | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50(96h): &gt;10 000 mg/L <i>Oncorhynchus mykiss</i> (Rainbow trout)<br/>EC50 (48h): &gt;1000 mg/L <i>Daphnia magna</i><br/>NOEC (72h): 75 mg/L <i>Desmodesmus subspicatus</i> (green algae)<br/>EC50 (72h): 289 mg/L <i>Desmodesmus subspicatus</i><br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>  |              |
|                         | WALNUT NUTPLUG | MI SWACO | Lost Circulation | 4.76%                               | <p>Walnut shell is a natural ingredient which is exempted from chemical disclosure guidelines.</p> <p><b><u>Crystalline silica (impurity)</u></b><br/><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. No known mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>OSPAR PLONOR Listed<br/>LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/>EC50 (72h): &gt; 1000 mg/L Algae<br/>LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |

### C. CHEMICAL LIST

| System   | Chemicals Within Systems                                  | CAS number | Mass fraction (%) |
|----------|---|------------|-------------------|
| LCM Pill | Water   | 7732-18-5  | ~ 34              |
|          | Barite (Ba(SO <sub>4</sub> ))                             | 13462-86-7 | ~ 27              |
|          | Calcium carbonate   | 471-34-1   | ~ 14              |
|          | Cellulose   | 9004-34-6  | ~ 7               |
|          | Cellulose fibre   | 65996-61-4 | ~ 6               |
|          | Bentonite   | 1302-78-9  | ~ 5               |
|          | Graphite  | 7782-42-5  | ~ 4               |
|          | Crystalline silica (impurity)                             | 14808-60-7 | ~ 2               |
|          | Xanthan Gum   | 11138-66-2 | < 1               |
|          | Sodium hydroxide  | 1310-73-2  | < 0.1             |
|          | Silica, crystalline, Tridymite                            | 15468-32-3 | < 0.1             |
|          | Gypsum (Calcium sulfate)                                  | 13397-24-5 | < 0.1             |
|          | 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol | 4719-04-4  | < 0.1             |
|          | Glyoxal   | 107-22-2   | < 0.01            |
|          | 2-aminoethanol  | 141-43-5   | < 0.01            |
|          | Total of System   |            | ~100%             |

## 5. CONTINGENCY CHEMICALS - CEMENT CONTAMINATION TREATMENT, LOST CIRCULATION REMEDIATION, PIT CLEANING, SUBSTITUTE PRODUCTS

### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA  |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment   |
| SYSTEM:                 | Well Abandonment – Contingency chemicals for potential cement contamination treatment, lost circulation remediation, pit cleaning (If SMS enters surface pits or substitute products (if inventory or planned chemicals are depleted or fluids recycled from E&A wells are used) |
| TOTAL VOLUME OF SYSTEM: | 3930 m <sup>3</sup>  |

### B. PRODUCT LIST

| Fluid Name (and Volume)                      | Product Name                      | Supplier        | Purpose    | Product in System (Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|--|-----------------------------------|-----------------|------------|-------------------------------------|--|--------------|
| Contingency Chemicals (3930 m <sup>3</sup> ) | Water                             | Locally sourced | Base fluid | 63.71%                              | Natural product - exempted under the chemical disclosure guidelines.   | N/A          |
|  | Citric Acid (OSPAR PLONOR Listed) | REDOX           | pH Control | 0.89%                               | <p><b><i>Citric Acid</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/> LD50 Oral (Mouse): 5400-5790 mg/kg<br/> LD50 Oral (Rat): 11 700 mg/kg<br/> LD50 Dermal (Rat): &gt; 2000 mg/kg bw</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> OSPAR PLONOR Listed<br/> LC50 (48h): 440 mg/L <i>Leuciscus idus melanotus</i> (Fish)<br/> EC50 (24h): 1535 mg/L <i>Daphnia magna</i> (Crustacea)</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/> OSPAR PLONOR Listed</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name | Supplier | Purpose            | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--------------|----------|--------------------|--|---|--------------|
|                            | DEEPCLEAN    | MI SWACO | Solvent/Surfactant | 8.07%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>D-Glucopyranose, oligomeric C8-10 glycosides</i></b><br/> LD50 Oral (Rat): &gt; 2000 mg/kg<br/> LD50 Dermal (Rabbit): &gt; 2000 mg/kg</p> <p><b><i>2-butoxyethanol</i></b><br/> Rat (oral) LD50: 470 mg/kg<br/> Rabbit (dermal) LD50: 220 mg/kg<br/> Rat (dermal) LD50: 2270 mg/kg<br/> Rat (inhalation) LC50: 2.21 mg/L<br/> Rat (4 h) = 450 ppm</p> <p><b><i>Citric Extract</i></b><br/> LD50 Oral (Rat): &gt; 5000 mg/kg<br/> LD50 Dermal (Rabbit): &gt; 5000 mg/kg</p> <p><b><i>Distillates, petroleum, hydrotreated light</i></b><br/> LD50 Oral (Rat): &gt; 5000 mg/kg<br/> LD Dermal (Rabbit): &gt; 2000 mg/kg<br/> LC50 Inhalation: &gt; 5.2 mg/L (4h)</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Component 1 surfactant (10-30%)</i></b><br/> EC50 (72h) <i>Skeletonema costatum</i>: &gt;2700 mg/L<br/> LC50 (48h) <i>Acartia tonsa</i>: &gt;2700 mg/L<br/> LC50 (96h) <i>Scopthalmus maximus</i>: &gt;2700 mg/L<br/> LC50 (10d) <i>Corophium volutator</i>: 940mg/Kg dry sediment</p> <p><b><i>Component 2 (10-30%)</i></b><br/> EC50 (72h) <i>Skeletonema costatum</i>: 130 mg/L<br/> LC50 (48h) <i>Acartia tonsa</i>: 690 mg/L<br/> LC50 (96h) <i>Scopthalmus maximus</i>: &gt;1000 mg/L</p> | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p><b>Component 3 (10-30%)</b><br/> EC50 (72h) <i>Skeletonema costatum</i>: 36 mg/L<br/> LC50 (48h) <i>Acartia tonsa</i> 21 mg/L<br/> LC50 (96h) <i>Scopthalmus maximus</i>: &gt;12 mg/L<br/> LC50 (10d) <i>Corophium volutator</i>: &gt;210 mg/Kg dry sediment</p> <p><b>Component 4 surfactant (30-60%)</b><br/> EC50 (72h) <i>Skeletonema costatum</i>: 3.0 mg/L<br/> LC50 (48h) <i>Acartia tonsa</i>: 48 mg/L<br/> LC50 (96h) <i>Scopthalmus maximus</i>: &gt;5.1 mg/L<br/> LC50 (10d) <i>Corophium volutator</i>: &gt;23 mg/Kg dry sediment</p> <p><b>Biodegradation</b><br/> <b>Component 1 surfactant (10-30%)</b><br/> (OECD 306): &gt;100%</p> <p><b>Component 2 (10-30%)</b><br/> (OECD 306): 96%</p> <p><b>Component 3 (10-30%)</b><br/> (OECD 306): 67%</p> <p><b>Component 4 surfactant (30-60%)</b><br/> (OECD 306): 74%</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 surfactant (10-30%)</b><br/> Log Pow (OECD 117): 6 (MW&lt;700)</p> <p><b>Component 2 (10-30%)</b><br/> Log Pow (OECD 117): 1.1 (MW&gt;700)</p> <p><b>Component 3 (10-30%)</b><br/> Log Pow (OECD 117): 5.5 (MW&lt;700)</p> <p><b>Component 4 surfactant (30-60%)</b><br/> Log Pow (OECD 117): Estimated 0 (MW&gt;700)</p> |                 |

| Fluid Name (and Volume) | Product Name  | Supplier   | Purpose          | Product in System (Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|-------------------------|---|--|------------------|-------------------------------------|---|--------------|
|                         | Diaseal M Lost Circulation (OCNS non-CHARM rated E) | Drilling Specialties Company - Chevron Phillips Chemical Company | Lost Circulation | 5.77%                               | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Calcium Hydroxide</i></b><br/> LD50 Oral (Rat): 7340 mg/kg<br/> Remaining components are entirely OSPAR PLONOR Listed.</p> <p><b><u>Chronic Toxicity</u></b><br/> Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. Remaining components have no known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Calcium Hydroxide</i></b><br/> LC50 (96h) <i>Gambusia affinis</i> (Fish, fresh water) static test Elimination information (persistence and degradability): 160 mg/L<br/> Remaining components are OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/> Not Applicable to inorganic material</p> | Yes          |
|                         | FORM-A-BLOK (OCNS CHARM rated Gold)                 | MI Australia (Alpine Specialty Chemicals)                        | Lost Circulation | 5.77%                               | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Wollastonite (Ca(SiO<sub>3</sub>))</i></b><br/> No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the product in the section below.</p> <p><b><i>Cellulose</i></b><br/> Rat (Oral) LC50: 5 g/kg<br/> Rabbit (Dermal) LD50: &gt; 2 g/kg<br/> Rat (Inhalation) LC50: &gt; 5800 mg/m<sup>3</sup></p> <p><b><i>Kaolin</i></b></p>   | Yes          |



| Fluid Name<br>(and Volume) | Product Name                                | Supplier | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|----------|------------|--|---|--------------|
|                            |   |          |            |  | <p>No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the product in the section below.</p> <p><b><i>Polyvinyl alcohol</i></b><br/>LD50 Oral (Rat): = 23854 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/><b><i>Whole Product Data</i></b><br/><i>Scophthalmus maximus</i> LC50(96h): &gt;100 mg/L<br/><i>Acartia tonsa</i> LC50(48h): &gt;505 mg/L<br/><i>Skeletonema costatum</i> EC50(72h): &gt;1000 mg/L</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> |              |
|                            | KLEEN UP<br>(OCNS<br>CHARM<br>rated Silver) | MI SWACO | Surfactant | 11.43%                                 | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>Rat (oral) LD50 &gt; 2000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/><i>Skeletonema costatum</i> EC50 (72h): 1.7 mg/L<br/><i>Acartia tonsa</i> LC50 (48h): 2.0 mg/L<br/><i>Scophthalmus maximus</i> LC50 (96h): &gt;1.7 mg/L<br/><i>Corophium volutator</i> LC50 (10 days) &gt;2.2 mg/kg</p>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                       | Supplier | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|----------|------------------|--|--|--------------|
|                            |  |          |                  |  | <u><b>Biodegradation</b></u><br>61% in 28 days (OECD 306)<br><br><u><b>Bioaccumulation</b></u><br>Log Pow (OECD 117): Estimated 0 (MW>700)   |              |
|                            | HYDRATED LIME<br>(OSPAR PLONOR Listed ingredients) | MI SWACO | Alkalinity       | 1.28%                                  | <b><i>Whole Product Data</i></b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>Rat (oral) LD50: > 2000 mg/kg<br>Rabbit (dermal) LD50 > 2500 mg/kg<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3).<br><br><u><b>Aquatic Toxicity</b></u><br><i>Gambusia affinis</i> LC50 (96 h): 160 mg/L<br>OSPAR PLONOR Listed ingredients<br><br><u><b>Biodegradation/Bioaccumulation</b></u><br>Not applicable to inorganic material | Yes          |
|                            | SAFE-SCAV CA (OCNS CHARM rated Gold)               | MI SWACO | Oxygen Scavenger | 0.17%                                  | <b><i>Whole Product Data</i></b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>Rat (oral) LD50 > 5 g/kg<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br><i>Skeletonema costatum</i> EC50 (72h): 1058 mg/L<br><i>Acartia tonsa</i> LC50 (48h): 171 mg/L<br><i>Scophthalmus maximus</i> LC50 (96h): >1000 mg/L  | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                   | Supplier | Purpose             | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|----------|---------------------|--|--|--------------|
|                            |  |          |                     |  | <b>Biodegradation</b><br>42% in 28 days (OECD 306)<br><b>Bioaccumulation</b><br>Log Pow (OECD 117): -2.74  |              |
|                            | SAFE-SCAV<br>HSB (OCNS<br>CHARM<br>rated Gold) | MI SWACO | Oxygen<br>Scavenger | 0.53%                                  | <b>Acute Mammalian Toxicity</b><br><b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol</b><br>LD50 Oral (Rat): 1000 mg/kg<br>LD50 Dermal (Rabbit): > 4000 mg/kg<br>LC50 Inhalation (Rat): 0.371 mg/l (dust/mist) (4h)<br><br><b>Formaldehyde (impurity)</b><br>LD50 Oral (Rat): 100 mg/kg<br>LD50 Dermal (Rabbit): 270 mg/kg<br>LC50 Inhalation (Rat): 0.578 mg/L<br><br><b>2-aminoethanol (impurity)</b><br>Rat (oral) LD50 1720 mg/kg<br>Rabbit (dermal) LD50 1025 mg/kg<br><br><b>Chronic Toxicity</b><br>Formaldehyde is listed by IARC in Group 1 as carcinogenic to humans. Contains a known or suspected mutagen.<br><br>The product does not contain any known or suspected reproductive hazards.<br><br><b>Aquatic Toxicity</b><br><b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol</b><br><i>Skeletonema costatum</i> EC50 (72h): 3.64 mg/L<br><i>Acartia tonsa</i> LC50 (48h): 58.89 mg/L<br><i>Scophthalmus maximus</i> LC50 (96h): 117 mg/L<br><i>Corophium volutator</i> LC50 (10 days): 1144 mg/kg | Yes          |

| Fluid Name<br>(and Volume) | Product Name                     | Supplier | Purpose              | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|----------------------------------|----------|----------------------|--|--|--------------|
|                            |                                  |          |                      |  | <p><b>2-aminoethanol (Impurity)</b><br/> <i>Pimephales promelas</i> LC50 (96h): 227 mg/L<br/> <i>Brachydanio rerio</i> LC50 (96h): 3684 mg/L<br/> <i>Lepomis macrochirus</i> LC50 (96h): 300-1000 mg/L<br/> <i>Desmodesmus subspicatus</i> EC50 (72h): 15 mg/L<br/> <i>Daphnia magna</i> EC50 (48h): 65 mg/L</p> <p><b>Formaldehyde (impurity)</b><br/> LC50 (96h) <i>Pimephales promelas</i>: 23.2-29.7 mg/L<br/> LC50 (96h) <i>Brachydanio rerio</i>: 41 mg/L<br/> LC50 (96h) <i>Oncorhynchus mykiss</i>: 0.032-0.226 ml/L<br/> LC50 (96h) <i>Lepomis macrochirus</i>: 1510 µg/L<br/> LC50 (96h) <i>Pimephales promelas</i>: 22.6-25.7 mg/L<br/> LC50 (48h) <i>Daphnia magna</i>: 2 mg/L<br/> EC50 (48h) <i>Daphnia magna</i>: 11.3-18 mg/L</p> <p><b>Biodegradation</b><br/> <b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol</b><br/> 95% in 28 days (OECD 306)</p> <p><b>Bioaccumulation</b><br/> <b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol</b><br/> Log Pow (OECD 117): &lt;3</p> <p>There is no data available for the whole product, only data for the hazardous ingredients. The remainder of the product contains non-hazardous (natural) ingredients which are exempted from chemical disclosure guidelines.</p> |              |
|                            | SAPP<br>(OCNS non-CHARM rated E) | MI Swaco | Thinner (pH control) | 0.77%                                  | <p><b>Disodium dihydrogen diphosphate (60-100%)</b></p> <p><b>Acute Mammalian Toxicity</b><br/> LD50 Oral (Rat): 1800 mg/kg<br/> LC50 (Rat): &gt; 0.58 mg/l (4h)</p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                | Supplier | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|----------|------------|--|---|--------------|
|                            |   |          |            |  | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/ Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>   |              |
|                            | Sodium Bicarbonate<br>(OSPAR PLONOR Listed) | REDOX    | Alkalinity | 0.64%                                  | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): 4220 mg/kg<br/>LC50 Inhalation (Rat): 4.74 mg/L (dust/mist)</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) <i>Oncorhynchus mykiss</i>: 7700 mg/L<br/>NOEC (96h) <i>Oncorhynchus mykiss</i>: 2300 mg/L<br/>LC50 (96h) <i>Lepomis macrochirus</i>: 7100 mg/L<br/>NOEC (96h) <i>Lepomis macrochirus</i>: 5200 mg/L<br/>LC50 (48h) <i>Daphnia magna</i>: 4100 mg/L<br/>NOEC (48h) <i>Daphnia magna</i>: 3100 mg/L<br/>NOEC (21 days): <i>Daphnia magna</i>: &gt; 576 mg/L<br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                | Supplier   | Purpose     | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--|-------------|--|---|--------------|
|                            | Flowzan Biopolymer (OCNS non-CHARM rated E) | Drilling Specialties Company – (Chevron Phillips Chemical Company) | Viscosifier | 0.95%                                  | <p><b>Whole Product Data</b></p> <p><b>Acute Mammalian Toxicity</b><br/>LC50: no data available. A similar product by a different supplier lists LD/50 rat (oral): &gt;5,000 mg/kg</p> <p><b>Chronic Toxicity</b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/> <i>Skeletonema costatum</i> EC50 (72h): 207 mg/L<br/> <i>Acartia tonsa</i> LC50 (48h): 259 mg/L<br/> <i>Scophthalmus maximus</i> LC50 (96h): &gt;1,000 mg/L</p> <p><b>Biodegradation</b><br/>OECD 306: 49% in 28 days</p> <p><b>Bioaccumulation</b><br/>Log Pow (OECD 117): &lt;0</p> | Yes          |
| <b>Total</b>               |   |  |             | <b>~100</b>                            |   |              |

C. CHEMICAL LIST

| System               | Chemicals Within Systems                          | CAS number             | Mass fraction (%) |
|----------------------|---|------------------------|-------------------|
| Contingency Products | Water   | 7732-18-5              | ~58%              |
|                      | Diatomaceous earth                                | 61790-53-2             | ~9%               |
|                      | Calcium metasilicate                              | 13983-17-0             | ~7%               |
|                      | Cellulose   | 9004-34-6              | ~4%               |
|                      | Alcohols, C11-14-iso-, C13-rich, ethoxylated      | 78330-21-9             | ~3%               |
|                      | Calcium hydroxide                                 | 1305-62-0              | ~2%               |
|                      | D-Glucopyranose, oligomeric, C8-10 glycosides     | 68515-73-1             | ~2%               |
|                      | 2-butoxyethanol                                   | 111-76-2               | ~2%               |
|                      | Citrus Extract                                    | 68647-72-3             | ~2%               |
|                      | Distillates, petroleum, hydrotreated light        | 64742-47-8             | ~2%               |
|                      | Citric acid                                       | 77-92-9                | ~1%               |
|                      | Disodium dihydrogen diphosphate                   | 7758-16-9              | ~1%               |
|                      | Sodium bicarbonate                                | 144-55-8               | ~1%               |
|                      | Xanthan gum                                       | 11138-66-2             | ~1%               |
|                      | Kaolin  | 1332-58-7              | <1%               |
|                      | Polyvinyl alcohol                                 | 9002-89-5              | <1%               |
|                      | Hexahydro-1,3,5-tris(2-hydroxyethyl)-sym-triazine | 4719-04-4              | <1%               |
|                      | Sodium erythorbate                                | 6381-77-7              | <1%               |
|                      | Sodium sulfate                                    | 7727-73-3              | <1%               |
|                      | Crystalline Silica                                | 14808-60-7             | <1%               |
|                      | Magnesium Hydroxide                               | 1309-42-8              | <1%               |
|                      | Octadecanoic acid, calcium salt                   | 1592-23-0              | <1%               |
|                      | Methyl oxirane polymer with oxirane               | 9003-11-6              | <0.1%             |
|                      | Diopside  | 12765-06-9             | <0.1%             |
|                      | Calcium carbonate                                 | 471-34-1               | <0.1%             |
|                      | Limestone   | 1317-65-3              | <0.1%             |
|                      | Iron (III) Oxide                                  | 1309-37-1              | <0.1%             |
|                      | Aluminium Oxide                                   | 1344-28-1              | <0.1%             |
|                      | Formaldehyde (impurity)                           | 50-00-0                | <0.001%           |
|                      | 2-aminoethanol (Impurity)                         | 141-43-5~5             | <0.001%           |
|                      |   | <b>Total of System</b> | <b>~100%</b>      |

## 6. CEMENT SLURRY SYSTEM

### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA                                |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment |
| SYSTEM:                 | Well Abandonment – Cement Slurry         |
| TOTAL VOLUME OF SYSTEM: | 795 m <sup>3</sup>                       |

### B. PRODUCT LIST

| Fluid Name<br>(and<br>Volume)             | Product<br>Name   | Supplier        | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|---|---|-----------------|------------|--|--|-----------------|
| Cement<br>Slurry<br>(795 m <sup>3</sup> ) | Water   | Locally sourced | Base Fluid | 30.76%                                 | Naturally occurring – exempted under chemical disclosure guidelines.   | N/A             |
|   | Antifoam<br>Agent D47<br>(OCNS<br>CHARM<br>rated Silver)    | Schlumberger    | Antifoam   | 0.1%                                   | <b><i>Whole Product Data</i></b><br><br><b><u>Acute Mammalian Toxicity</u></b><br>LD50, Rat > 15,000 mg/kg<br><br><b><u>Chronic Toxicity</u></b><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><b><u>Aquatic Toxicity</u></b><br>EC50 (72h) Algae: 3.2 mg/L<br>LC50 (48hr) Crustacean: 0.25 mg/L<br><br><b><u>Biodegradation</u></b><br>1% in 28 days (OECD 306)<br><br><b><u>Bioaccumulation</u></b><br>Log Pow: 4.8 (OECD 117) | Yes             |
|   | Silicate<br>Additive D75<br>(OCNS non-<br>CHARM<br>rated E) | Schlumberger    | Extender   | 3.45%                                  | <b><i>Whole Product Data</i></b><br><br><b><u>Acute Mammalian Toxicity</u></b><br>LD50, Rat: 25 µg/kg  | Yes             |



| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|------------|--|---|--------------|
|                            |   |              |            |  | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) Fish: 1,180 mg/L<br/>EC50 (72h) Algae: &gt;345.4 mg/L<br/>EC50 (48hr) Crustacean: 1700 mg/L</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>   |              |
|                            | Cement Liquid Dispersant D80 (OCNS non-CHARM rated E) | Schlumberger | Dispersant | 0.29%                                  | <p><b><u>Component 1 (30-60%)</u></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>No scientific data or research is available for this product. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the product in the section below.<br/>Toxicological effects may include irritation of respiratory system through inhalation and irritation to skin.</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (48 h) &gt; 1.46 mg/L <i>Skeletonema Costatum</i><br/>EC50 (48 h) &gt; 100 mg/L <i>Acartia tonsa</i></p> <p><b><u>Biodegradation</u></b><br/>0 % in 28 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/>Log Pow: 2.9 (OECD 117)</p> <p><b><u>Component 2 (40-70%)</u></b></p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                  | Supplier     | Purpose                   | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|---------------------------|--|---|--------------|
|                            |   |              |                           |  | Naturally occurring – exempted under chemical disclosure guidelines.  |              |
|                            | Liquid Retarder D81 (OCNS non-CHARM rated E)  | Schlumberger | Retarder                  | 0.29%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Component 1 (15-50%)</i></b><br/>           OSPAR PLONOR Listed</p> <p><b><i>Component 2 (30-60%)</i></b><br/>           Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b><u>Chronic Toxicity</u></b><br/>           No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Component 1 (15-50%)</i></b><br/>           OSPAR PLONOR Listed</p> <p>Ecotoxicity testing is waived in the North Sea for substances listed on OSPAR PLONOR List</p> <p><b><i>Component 2 (30-60%)</i></b><br/>           Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>           Not applicable to inorganic material</p> | Yes          |
|                            | D095 Cement Additive (OCNS non-CHARM rated E) | Schlumberger | Lost Circulation Material | 0.07%                                  | <p><b><i>Whole Product Data</i></b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>           No scientific data or research is available for this product or components.<br/>           Toxicological effects may shortness of breath, tightness of the chest, a sore throat and cough through inhalation of dust and irritation to skin.</p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                    | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|----------|--|---|--------------|
|                            |   |              |          |  | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>OSPAR PLONOR Listed and REACH Annex IV Listed are exempted from testing under OSPAR Regulations.</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>   |              |
|                            | Cement Retarder D110<br>(OCNS CHARM rated Gold) | Schlumberger | Retarder | 0.14%                                  | <p><b><u>Acute Mammalian Toxicity</u></b></p> <p><b><i>Component 1 (10-30%)</i></b><br/>LD50 Oral (Rat): 1170 mg/kg</p> <p><b><i>Component 2 (60-100%)</i></b><br/>Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/><b><i>Component 1 (10-30%)</i></b><br/>LC50 (96h), Fish – <i>Scophthalmus maximus</i> &gt; 576 mg/l<br/>EC50 (72h), Algae - <i>Skeletonema costatum</i>: 360 mg/l<br/>LC50 (48h), Crustacean – <i>Acartia tonsa</i> &gt; 360 mg/l</p> <p><b><i>Component 2 (60-100%)</i></b><br/>Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b><u>Biodegradation</u></b><br/><b><i>Component 1 (10-30%)</i></b><br/>28 days: 88.0% (OECD 301B)</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|--------------|------------|--|--|--------------|
|                            |   |              |            |  | <p><b>Component 2 (60-100%)</b><br/>Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b>Bioaccumulation</b><br/><b>Component 1 (10-30%)</b><br/>Log Pow &lt; 0 (OECD 117)</p> <p><b>Component 2 (60-100%)</b><br/>Naturally occurring – exempted under chemical disclosure guidelines.</p>  |              |
|                            | Low-Temperature Liquid Dispersant D145A (OCNS CHARM rated Gold) | Schlumberger | Dispersant | 0.36%                                  | <p><b>Acute Mammalian Toxicity</b><br/><b>Component 1 (&lt; 0.2%)</b><br/>LD50 Oral = 500 mg/kg (Rat)<br/>LC50 Inhalation = 0.578 mg/L (Rat) 4 h<br/>LD50 Dermal = 260 mg/kg (Rabbit)</p> <p><b>Component 2 (15-40%)</b><br/>Oral LD50 &gt; 5000 mg/kg (Rats)</p> <p><b>Component 3 (30-60%)</b><br/>Naturally occurring – exempted from chemical disclosure guidelines.</p> <p><b>Chronic Toxicity</b><br/><b>Component 1 (&lt; 0.2%)</b><br/>Contains a known or suspected carcinogen. Listed by IARC in Group 1 as carcinogenic to humans.<br/>Contains a known or suspected mutagen.</p> <p>This product does not contain any known or suspected reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b>Aquatic Toxicity</b><br/><b>Component 1 (&lt; 0.2%)</b><br/>LC50 (96h) 22.6-25.7 mg/L (<i>Pimephales promelas</i>)</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|----------------------------|--------------|----------|---------|--|--|-----------------|
|                            |              |          |         |  | <p>LC50 (96h) 1510 µg/L (<i>Lepomis macrochirus</i>)<br/> LC50 (96h) 100-136 mg/L (<i>Oncorhynchus mykiss</i>)<br/> LC50 (96h) 41 mg/L (<i>Brachydanio rerio</i>)<br/> LC50 (48h) 2 mg/L (<i>Daphnia magna</i>)<br/> EC50 (48h) 11.3-18 mg/L (<i>Daphnia magna</i>)</p> <p><b>Component 2 (15-40%)</b><br/> EC50 (72h) 64-112 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> EC90 (72h) &gt; 112 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> NOEC (72h) = 36 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> LC50 (48h) &gt; 200 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/> LC100/LC90 (48h) &gt; 200 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/> LC50 (96h) &gt; 760 mg/l (Fish – <i>Scophthalmus maximus</i>)<br/> NOEC (96h) = 760 mg/l (Fish – <i>Scophthalmus maximus</i>)</p> <p><b>Component 3 (30-60%)</b><br/> Naturally occurring – exempted under chemical disclosure guidelines</p> <p><b>Biodegradation</b><br/> <b>Component 1 (&lt; 0.2%)</b><br/> Not readily biodegradable &lt;20% in 28 days</p> <p><b>Component 2 (15-40%)</b><br/> Biodegradability, 28 days: 17.0% (OECD 306)</p> <p><b>Component 3 (30-60%)</b><br/> Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 (&lt; 0.2%)</b><br/> Log Pow: 0.35 (OECD 117)</p> <p><b>Component 2 (15-40%)</b><br/> Log Pow &lt; -0.5 (OECD 117)</p> |                 |

| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose          | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|------------------|--|---|--------------|
|                            |   |              |                  |  | <b>Component 3 (30-60%)</b><br>Naturally occurring – exempted under chemical disclosure guidelines.   |              |
|                            | Anti-Settling Agent D153 (OCNS non-CHARM rated E)             | Schlumberger | Suspending Agent | 0.1%                                   | <b>Component 1 (60-100%)</b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50 Oral (Rat): 500 mg/kg<br><br><u><b>Chronic Toxicity</b></u><br>Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. No known mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3).<br><br><u><b>Aquatic Toxicity</b></u><br>Not considered toxic to Algae, Fish, or Invertebrates. Substances present on the OSPAR PLONOR List. REACH Annex IV list are exempted from testing under OSPAR Regulations.<br><br><u><b>Biodegradation/Bioaccumulation</b></u><br>Not applicable to inorganic material | Yes          |
|                            | Low-Temperature Liquid Extender D155 (OCNS non-CHARM rated E) | Schlumberger | Extender         | 2.76%                                  | <u><b>Acute Mammalian Toxicity</b></u><br><b>Fumed Silica</b><br>LD50 Oral (Rat): > 5000 mg/kg bw<br>LD50 Dermal (Rat): > 5000 mg/kg bw<br><br><b>Component 2 (30-60%)</b><br>Substance is present on REACH ANNEX IV and is exempt from testing under OSPAR Regulations<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br><b>Fumed Silica</b>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|--------------|----------|--|--|--------------|
|                            |  |              |          |  | LC50: > 100 mg/L Fish<br>LC50(72h): > 323 mg/L Algae<br>LC50: > 1003 mg/L Daphnia and other aquatic invertebrates<br>OSPAR PLONOR Listed<br><br><b>Component 2 (30-60%)</b><br>Substance is present on REACH ANNEX IV and is exempt from testing under OSPAR regulations<br><br><u><b>Biodegradation/Bioaccumulation</b></u><br>Not applicable to inorganic material   |              |
|                            | Multi-Temperature Cement Retarder D161 (OCNS CHARM rated Gold) | Schlumberger | Retarder | 0.69%                                  | <u><b>Acute Mammalian Toxicity</b></u><br><b>Component 1 (1-5%)</b><br>LD50 Oral (Rat): >2,000 mg/kg<br><br><b>Component 2 (1-10%)</b><br>LD50 Oral (Rat) > 2000 mg/kg bw<br>LC50 Inhalation (Rat) > 2.03 mg/L<br><br><b>Component 3 (60-100%)</b><br>Inorganic, Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><u><b>Aquatic Toxicity</b></u><br><b>Component 1(1-5%)</b><br>LC50 (96h) Fish: > 1000 mg/L<br>EC50 (72h) Algae: 9 mg/L<br>LC50 (48h) Crustacean:>1000 mg/L<br><br><b>Component 2 (1-10%)</b><br>LC50 (96h) Fish: >100 mg/L<br>EC50 (72h) Algae: 99 mg/L | Yes          |

| Fluid Name<br>(and Volume) | Product Name                              | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|--------------|----------|--|--|--------------|
|                            |   |              |          |  | <p>LC50 (48h) Crustacean: 931 mg/L</p> <p><b>Component 3 (60-100%)</b><br/>Inorganic, substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations</p> <p><b>Biodegradation</b><br/><b>Component 1 (1-5%)</b><br/>OECD306: 80% in 28 days</p> <p><b>Component 2 (5-10%)</b><br/>Not applicable to inorganic material</p> <p><b>Component 3 (60-100%)</b><br/>Inorganic, substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> <p><b>Bioaccumulation</b><br/><b>Component 1 (1-5%)</b><br/>Log Pow (OECD 117) &lt; 0, MW &lt; 700</p> <p><b>Component 2 (5-10%)</b><br/>Not applicable to inorganic material</p> <p><b>Component 3 (60-100%)</b><br/>Inorganic, substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> |              |
|                            | Expanding Cement Additive D174 (OCNS non- | Schlumberger | Additive | 0.64%                                  | <p><b>Component 1 (90-100%)</b></p> <p><b>Acute Mammalian Toxicity</b><br/>LD50 Oral (Rat): &gt; 2000 mg/kg</p> <p><b>Chronic Toxicity</b></p>   | Yes          |



| Fluid Name<br>(and Volume) | Product Name                                 | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------|--|---|--------------|
|                            | CHARM rated E)                               |              |          |  | <p>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>           LC50 freshwater fish: 50.6 mg/L<br/>           LC50 marine fish: 457 mg/L<br/>           EC50 freshwater algae: 184.57 mg/L<br/>           EC50 freshwater invertebrates: 49.1 mg/L<br/>           EC50 marine invertebrates: 158 mg/L</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>           Not applicable to inorganic material</p>  |              |
|                            | Antifoam Agent D175A (OCNS CHARM rated Gold) | Schlumberger | Defoamer | 0.33%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Component 1 (10-30%)</i></b><br/>           LD50 Oral (Rat): &gt;24 g/kg<br/>           LD50 Oral (Rat): &gt;17 g/kg<br/>           LD50 Dermal (Rabbit): LD50: &gt;2 g/kg</p> <p><b><i>Component 2 (1-5%)</i></b><br/>           LD50 Acute Oral (Rat): &gt; 10 g/kg<br/>           NOAEL Chronic Oral (Rat): 2500 mg/kg</p> <p><b><i>Component 3 (1-10%)</i></b><br/>           LD50 Oral (Rat): 31 g/kg</p> <p><b><i>Component 4 (&lt;1%)</i></b><br/>           LD50 Oral (Rat): 900 mg/kg<br/>           LD50 Dermal (Rat): 1207 - 1620 mg/kg</p> <p><b><i>Component 5 (1-5%)</i></b><br/>           OSPAR PLONOR Listed<br/>           LD50 Oral (Rat): &gt; 7900 mg/kg<br/>           LD50 Dermal (Rabbit): &gt; 2000 mg/kg<br/>           LC50 Inhalation (Rat) (1hr): &gt; 2.2 mg/L</p> <p><b><i>Component 6 (60-100%)</i></b><br/>           Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--------------|----------|---------|--|---|--------------|
|                            |              |          |         |  | <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b>Component 1 (10-30%)</b><br/> LC50 (96h) Fish: 1,000 mg/L<br/> EC50 (72h) Algae &gt; 1000 mg/L<br/> LC50 (48h) Crustacean: 175 mg/L</p> <p><b>Component 2 (1-5%)</b><br/> LC50 (96h) Fish: &gt;50 mg/L<br/> EC50 (72h) Algae: 72 mg/L<br/> LC50 (48h) Crustacean: &gt; 1000 mg/L</p> <p><b>Component 3 (1-10%)</b><br/> LC50 (96h) Fish: &gt; 1000 mg/L<br/> EC50 (72h) Algae &gt; 1000 mg/L<br/> LC50 (48h) Crustacean: &gt; 1000 mg/L</p> <p><b>Component 4 (&lt;1%)</b><br/> LC50 (96h) Fish: &gt; 4.9 mg/L<br/> EC50 (72h) Algae = 4.1 mg/L<br/> LC50 (48h) Crustacean: &gt; 25 mg/L</p> <p><b>Component 5 (1-5%)</b><br/> OSPAR PLONOR Listed</p> <p><b>Component 6 (60-100%)</b><br/> Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> <p><b><u>Biodegradation</u></b><br/> <b>Component 1 (10-30%)</b><br/> 28 days: &lt;20% (OECD 306)</p> <p><b>Component 2 (1-5%)</b><br/> 28 days: 0% (OECD 306)</p> |              |

| Fluid Name<br>(and Volume) | Product Name                             | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|--------------|----------|--|--|--------------|
|                            |  |              |          |  | <p><b>Component 3 (1-10%)</b><br/>28 days: 6% (OECD 306)</p> <p><b>Component 4 (&lt;1%)</b><br/>28 days: 92% (OECD 306)</p> <p><b>Component 5 (1-5%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 6 (60-100%)</b><br/>Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 (10-30%)</b><br/>Log Pow &gt; 3 (OECD 117)</p> <p><b>Component 2 (1-5%)</b><br/>Log Pow &lt; 0 (OECD 117)</p> <p><b>Component 3 (1-10%)</b><br/>Log Pow = 2.2 (OECD 117)</p> <p><b>Component 4 (&lt;1%)</b><br/>Log Pow = 2.1 (OECD 117)</p> <p><b>Component 5 (1-5%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 6 (60-100%)</b><br/>Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> |              |
|                            | High Temperature Expanding Additive D176 | Schlumberger | Additive | 0.60%                                  | <p><b>Acute Mammalian Toxicity</b><br/> <b>Component 1 (60-100%)</b><br/>LD50 Oral (Rat): 3870 mg/kg</p> <p><b>Crystalline silica (impurity)</b></p>   | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                   | Supplier     | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|--------------|---------|--|--|--------------|
|                            | (OCNS non-CHARM rated E)                       |              |         |  | <p>LD50 Oral (Rat): 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/> <b><i>Crystalline silica (impurity)</i></b><br/> Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.</p> <p>This product does not contain any known or suspected mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Component 1 (60-100%)</i></b><br/> LC50 (96h) Fish: 5,000 mg/L<br/> EC50 (72h) Algae: 440 mg/L<br/> LC50 (48h) Daphnia: 7,600 mg/L</p> <p><b><i>Crystalline silica (impurity)</i></b><br/> OSPAR PLONOR Listed<br/> LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/> EC50 (72h): &gt; 1000 mg/L Algae<br/> LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/> Not applicable to inorganic material</p> |              |
|                            | MUDPUSH II Spacer D182 (OCNS CHARM rated Gold) | Schlumberger | Spacer  | 0.19%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Component 1 (15-40%)</i></b><br/> OSPAR PLONOR Listed</p> <p><b><i>Component 2 (40-70%)</i></b><br/> No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for this component in the section below.</p> <p><b><u>Chronic Toxicity</u></b></p>  | Yes          |

| Fluid Name<br>(and Volume) | Product Name                             | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|--------------|----------|--|--|--------------|
|                            |  |              |          |  | <p>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b>Component 1 (15-40%)</b><br/>           OSPAR PLONOR Listed</p> <p><b>Component 2 (40-70%)</b><br/>           EC50 (72h) = 431 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           EC90 (72h) &gt;100 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           NOEC (72h) = 26 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           LC50 (48h) = 890 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC90 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           NOEC (48h) 250 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC50 (96h) &gt; 431 mg/l (Fish – <i>Scophthalmus maximus</i>)<br/>           NOEC (96h) = 431 mg/l (Fish – <i>Scophthalmus maximus</i>)</p> <p><b><u>Biodegradation</u></b><br/> <b>Component 1 (15-40%)</b><br/>           OSPAR PLONOR Listed</p> <p><b>Component 2 (40-70%)</b><br/>           11% in 54 days (OECD 306)</p> <p><b><u>Bioaccumulation</u></b><br/> <b>Component 1 (15-40%)</b><br/>           OSPAR PLONOR Listed, Molecular weight &gt;700</p> <p><b>Component 2 (40-70%)</b><br/>           Weighted average Log Pow: &lt; 0 (OECD 117)</p> |              |
|                            | Low Temperature Cement Set Enhancer D186 | Schlumberger | Additive | 1.83%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b>Component 1 (10-30%)</b><br/>           OSPAR PLONOR Listed</p> <p><b>Component 2 (1-5%)</b><br/>           LD50 Oral (Rat): 12565 mg/kg</p>   | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p>LD40 Dermal (Rabbit): 11890 mg/kg<br/>LC50 Inhalation (Rat): &gt; 4600 mg/m<sup>3</sup> (4h)</p> <p><b>Component 3 (1-5%)</b><br/>LD50 (Oral) Rat: 4100 mg/kg</p> <p><b>Component 4 (1-5%)</b><br/>LD50 Dermal (Rabbit): 6217 mg/kg<br/>LD50 Oral (Rat): 1945 mg/kg</p> <p><b>Chronic Toxicity</b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/><b>Component 1 (10-30%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 2 (1-5%)</b><br/>LC50 (96h) Fish: &gt;90 mg/L<br/>EC50 (72h) Algae: &gt;15 mg/L<br/>LC50 (48h) Crustacean: 51 mg/L</p> <p><b>Component 3 (1-5%)</b><br/>LC50 (96h) Fish: &gt;1000 mg/L<br/>EC50 (72h) Algae: &gt;5600 mg/L<br/>LC50 (48h) Crustacean: &gt;10,000mg/L</p> <p><b>Component 4 (1-5%)</b><br/>EC50 (72h): 37 mg/L <i>Scenedesmus subspicatus</i> (Algae)<br/>EC50 (48h): 332 mg/L <i>Daphnia magna</i> (Crustacean)<br/>EC50 (96h): 762 mg/L <i>Salmo gairdneri</i> (fish)</p> <p><b>Biodegradation</b><br/><b>Component 1 (10-30%)</b><br/>OSPAR PLONOR Listed</p> |                 |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------|--|---|--------------|
|                            |  |              |          |  | <p><b>Component 2 (1-5%)</b><br/>OECD 306 (28 days): 13%</p> <p><b>Component 3 (1-5%)</b><br/>OECD 306 (28 days): 99.7%</p> <p><b>Component 4 (1-5%)</b><br/>OECD 301A (18 days): 96%</p> <p><b>Bioaccumulation</b><br/><b>Component 1 (10-30%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 2 (1-5%)</b><br/>Log Pow (OECD 117): &lt;0</p> <p><b>Component 3 (1-5%)</b><br/>Log Pow (OECD 117): 0.52</p> <p><b>Component 4 (1-5%)</b><br/>Log Pow: -1.08 (OECD 117)</p>   |              |
|                            | Liquid Trifunctional Additive D194 (OCNS CHARM rated Gold) | Schlumberger | Retarder | 0.45%                                  | <p><b>Acute Mammalian Toxicity</b><br/>No scientific data or research is available for this product or components. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the components in the section below.</p> <p><b>Chronic Toxicity</b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/><b>Component 1 (1-5%)</b><br/>LC50 (96h) Fish: &gt; 1000 mg/L<br/>EC50 (72h) Algae: &gt; 1000 mg/L<br/>LC50 (48h) Crustacean: &gt; 1000 mg/L</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                             | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------|--|---|--------------|
|                            |  |              |          |  | <p><b>Component 2 (5-10%)</b><br/> LC50 (96h) Fish: &gt; 3000 mg/L<br/> EC50 (72h) Algae: &gt; 1000 mg/L<br/> LC50 (48h) Crustacean: &gt; 1000 mg/L</p> <p><b>Biodegradation</b><br/> <b>Component 1 (1-5%)</b><br/> 28 days (OECD306): 67.9%</p> <p><b>Component 2 (5-10%)</b><br/> 28 days (OECD306): 69%</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 (1-5%)</b><br/> Log Pow (OECD117): &lt; 0</p> <p><b>Component 2 (5-10%)</b><br/> Log Pow (OECD117): &lt; -3.8</p> <p>The remaining component (70-100%) is present on REACH Annex IV and is exempt from testing under OSPAR Regulations.</p> |              |
|                            | AccuSET D197<br>(OCNS non-CHARM rated E) | Schlumberger | Retarder | 0.1%                                   | <p><b>Silicic acid, sodium salt 10-30%</b></p> <p><b>Acute Mammalian Toxicity</b><br/> LD50 Oral (Rat) = 1960 mg/kg<br/> LD50 Dermal (Rabbit) &gt; 460 mg/kg</p> <p><b>Chronic Toxicity</b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/> LC50 (96h) Fish = 3185 mg/L<br/> EC50 (96h) Crustacean = 216 mg/L<br/> OSPAR PLONOR Listed</p>   | Yes          |



| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|--------------|------------|--|--|--------------|
|                            |   |              |            |  | <b><u>Biodegradation/Bioaccumulation</u></b><br>Not applicable in inorganic material<br>The remaining substance (60-100%) is present on REACH Annex IV and is exempt from testing under OSPAR Regulations.   |              |
|                            | Low Temperature Dispersant D230 (OCNS CHARM rated Gold) | Schlumberger | Dispersant | 0.69%                                  | <b><u>Acute Mammalian Toxicity</u></b><br>No scientific data or research is available for this product or components. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the components in the section below.<br><br><b><u>Chronic Toxicity</u></b><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3)<br><br><b><u>Aquatic Toxicity</u></b><br><b><i>Component 1 (10-30%)</i></b><br>LC50 (96h) Fish: >1,000 mg/L<br>EC50 (72h) Algae: >1,003 mg/L<br>LC50 (48h) Crustacean: >1,004 mg/L<br><br><b><i>Component 2 (60-100%)</i></b><br>Substance is present on REACH ANNEX IV and is exempt from testing under OSPAR Regulations.<br><br><b><u>Biodegradation</u></b><br><b><i>Component 1 (10-30%)</i></b><br>OECD 306 (28 days): 12%<br><br><b><i>Component 2 (60-100%)</i></b><br>Substance is present on REACH ANNEX IV and is exempt from testing under OSPAR Regulations.<br><br><b><u>Bioaccumulation</u></b><br><b><i>Component 1 (10-30%)</i></b><br>Log Pow: < 0 (OECD 117) | Yes          |

| Fluid Name<br>(and Volume) | Product Name                              | Supplier     | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|--------------|---------|--|--|--------------|
|                            |   |              |         |  | <p>Component does not bioaccumulate (MW &gt; 700)</p> <p><b>Component 2 (60-100%)</b><br/> Substance is present on REACH ANNEX IV and exempted from testing under OSPAR Regulations.</p>   |              |
|                            | Dye D247<br>(OCNS<br>CHARM<br>rated Gold) | Schlumberger | Dye     | 1.07%                                  | <p><b>Acute Mammalian Toxicity</b><br/> <b>Component 1 (10-25%)</b><br/> LD50 Oral (Rat): 4700 mg/kg<br/> LD50 Dermal (Rabbit): 10600 mg/kg</p> <p><b>Component 2 (1-5%)</b><br/> LD50 Oral (Rat): 3310 mg/kg<br/> LD50 Dermal (Rabbit): 1060 mg/kg<br/> LC50 Inhalation (Rat): 11.4 mg/L (4h)</p> <p><b>Chronic Toxicity</b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/> <b>Component 1 (10-25%)</b><br/> LC50 (96h) Fish: 60,000 mg/L<br/> EC50 (72h) Algae: 6500 - 13000 mg/L<br/> LC50 (48h) Daphnia: 46300 mg/L</p> <p><b>Component 2 (1-5%)</b><br/> LC50 (96h) Fish: 79 mg/L<br/> EC50 (72h) Algae: 300.82 mg/L<br/> LC50 (48h) Daphnia: 65 mg/L</p> <p><b>Biodegradation</b><br/> <b>Component 1 (10-25%)</b><br/> OECD 301A (10 days): 90-100%</p> <p><b>Component 2 (1-5%)</b><br/> 28 days (OECD 306): 30%</p> <p><b>Bioaccumulation</b></p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|-----------------|--|---|--------------|
|                            |  |              |                 |  | <b>Component 1 (10-25%)</b><br>Log Pow: < 3 (OECD 117)<br><b>Component 2 (1-5%)</b><br>Log Pow: -0.17 (OECD 117)<br><br>The remaining substance (60-100%) is present on REACH ANNEX IV and exempted from testing under OSPAR Regulations.   |              |
|                            | Mid-Range liquid FLAC D256 (OCNS CHARM rated Silver) | Schlumberger | Shale Inhibitor | 3.21%                                  | <b><u>Acute Mammalian Toxicity</u></b><br>No scientific data or research is available for this product. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for the components in the section below.<br><br><b><u>Chronic Toxicity</u></b><br>Contains a known or suspected carcinogen<br>This product does not contain any known or suspected mutagens.<br>This product does not contain any known or suspected reproductive hazards at concentrations > 0.1%<br><br><b><u>Aquatic Toxicity</u></b><br><b>Component 1 (1-10%)</b><br>LC50 (96h) Fish: 1,497 mg/L<br>EC50 (72h) Algae: 785 mg/L<br>LC50 (48h) Crustacean: >785 mg/L<br><br><b>Component 2 (&lt; 1%)</b><br>LC50 (96h) Fish: > 4.2 mg/L<br>EC50 (72h) Algae: > 0.2 mg/L<br>LC50 (48h) Crustacean: = 4.2 mg/L<br><br><b><u>Biodegradation</u></b><br><b>Component 1 (1-10%)</b><br>OECD 306 (28 days): < 20%<br><br><b>Component 2 (&lt; 1%)</b> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                            | Supplier     | Purpose           | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|-------------------|--|---|--------------|
|                            |   |              |                   |  | <p>OECD 306 (28 days): 0%</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 (1-10%)</b><br/> Log Pow (OECD 117): &lt; 0</p> <p><b>Component 2 (&lt; 1%)</b><br/> Log Pow (OECD 117): 0.4</p> <p>The remaining substance (60-100%) is present on REACH ANNEX IV and is exempt from testing under OSPAR Regulations.</p>  |              |
|                            | GASBLOK LT D500 (OCNS CHARM rated Gold) | Schlumberger | Gas Control Agent | 6.9%                                   | <p><b>Acute Mammalian Toxicity</b><br/> <b>Component 1 (1-55%)</b><br/> No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for this component in the section below.</p> <p><b>Component 2 (&lt;1%)</b><br/> LD50 Oral = 763 mg/kg (Rat)<br/> LD50 Dermal &gt; 2 g/kg (Rat)</p> <p><b>Component 3 (1-5%)</b><br/> LD50 Oral &gt; 40 g/kg (Mouse)<br/> LD50 Oral = 1040 mg/kg (Rabbit)<br/> LD50 Oral = 100 mg/kg (Rat)</p> <p><b>Component 4 (&lt;1%)</b><br/> LD50 Oral = 12750 mg/kg (Mouse)</p> <p><b>Component 5 (60-100%)</b><br/> Naturally occurring – exempted under chemical disclosure guidelines</p> <p><b>Chronic Toxicity</b></p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS<br>Attached |
|----------------------------|--------------|----------|---------|--|---|-----------------|
|                            |              |          |         |  | <p>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/> <b>Component 1 (1-55%)</b><br/>           EC50 (72h) = 300 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           EC90 (72h) = 430 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           NOEC (72h) = 100 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           LC50 (48h) = 302 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC90 (48h) = 363 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           NOEC (48h) = 100 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC50 (96h) &gt; 1000 mg/l (Fish – Sheepshead monnow)<br/>           NOEC (96h) = 300 mg/l (Fish – Sheepshead monnow)</p> <p><b>Component 2 (&lt;1%)</b><br/>           EC50 (72h) = 2.7 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           NOEC (72h) &lt; 1 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           LC50 (48h) = 10 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC90 (48h) = 65 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           NOEC (48h) &lt; 0.1 mg/l (see note) (Crustacean – <i>Acartia tonsa</i>)<br/>           Note: LC10&lt;0.1 mg/l at 48 hours<br/>           LC50 (96h) = 174 mg/l (Fish – Sheepshead monnow)<br/>           NOEC (96h) = 100 mg/l (Fish – Sheepshead monnow)</p> <p><b>Component 3 (1-5%)</b><br/>           EC50 (72h) &gt; 1000 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           EC90 (72h) &gt; 1000 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>           LC50 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC90 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>           LC50 (96h) &gt; 1000 mg/l (Fish – <i>Scophthalmus maximus</i>)<br/>           NOEC (96h) = 1000 mg/l (see note) (Fish – <i>Scophthalmus maximus</i>)<br/>           Note: At a test concentration of 10000 mg/l, no mortality was recorded for the four days test period</p> |                 |

| Fluid Name<br>(and Volume) | Product Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--------------|----------|---------|--|---|--------------|
|                            |              |          |         |  | <p><b>Component 4 (&lt;1%)</b><br/> EC50 (72h) = 104 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> EC90 (72h) = 409 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> NOEC (72h) &lt; 9 mg/l (Algae - <i>Skeletonema costatum</i>)<br/> LC50 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/> LC90 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/> LC50 (96h) &gt; 1000 mg/l (Fish – <i>Scophthalmus maximus</i>)<br/> NOEC (96h) = 1000 mg/l (see note) (Fish – <i>Scophthalmus maximus</i>)<br/> Note: No mortality was recorded in the test.</p> <p><b>Component 5 (60-100%)</b><br/> Naturally occurring – exempted under chemical disclosure guidelines</p> <p><b>Biodegradation</b><br/> <b>Component 1 (1-55%)</b><br/> 28 days: 25.0% (BODIS)</p> <p><b>Component 2 (&lt;1%)</b><br/> 28 days: 80.0% (OECD 306)</p> <p><b>Component 3 (1-5%)</b><br/> 28 days: 0.0% (OECD 306)</p> <p><b>Component 4 (&lt;1%)</b><br/> 28 days: 37.7% (OECD 306)</p> <p><b>Component 5 (60-100%)</b><br/> Naturally occurring – exempted under chemical disclosure guidelines</p> <p><b>Bioaccumulation</b><br/> Product is a polymer with high molecular weight (&gt;700).<br/> It is therefore unlikely that material will bioaccumulate</p> |              |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose              | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------------------|--|---|--------------|
|                            | D600G<br>GASBLOK<br>Gas<br>Migration<br>Control<br>Additive<br>(OCNS<br>CHARM<br>rated Gold) | Schlumberger | Gas Control<br>Agent | 2.76%                                  | <p><b><u>Acute Mammalian Toxicity</u></b></p> <p><b><i>C12-15 alcohol ethoxylated</i></b><br/>LD50 Oral (Rat): 2.5-5 mg/kg<br/>LD50 Dermal (Rabbit): 2500 mg/kg</p> <p><b><i>Sodium dodecyl sulphate</i></b><br/>LD50 Oral (Rat) = 1288mg/kg<br/>LD50 Dermal (Rabbit): 200 mg/kg<br/>LD50 Inhalation (Rat): &gt; 3900 mg/m<sup>3</sup> (1h)</p> <p><b><i>1,4-Dioxane (Impurity)</i></b><br/>LD50 Oral (Rat): 4200-5170 mg/kg<br/>LD50 Dermal (Rabbit): 7600 mg/kg<br/>LD50 Inhalation (Rat): = 46 mg/L (2h)</p> <p><b><i>5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one</i></b><br/>LD50 Oral (Rat): 53 mg/kg<br/>LD50 Inhalation (Rat): 0.11-1.23 mg/L (4h)</p> <p><b><u>Chronic Toxicity</u></b><br/>This product contains a known or suspected carcinogen (IARC: Group 2B). No known mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b></p> <p><b><i>C12-15 alcohol ethoxylated</i></b><br/>LC50 (96h) <i>Scophthalmus maximus</i> (Fish): 3.1 mg/L<br/>EC50 (72h) <i>Skeletonema costatum</i> (Algae): 1 – 3.2 mg/L<br/>LC50 (48h) <i>Acartia tonsa</i> (Crustacean): 0.88 mg/L</p> <p><b><i>Sodium dodecyl sulphate</i></b><br/>LC50 (96h) <i>Cyprinus carpio</i>: 1.31 mg/L<br/>LC50 (96h) <i>Desmodesmus subspicatus</i>: 42 mg/L<br/>EC50 (96h) <i>Pseudokirchneriella subcapitata</i>: 3.59-15.6 mg/L<br/>LC50 (48h) <i>Daphnia magna</i>: 1.8 mg/L</p> <p><b><i>1,4-Dioxane (Impurity)</i></b></p> | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p>LC50 (96h) <i>Pimephales promelas</i>: 9850 mg/L<br/> EC50 (96h) <i>Scenedesmus quadricauda</i>: 5600 mg/L<br/> LC50 (48h) <i>Daphnia magna</i>: 163 mg/L<br/> <b>5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one</b><br/> LC50 (96h) <i>Oncorhynchus mykiss</i>: 1.6 mg/L<br/> EC50 (96h) <i>Pseudokirchneriella subcapitata</i>: 0.03 - 0.13 mg/L<br/> LC50 (48h) <i>Daphnia magna</i>: 0.12 - 0.3 mg/L</p> <p><b><u>Biodegradation</u></b><br/> <b>C12-15 alcohol ethoxylated</b><br/> 72% in 28 days (OECD 301B)</p> <p><b>Sodium dodecyl sulphate</b><br/> 95% in 28 days (OECD 301B)</p> <p><b>1,4-Dioxane (Impurity)</b><br/> &lt;10% in 29 days (OECD 301F)</p> <p><b>5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one</b><br/> OECD 306 (28 days): 14%</p> <p><b><u>Bioaccumulation</u></b><br/> <b>C12-15 alcohol ethoxylated</b><br/> BCF &lt; 5 to 387.8 in Flathead minnows</p> <p><b>Sodium dodecyl sulphate</b><br/> Bioconcentration factor (BCF): 3.9-5.3 <i>Cyprinus carpio</i></p> <p><b>1,4-Dioxane (Impurity)</b><br/> Low Pow: -0.27 to -0.49 (OECD 117)</p> <p><b>5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one</b><br/> BCF: 5 Bluegill sunfish</p> |                 |



| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose           | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|--------------|-------------------|--|--|--------------|
|                            | GASBLOK<br>Gas Migration Control Additive D620 (OCNS CHARM rated Gold) | Schlumberger | Gas control agent | 2.76%                                  | <p><b><u>Acute Mammalian Toxicity</u></b></p> <p><b><i>Propane-1,2-diol</i></b><br/>LD50 Oral (Rat): 20 g/kg<br/>LD50 Dermal (Rabbit): 20,800 mg/kg</p> <p><b><i>2-methyl-2h-isothiazol-3-one</i></b><br/>LD50 Oral (Rat): 232-249 mg/kg<br/>LD50 Dermal (Rabbit): 200 mg/kg<br/>LC50 Inhalation (Rat): 0.11 mg/L (4 hour)</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b></p> <p><b><i>Propane-1,2-diol</i></b><br/>LC50 (96h) <i>Pimephales promelas</i>: 710 mg/L<br/>LC50 (96h) <i>Oncorhynchus mykiss</i>: 51 600 mg/L<br/>EC50 (72h) Algae: 19,000 mg/L<br/>LC50 (48h) Daphnia: &gt;1,000 mg/L</p> <p><b><i>2-methyl-2h-isothiazol-3-one</i></b><br/>LC50 (96h) Fish: 0.07 mg/L<br/>EC50 (72h) Algae: 0.56 mg/L (<i>Scenedesmus vacuolatus</i>)<br/>EC50 (48h) Crustacean: 0.18 mg/L (<i>Daphnia magna</i>)</p> <p><b><u>Biodegradation</u></b></p> <p><b><i>Propane-1,2-diol</i></b><br/>96% in 64 days (OECD 306)</p> <p><b><i>2-methyl-2h-isothiazol-3-one</i></b><br/>0.1 mg/L is 54% in 29 days (OECD TG 301B)</p> <p><b><u>Bioaccumulation</u></b></p> <p><b><i>Propane-1,2-diol</i></b><br/>Log Kow: -1.07<br/>Calculated BCF value of 0.09</p> <p><b><i>2-methyl-2h-isothiazol-3-one</i></b></p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|---|--------------|---------|--|---|--------------|
|                            |   |              |         |  | BCF: 2.3 L/kg (Exp conc. 0.12 mg/L <i>Lepomis macrochirus</i> )   |              |
|                            | Cement<br>Class G<br>D907<br>(OCNS non-CHARM rated E) | Schlumberger | Cement  | 16.90%                                 | <p><b><u>Acute Mammalian Toxicity</u></b></p> <p><b><i>Component 1 (&lt;97%)</i></b><br/>LD50, Rat (oral): &gt;1,848 mg/kg</p> <p><b><i>Component 2 (3-8%)</i></b><br/>LD50, Rat (oral): &gt;5,000 mg/kg</p> <p><b><i>Component 3 (0-5%)</i></b><br/>Natural product – exempted under chemical disclosure guidelines</p> <p><b><i>Component 4 (&lt;20 ppm)</i></b><br/>LD50, Rat (oral): &gt;5,000 mg/kg</p> <p><b><i>Component 5 (&lt;1%)</i></b><br/>LD 50, Rat (oral): = 500 mg/kg<br/>Natural product – exempted under chemical disclosure guidelines.</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b></p> <p><b><i>Component 1 (&lt;97%)</i></b><br/>OSPAR PLONOR Listed</p> <p><b><i>Component 2 (3-8%)</i></b><br/>OSPAR PLONOR Listed</p> <p><b><i>Component 3 (0-5%)</i></b><br/>Natural product – exempted under chemical disclosure guidelines</p> <p><b><i>Component 4 (&lt;20 ppm)</i></b></p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name   | Supplier     | Purpose     | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|-------------|--|---|--------------|
|                            |  |              |             |  | <p>No scientific data or research is available for this component.</p> <p><b>Component 5 (&lt;1%)</b><br/>Naturally occurring – exempted under chemical disclosure guidelines</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material and naturally occurring in soil</p>  |              |
|                            | Calcium Chloride S1<br>(OCNS non-CHARM rated<br>E/OSPAR PLONOR Listed) | Schlumberger | Accelerator | 22.41%                                 | <p><b>Whole Product Data</b></p> <p><b><u>Acute Mammalian Toxicity</u></b><br/>LD50 Oral (Rat): = 1000 mg/kg<br/>LD50 Dermal (Rabbit) &gt; 5000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Toxicity</u></b><br/>LC50 (96h) Fish: 10650 mg/L<br/>EC50 (72h) Algae: No information available<br/>EC50 (48h) Invertebrates: 2400 mg/L<br/>OSPAR PLONOR Listed</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> | Yes          |
| Total                      |  |              |             | ~100                                   |   |              |

### C. CHEMICAL LIST

| Chemicals Within Produced Water Reinjection System   | CAS Number   | Mass Fraction (%) |
|--|--------------|-------------------|
| Portland Cement Clinker  | 65997-15-1   | ~ 71              |
| Quartz, Crystalline silica   | 14808-60-7   | ~ 13              |
| Sulfuric acid, calcium salt  | 7778-18-9    | ~4                |
| Magnesium oxide  | 1309-48-4    | ~2                |
| Calcium magnesium oxide  | 37247-91-9   | ~2                |
| Fumed Silica   | 69012-64-2   | ~1                |
| Silicic acid, sodium salt  | 1344-09-8    | <1                |
| Styrene butadiene copolymer  | 9003-55-8    | <1                |
| Water (Including Mix Water)  | 7732-18-5    | <1                |
| Calcium oxide  | 1305-78-8    | <1                |
| 2-Propenamide, N-(hydroxymethyl)-,polymer with 1,3-Butadiene and ethylbenzene  | 26591-53-7   | <1                |
| Sodium lignosulfonate  | 8061-51-6    | <1                |
| Calcium nitrite  | 13780-06-8   | <1                |
| Calcium nitrate  | 10124-37-5   | <1                |
| 2-Propenoic acid, polymer with 2-methyl-2-[(1-oxo-2-propenyl)amino]-1-propanesulfonic acid and 2-propenamide, ammonium salt. | 1857271-55-6 | <1                |
| Vinyl acetal polymers, glutarals   | 110532-37-1  | <1                |
| Polyvinylpyrrolidone   | 9003-39-8    | <1                |
| Calcium chloride   | 10043-52-4   | <1                |
| Propane-1,2-diol   | 57-55-6      | <1                |
| Ethylene Glycol  | 107-21-1     | <1                |
| Sodium chloride (impurity)   | 7647-14-5    | <1                |
| Calcium lignosulfonate   | 8061-52-7    | <1                |
| Melamine, formaldehyde, sodium bisulfite polymer   | 64787-97-9   | <1                |

| Chemicals Within Produced Water Reinjection System  | CAS Number  | Mass Fraction (%) |
|---|-------------|-------------------|
| Sodium sulfate  | 7757-82-6   | <0.1              |
| 2,2' -oxydiethanol  | 111-46-6    | <0.1              |
| Sulfurous acid, monosodium salt, polymer  | 40104-76-5  | <0.1              |
| Polypropylene glycol  | 25322-69-4  | <0.1              |
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde                              | 9008-63-3   | <0.1              |
| Methacrylic acid-methoxy polyethylene glycol copolymer  | 381164-40-5 | <0.1              |
| Dimethyl siloxanes and silicones  | 63148-62-9  | <0.1              |
| Alcohols, c10-12, ethoxylated propoxylated  | 68154-97-2  | <0.1              |
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol                                      | 4719-04-4   | <0.1              |
| Polysaccharide biopolymer   | 72121-88-1  | <0.1              |
| Hexacol tartrazine supra 1971green dye  | 1934-21-0   | <0.1              |
| Glass fibers  | 60676-86-0  | <0.1              |
| Poly(oxy- 1,2-ethanediyl), .alpha.-sulfo-.omega.-hydroxy-, c12-c14-alkyl ethers, sodium salts | 68891-38-3  | <0.1              |
| Sodium pentaborate  | 12007-92-0  | <0.1              |
| [9-(2-carboxyphenyl)-6-(diethylamino)xanthen-3-ylidene]-diethylazanium acetate                | 64381-99-3  | <0.1              |
| Acetic acid   | 64-19-7     | <0.1              |
| Calcium Bromide   | 7789-41-5   | <0.1              |
| 2,2'-Methyliminodiethanol   | 105-59-9    | <0.1              |
| Sodium gluconate  | 527-07-1    | <0.1              |
| C12-15 alcohol ethoxylated  | 68131-39-5  | <0.1              |
| Calcium glucoheptonate  | 17140-60-2  | <0.1              |
| Isotridecanol, ethoxylated  | 69011-36-5  | <0.1              |
| Calcium dihydroxide (impurity)  | 1305-62-0   | <0.1              |
| Alkyl glyceryl ether sulfonate  | 246867-88-9 | <0.1              |
| Sorbitan stearate   | 1338-41-6   | <0.1              |
| Alcohols, tallow, propoxylated  | 70955-07-6  | <0.1              |

| Chemicals Within Produced Water Reinjection System                         | CAS Number | Mass Fraction (%) |
|--|------------|-------------------|
| 2-methylpropan-2-ol  | 75-65-0    | <0.1              |
| Tartaric acid  | 87-69-4    | <0.1              |
| Potassium chloride   | 7447-40-7  | <0.1              |
| Sodium poly[(naphthaleneformaldehyde)sulfonate]                            | 9084-06-4  | <0.01             |
| Oxirane, methyl-, polymer with oxirane, octadecanoate                      | 51668-30-5 | <0.01             |
| Polyoxyethylene (40) stearic acid (monoester)                              | 9004-99-3  | <0.01             |
| Methanol (impurity)  | 67-56-1    | <0.01             |
| Sodium hydroxide   | 1310-73-2  | <0.01             |
| Pentasodium EDTMP  | 7651-99-2  | <0.01             |
| Silicon Dioxide  | 7631-86-9  | <0.01             |
| Polyethylene glycol monomethyl ether                                       | 9004-74-4  | <0.01             |
| Poly(oxy-1,2-ethanediyl),a-hydro-w-hydroxy- Ethane-1,2-diol, ethoxylated   | 25322-68-3 | <0.01             |
| Sodium dodecyl sulphate  | 151-21-3   | <0.01             |
| 1,4-Dioxane (Impurity)   | 123-91-1   | <0.01             |
| Formaldehyde (impurity)  | 50-00-0    | <0.001            |
| Solid Unsaturated Polyester Resin  | 39382-21-3 | <0.001            |
| 1,2-benzisothiazolin-3-one   | 2634-33-5  | <0.001            |
| Reaction products of paraformaldehyde and 2-hydroxypropylamine (ratio 3:2) | 66204-44-2 | <0.001            |
| 2-Propenamid (impurity)  | 79-06-1    | <0.001            |
| Sorbic acid  | 110-44-1   | <0.001            |
| 2-methyl-2h-isothiazol-3-one   | 2682-20-4  | <0.001            |
| 2-bromo-2-nitropropane-1,3-diol  | 52-51-7    | <0.001            |
| Phosphonic acid (impurity)   | 13598-36-2 | <0.001            |
| Phosphoric acid (impurity)   | 7664-38-2  | <0.001            |
| 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one   | 55965-84-9 | <0.001            |
| Styrene  | 100-42-5   | <0.001            |
| 1,3-Butadiene  | 106-99-0   | <0.001            |

| Chemicals Within Produced Water Reinjection System   | CAS Number             | Mass Fraction (%) |
|--|------------------------|-------------------|
| Benzenesulfonic acid, 2,2'-[(9,10-dihydro-9,10-dioxo-1,4-anthracenediyl)diimino]bis[5-methyl-, disodium salt (acid Green 25) | 4403-90-1              | <0.00001          |
| acid yellow 34   | 6359-90-6              | <0.00001          |
|  | <b>Total of System</b> | <b>~100%</b>      |

## 7. SPACER FLUID SYSTEM

### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA                                |
| PROJECT / WELL:         | Harriet Joint Venture Plug & Abandonment |
| SYSTEM:                 | Well Abandonment – Spacer Fluid          |
| TOTAL VOLUME OF SYSTEM: | 318 m <sup>3</sup>                       |

### B. PRODUCT DETAILS

| Fluid Name<br>(and Volume)            | Product Name                               | Supplier        | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|---------------------------------------|--|-----------------|------------|--|---|--------------|
| Spacer Fluid<br>(318 m <sup>3</sup> ) | Water                                      | Locally sourced | Base fluid | 64.57%                                 | N/A natural product – exempted under chemical disclosure guidelines.  | N/A          |
|                                       | Bentonite<br>(OCNS non-CHARM rated OCNS E) | MI-SWACO        | Extender   | 0.43%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b><i>Crystalline silica impurity (1-5%)</i></b><br/> Rat (oral) LD50 :500 mg/kg</p> <p><b><i>Bentonite (60-100%)</i></b><br/> Rat (oral) LD50 &gt; 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/> Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.<br/> Does not contain any known mutagens or reproductive hazards.</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b><i>Crystalline silica impurity (1-5%)</i></b><br/> LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/> EC50 (72h): &gt; 1000 mg/L Algae<br/> LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> <p><b><i>Bentonite (60-100%)</i></b><br/> OSPAR PLONOR Listed</p> | Yes          |



| Fluid Name<br>(and Volume) | Product Name   | Supplier | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|--|----------|-----------------|--|--|--------------|
|                            |  |          |                 |  | <p><b><u>Biodegradation / Bioaccumulation</u></b><br/>Not applicable to inorganic material</p> <p>There is no data available for the whole product, only data for the hazardous ingredient. The remainder of the product contains non-hazardous ingredients which are OSPAR PLONOR Listed and a naturally occurring mineral.</p> <p>Natural occurring material is exempted under the chemical disclosure guidelines.</p>   |              |
|                            | M-I BAR*<br>(All Grades)<br>(OCNS non-CHARM rated E) | MI SWACO | Weighting Agent | 21.74%                                 | <p><b><u>Acute Mammalian Toxicity</u></b><br/><b><i>Barite</i></b><br/>LD50 Oral (Rat) &gt; 15000 mg/kg</p> <p><b><i>Crystalline silica (impurity)</i></b><br/>LD50 Oral (Rat): 500 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/><b><i>Barite</i></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><i>Crystalline silica (impurity)</i></b><br/>Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.</p> <p><b><u>Aquatic Toxicity</u></b><br/><b><i>Barite</i></b><br/>OSPAR PLONOR Listed</p> <p><b><i>Crystalline silica (impurity)</i></b><br/>OSPAR PLONOR Listed<br/>LC50 (96h): &gt; 10 000 mg/L <i>Danio rerio</i> (Zebra fish)<br/>EC50 (72h): &gt; 1000 mg/L Algae<br/>LC50 (24h): &gt; 10 000 mg/L <i>Daphnia magna</i> (water flea)</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                 | Supplier     | Purpose  | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------|--|---|--------------|
|                            |  |              |          |  | <u><b>Biodegradation/Bioaccumulation</b></u><br>Not applicable to inorganic material<br>OSPAR PLONOR Listed for the ingredients, barite, quartz crystalline silica  |              |
|                            | Antifoam Agent D47 (ONCS CHARM rated Silver) | Schlumberger | Defoamer | 0.95%                                  | <b><i>Whole Product Data</i></b><br><br><u><b>Acute Mammalian Toxicity</b></u><br>LD50, Rat > 15,000 mg/kg<br><br><u><b>Chronic Toxicity</b></u><br>No known carcinogens (Cat 1 & 2), mutagens (Cat 1 & 2) or reproductive hazards (Cat 1, 2 & 3).<br><br><u><b>Aquatic Toxicity</b></u><br>EC50 (72h) Algae: 3.2 mg/L<br>LC50 (48hr) Crustacean: 0.25 mg/L<br><br><u><b>Biodegradation</b></u><br>1% in 28 days (OECD 306)<br><br><u><b>Bioaccumulation</b></u><br>Log Pow: 4.8 (OECD 117) | Yes          |
|                            | Antifoam Agent D175A (OCNS CHARM rated Gold) | Schlumberger | Defoamer | 0.24%                                  | <u><b>Acute Mammalian Toxicity</b></u><br><b><i>Component 1 (10-30%)</i></b><br>LD50 Oral (Rat): >24 g/kg<br>LD50 Oral (Rat): >17 g/kg<br>LD50 Dermal (Rabbit): LD50: >2 g/kg<br><br><b><i>Component 2 (1-5%)</i></b><br>LD50 Acute Oral (Rat): > 10 g/kg<br>NOAEL Chronic Oral (Rat): 2500 mg/kg<br><br><b><i>Component 3 (1-10%)</i></b><br>LD50 Oral (Rat): 31 g/kg<br><br><b><i>Component 4 (&lt;1%)</i></b><br>LD50 Oral (Rat): 900 mg/kg  | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p>LD50 Dermal (Rat): 1207 - 1620 mg/kg</p> <p><b>Component 5 (1-5%)</b><br/>           OSPAR PLONOR Listed<br/>           LD50 Oral (Rat): &gt; 7900 mg/kg<br/>           LD50 Dermal (Rabbit): &gt; 2000 mg/kg<br/>           LC50 Inhalation (Rat) (1hr): &gt; 2.2 mg/L</p> <p><b>Component 6 (60-100%)</b><br/>           Naturally occurring – exempted under chemical disclosure guidelines.</p> <p><b>Chronic Toxicity</b><br/>           No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/> <b>Component 1 (10-30%)</b><br/>           LC50 (96h) Fish: 1,000 mg/L<br/>           EC50 (72h) Algae &gt; 1000 mg/L<br/>           LC50 (48h) Crustacean: 175 mg/L</p> <p><b>Component 2 (1-5%)</b><br/>           LC50 (96h) Fish: &gt;50 mg/L<br/>           EC50 (72h) Algae: 72 mg/L<br/>           LC50 (48h) Crustacean: &gt; 1000 mg/L</p> <p><b>Component 3 (1-10%)</b><br/>           LC50 (96h) Fish: &gt; 1000 mg/L<br/>           EC50 (72h) Algae &gt; 1000 mg/L<br/>           LC50 (48h) Crustacean: &gt; 1000 mg/L</p> <p><b>Component 4 (&lt;1%)</b><br/>           LC50 (96h) Fish: &gt; 4.9 mg/L<br/>           EC50 (72h) Algae = 4.1 mg/L<br/>           LC50 (48h) Crustacean: &gt; 25 mg/L</p> <p><b>Component 5 (1-5%)</b><br/>           OSPAR PLONOR Listed</p> |                 |

| Fluid Name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p><b>Component 6 (60-100%)</b><br/>Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> <p><b>Biodegradation</b><br/> <b>Component 1 (10-30%)</b><br/>28 days: &lt;20% (OECD 306)</p> <p><b>Component 2 (1-5%)</b><br/>28 days: 0% (OECD 306)</p> <p><b>Component 3 (1-10%)</b><br/>28 days: 6% (OECD 306)</p> <p><b>Component 4 (&lt;1%)</b><br/>28 days: 92% (OECD 306)</p> <p><b>Component 5 (1-5%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 6 (60-100%)</b><br/>Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p> <p><b>Bioaccumulation</b><br/> <b>Component 1 (10-30%)</b><br/>Log Pow &gt; 3 (OECD 117), Molecular weight &gt;700</p> <p><b>Component 2 (1-5%)</b><br/>Log Pow &lt; 0 (OECD 117), Molecular weight &lt;700</p> <p><b>Component 3 (1-10%)</b><br/>Log Pow = 2.2 (OECD 117), Molecular weight &lt;700</p> <p><b>Component 4 (&lt;1%)</b><br/>Log Pow = 2.1 (OECD 117), Molecular weight &lt;700</p> <p><b>Component 5 (1-5%)</b></p> |                 |

| Fluid Name<br>(and Volume) | Product Name                                   | Supplier     | Purpose | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|---------|--|---|--------------|
|                            |  |              |         |  | <p>OSPAR PLONOR Listed</p> <p><b>Component 6 (60-100%)</b><br/>Substance is present on the REACH Annex IV list and is exempt from testing under OSPAR Regulations.</p>  |              |
|                            | MUDPUSH II Spacer D182 (OCNS CHARM rated Gold) | Schlumberger | Spacer  | 0.86%                                  | <p><b>Acute Mammalian Toxicity</b><br/><b>Component 1 (15-40%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 2 (40-70%)</b><br/>No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for this component in the section below.</p> <p><b>Chronic Toxicity</b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/><b>Component 1 (15-40%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 2 (40-70%)</b><br/>EC50 (72h) = 431 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>EC90 (72h) &gt;100 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>NOEC (72h) = 26 mg/l (Algae - <i>Skeletonema costatum</i>)<br/>LC50 (48h) = 890 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>LC90 (48h) &gt; 1000 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>NOEC (48h) 250 mg/l (Crustacean – <i>Acartia tonsa</i>)<br/>LC50 (96h) &gt; 431 mg/l (Fish – <i>Scophthalmus maximus</i>)<br/>NOEC (96h) = 431 mg/l (Fish – <i>Scophthalmus maximus</i>)</p> <p><b>Biodegradation</b><br/><b>Component 1 (15-40%)</b><br/>OSPAR PLONOR Listed</p> | Yes          |

| Fluid Name<br>(and Volume) | Product Name                                 | Supplier     | Purpose         | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|-----------------|--|---|--------------|
|                            |  |              |                 |  | <p><b>Component 2 (40-70%)</b><br/>11% in 54 days (OECD 306)</p> <p><b>Bioaccumulation</b><br/><b>Component 1 (15-40%)</b><br/>OSPAR PLONOR Listed, Molecular weight &gt;700</p> <p><b>Component 2 (40-70%)</b><br/>Weighted average Log Pow: &lt; 0 (OECD 117)</p>   |              |
|                            | Spacer Additive D259 (OCNS CHARM rated GOLD) | Schlumberger | Spacer Additive | 0.33%                                  | <p><b>Whole Product Data</b></p> <p><b>Acute Mammalian Toxicity</b><br/>No scientific data or research is available for this product. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for this product in the section below.</p> <p><b>Chronic Toxicity</b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b>Aquatic Toxicity</b><br/>LC50 (96hr) Fish: &gt; 1000 mg/L<br/>EC50 (72h) Algae: &gt; 1000 mg/L<br/>LC50 (48hr) Crustacean: &gt; 1001 mg/L</p> <p><b>Biodegradation</b><br/>28days (OECD301B): &lt; 20%</p> <p><b>Bioaccumulation</b><br/>The material is insoluble in water; therefore, this test cannot be performed. Furthermore, its MW is &gt;700 that indicates a low potential to bioaccumulate.</p> | Yes          |

| Fluid Name<br>(and<br>Volume) | Product<br>Name   | Supplier     | Purpose    | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS<br>Attached |
|-------------------------------|---|--------------|------------|--|---|-----------------|
|                               | EZEFLO<br>F103<br>Surfactant<br>(OCNS<br>CHARM<br>rated Gold) | Schlumberger | Surfactant | 4.76%                                  | <p><b><u>Acute Toxicity</u></b></p> <p><b><i>Propan-2-ol</i></b><br/> LD50 Oral (Rat): 1870 mg/kg<br/> LD50 Dermal (Rabbit): 4059 mg/kg<br/> LC50 Inhalation (4hr) Rat: 72600 mg/m<sup>3</sup></p> <p><b><i>2-butoxyethanol</i></b><br/> LD50 Oral (Guinea Pig): 1200 mg/kg<br/> LD50 Dermal (Rat): &gt; 2000 mg/kg<br/> LC50 Inhalation (Rabbit): 400 ppm</p> <p><b><i>Ethoxylated C11 Alcohol</i></b><br/> LD50 Oral (Rat): 1400 mg/kg<br/> LD50 Dermal (Rabbit): &gt; 2000 mg/kg</p> <p><b><i>Ethoxylated C12-15 Alcohol</i></b><br/> LD50 Oral (Rat): 1200 mg/kg<br/> LD50 Dermal (Rat): &gt; 5000 mg/kg</p> <p><b><i>Undecanol</i></b><br/> LD50 Oral (Rat): &gt; 3000 mg/kg<br/> LD50 Dermal (Rabbit): &gt; 5000 mg/kg</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3)</p> <p><b><u>Aquatic Ecotoxicity</u></b></p> <p><b><i>Propan-2-ol</i></b><br/> LC50(96hr) Fish: 11130 mg/L<br/> EC50 (72hr) Algae: &gt;1,000 mg/L<br/> EC50 (48hr) <i>Daphnia magna</i>: 13299 mg/L</p> <p><b><i>2-butoxyethanol</i></b><br/> LC50(4d) Fish: 2137 mg/L (Fathead minnow)<br/> EC50 (7d) Algae: &gt; 1000 mg/L (<i>Selenastrum capricornutum</i>)<br/> EC50 (48h) <i>Daphnia magna</i>: 835 mg/L</p> <p><b><i>Ethoxylated C11 Alcohol</i></b></p> | Yes             |

| Fluid Name<br>(and Volume) | Product Name  | Supplier     | Purpose        | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information   | SDS Attached |
|----------------------------|---|--------------|----------------|--|--|--------------|
|                            |   |              |                |  | <p>LC50 (96h): 3.2 mg/L Fish<br/>EC50: &lt; 10 mg/L Daphnia<br/>ErC50: &lt; 10 mg/L Algae</p> <p><b><i>Ethoxylated C12-15 Alcohol</i></b><br/>LC50 (96h): 8.5 mg/L<br/>EC50 Daphnia magna (Water flea): 5.3 mg/L<br/>EC50: 200 – 8700 mg/L Algae</p> <p><b><i>Undecanol</i></b><br/>LC50 (96h): 1.04 mg/L <i>Pimephales promelas</i> (Fathead minnow)<br/>No scientific data for crustacean or algae</p> <p><b><i>Whole Product Data</i></b><br/><b><u>Biodegradation:</u></b><br/>OECD306: 93.9% in 28 days</p> <p><b><u>Bioaccumulation:</u></b><br/>Log Pow &gt; 3 (OECD 117)</p> |              |
|                            | Potassium Chloride M117 (OCNS non-CHARM rated OCNS E/OSPAR PLONOR Listed) | Schlumberger | Mutual Solvent | 1.36%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/>Not considered to be toxic to animals. Used as an animal feed supplement</p> <p><b><u>Chronic Toxicity</u></b><br/>No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/>OSPAR PLONOR Listed<br/><i>Ictalurus punctulus</i> LC50 (48h): 720 mg/L<br/><i>Daphnia magna</i> LC50 (48h): 177 mg/L<br/><i>Nitzschia linearis</i> EC50 (120h): 1337 mg/L<br/><i>Daphnia magna</i> LOEC 101: mg/L</p>   | Yes          |



| Fluid Name<br>(and Volume) | Product Name                               | Supplier     | Purpose        | Product in System<br>(Concentration %) | Toxicity & Ecotoxicity Information  | SDS Attached |
|----------------------------|--|--------------|----------------|--|---|--------------|
|                            |  |              |                |  | <p>All the studies compiled on the acute and chronic aquatic toxicity were &gt; 100 mg/L. Thus, it is concluded that KCl is not hazardous to freshwater organisms. Taking into considerations the background concentrations of KCl in seawater (380 mg/l K<sup>+</sup> and 19,000 mg/l Cl<sup>-</sup>), it is concluded that there is no reason for further investigations of KCl on marine species. The low concern for the environment is supported by the absence of a bioaccumulation potential for the substance.</p> <p><b><u>Biodegradation/Bioaccumulation</u></b><br/>Not applicable to inorganic material</p>   |              |
|                            | Mutual Solvent U66 (OCNS CHARM rated Gold) | Schlumberger | Mutual Solvent | 4.76%                                  | <p><b><u>Component 1 60-100%</u></b><br/> <b><u>Acute Toxicity</u></b><br/> LD50 Oral (Guinea Pig): = 1200 mg/kg<br/> LD50 Dermal (Rat) &gt; 2000 mg/kg<br/> LC50 Inhalation (Rabbit) = 400 ppm</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Ecotoxicity:</u></b><br/> LC50(96hr) Fish: &gt; 770 mg/L<br/> LC50 (96hr):1490 mg/L <i>Lepomis macrochirus</i><br/> EC50 (72hr) Algae: &gt; 1000 mg/L<br/> LC50 (48hr) Crustacean: 531 mg/L<br/> LC50: 1698-1940 mg/L <i>Daphnia magna</i><br/> EC50: 1720 mg/L Water Flea</p> <p><b><u>Biodegradation</u></b><br/> OECD306: 84.0 % in 28 days</p> <p><b><u>Bioaccumulation</u></b><br/> Log Pow (OECD117): 0.81</p> | Yes          |
| Total                      |  |              |                | ~100                                   |   |              |



### C. CHEMICAL LIST

| Chemicals Within Produced Water Reinjection System  | CAS Number | Mass Fraction (%) |
|---|------------|-------------------|
| Mix Water (supplied by client)  | 7732-18-5  | ~ 37              |
| Barium sulfate  | 7727-43-7  | ~ 54              |
| 2-butoxyethanol   | 111-76-2   | ~ 14              |
| Crystalline silica (impurity)   | 14808-60-7 | ~ 13              |
| Potassium Chloride  | 7447-40-7  | ~ 9               |
| Bentonite   | 1302-78-9  | ~ 4               |
| Polypropylene glycol  | 25322-69-4 | ~ 3               |
| Sulfurous acid, monosodium salt, polymer  | 40104-76-5 | ~ 3               |
| Propan-2-ol   | 67-63-0    | ~ 2               |
| Ethoxylated C11 Alcohol   | 34398-01-1 | ~ 2               |
| 1,4-Dioxane-2,5-dione, 3,6- dimethyl-, (3Rcis)-, polymer with (3S-cis)-3,6-dimethyl-                    | 9051-89-2  | ~ 1               |
| Polysaccharide biopolymer   | 72121-88-1 | ~ 1               |
| Ethoxylated Alcohol   | 68131-39-5 | ~ 1               |
| Undecanol   | 112-42-5   | < 1               |
| Dimethyl siloxanes and silicones  | 63148-62-9 | < 1               |
| Sorbitan stearate   | 1338-41-6  | < 0.1             |
| Polyoxyethylene (40) stearic acid (monoester)   | 9004-99-3  | < 0.1             |
| Silicon Dioxide   | 7631-86-9  | < 0.1             |
| Acetic acid, potassium salt   | 127-08-2   | < 0.01            |
| Oxirane, 2-methyl-, polymer with oxirane, mono-(9Z)-9-octadecenoate, methyl ether                       | 72283-36-4 | < 0.01            |
| Reaction products of paraformaldehyde and 2-hydroxypropylamine (ratio 3:2)                              | 66204-44-2 | < 0.01            |
| Acetic acid (impurity)  | 64-19-7    | < 0.01            |
| Phosphoric acid, dodecyl ester, potassium salt  | 39322-78-6 | < 0.001           |
| 1,4-Benzenedicarboxylic acid, polymer with 1,2-ethanediol and a-hydro-w-hydroxypoly(oxy-1,2-ethanediyl) | 9016-88-0  | < 0.001           |

| Chemicals Within Produced Water Reinjection System | CAS Number      | Mass Fraction (%) |
|--|-----------------|-------------------|
| Sorbic acid  | 110-44-1        | < 0.001           |
| C12 fatty alcohol                                  | 112-53-8        | < 0.0001          |
| C13 alcohol ethoxylate                             | 9043-30-5       | < 0.0001          |
| 2-bromo-2-nitropropane-1,3-diol                    | 52-51-7         | < 0.00001         |
|  | Total of System | ~100%             |

## 8. CONTINGENCY CHEMICALS – PRE-RIG WELL FLUSHING

### A. SYSTEM DETAILS

|                         |  |
|-------------------------|--|
| OPERATOR:               | Santos WA  |
| PROJECT / WELL:         | Harriet Joint Venture P&A  |
| SYSTEM:                 | Well Abandonment – Contingency Chemicals for pre-rig well flushing |
| TOTAL VOLUME OF SYSTEM: | 5000 m <sup>3</sup>  |

### B. PRODUCT LIST

| Fluid name<br>(and<br>Volume)  | Product<br>Name | Supplier        | Purpose                | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|--|-----------------|-----------------|------------------------|--|--|-----------------|
| Contingency<br>Chemicals –<br>pre-rig well<br>flushing<br>activities<br>(5000 m <sup>3</sup> ) | Water           | Locally sourced | Base Fluid             | 99.90%                                 | Not applicable as naturally occurring – exempted from chemical disclosure guidelines.  | N/A             |
|  | CRW24830        | Baker Hughes    | Corrosive<br>Inhibitor | 0.05%                                  | <p><b>Acute Mammalian Toxicity</b></p> <p><b>Component 1 (30-60%)</b><br/>Natural product – exempted under chemical disclosure guidelines.</p> <p><b>Component 2 (10-30%)</b><br/>No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. However, aquatic toxicity data is available for this component in the section below.</p> <p><b>Component 3 (10-30%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 4 (5-10%)</b><br/>Specie Rat (Oral) LD50: 4500 mg/kg</p> <p><b>Component 5 (5-10%)</b><br/>Specie Rat (Oral): 426 mg/kg</p> | Yes             |

| Fluid name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p><b>Component 6 (5-10%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 7 (&lt;1%)</b><br/>Specie: Rat (Oral) LD50: 6720 mg/kg</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b>Component 1 (30-60%)</b><br/> Natural product – exempted under chemical disclosure guidelines.</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b>Component 2 (10-30%)</b><br/> Specie: <i>Skeletonema costatum</i> (marine algae) EC50 (72h): 0.15 mg/L<br/> Specie: <i>Acartia tonsa</i> (marine invertebrate) LC50 (48h): 1.1 mg/L<br/> Specie: <i>Cyprinodon variegatus</i> (marine fish) LC50 (96h): &gt;0.1 mg/L</p> <p><b>Component 3 (10-30%)</b><br/> OSPAR PLONOR Listed</p> <p><b>Component 4 (5-10%)</b><br/> Specie: <i>Skeletonema costatum</i> (marine algae) EC50 (48h): 500 – 5000 mg/L<br/> Specie: <i>Daphnia magna</i> (freshwater invertebrate) LC50 (48h): 2850 mg/L<br/> Specie: <i>Lepomis macrochirus</i> (freshwater fish) LC50 (96h): 1300 mg/L</p> |                 |

| Fluid name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p><b>Component 5 (5-10%)</b><br/> Specie: Algae: No scientific data or research is available for this component at this trophic level. An estimate value could not be generated as no suitable read-across data could be sourced in the literature. Aquatic toxicity data is available for fish and crustacea.</p> <p>Specie: <i>Daphnia magna</i> (freshwater invertebrate) LC50 (48h): 0.08 mg/L<br/> Specie: <i>Pimephales promelas</i> (freshwater fish) LC50 (96h): 0.66 mg/L</p> <p><b>Component 6 (5-10%)</b><br/> OSPAR PLONOR Listed</p> <p><b>Component 7 (&lt;1%)</b><br/> Specie: <i>Chlorella</i> sp. (freshwater algae) EC50 (48h): &gt;10 mg/L<br/> Specie: <i>Daphnia pulex</i> (freshwater invertebrate) LC50 (48h): 337 mg/L<br/> Specie: <i>Scophthalmus maximus</i> (marine fish) LC50 (96h): 423 mg/L</p> <p><b><u>Biodegradation</u></b></p> <p><b><u>Readily Biodegradability Test</u></b></p> <p><b>Component 1 (30-60%)</b><br/> Natural product – exempted under chemical disclosure guidelines.</p> <p><b>Component 2 (10-30%)</b><br/> Method: OECD 306 Biodegradability 28 days: 39%</p> |                 |

| Fluid name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information  | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|---|-----------------|
|                               |                 |          |         |  | <p><b>Component 3 (10-30%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 4 (5-10%)</b><br/>Method: OECD 306 Biodegradability 28 days: 75%</p> <p><b>Component 5 (5-10%)</b><br/>No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature.</p> <p><b>Component 6 (5-10%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 7 (&lt;1%)</b><br/>No scientific data or research is available for this component. An estimate value could not be generated as no suitable read-across data could be sourced in the literature.</p> <p><b>Bioaccumulation</b><br/><b>Component 1 (30-60%)</b><br/>Natural product – exempted under chemical disclosure guidelines.</p> <p><b>Component 2 (10-30%)</b><br/>Not considered bioaccumulative, molecular weight (MW) &gt; 700</p> <p><b>Component 3 (10-30%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 4 (5-10%)</b><br/>Method: OECD 177 (HPLC) Log (Pow): 0.2</p> |                 |



| Fluid name<br>(and<br>Volume) | Product<br>Name | Supplier     | Purpose | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information  | SDS<br>Attached |
|-------------------------------|-----------------|--------------|---------|--|---|-----------------|
|                               |                 |              |         |  | <p><b>Component 5 (5-10%)</b><br/>Not applicable to surfactants with surface active properties.</p> <p><b>Component 6 (5-10%)</b><br/>OSPAR PLONOR Listed</p> <p><b>Component 7 (&lt;1%)</b><br/>Method" OECD 117 (HPLC) Log (Pow): 3.35</p>  |                 |
|                               | XC24380         | Baker Hughes | Biocide | 0.05%                                  | <p><b><u>Acute Mammalian Toxicity</u></b><br/> <b>Component 1 (60-100%)</b><br/> LD50 (oral): 575 mg/kg</p> <p><b>Component 2 (10-30%)</b><br/> Natural product – exempted under chemical disclosure guidelines.</p> <p><b><u>Chronic Toxicity</u></b><br/> No known carcinogens (Cat 1 &amp; 2), mutagens (Cat 1 &amp; 2) or reproductive hazards (Cat 1, 2 &amp; 3).</p> <p><b><u>Aquatic Toxicity</u></b><br/> <b>Component 1 (60-100%)</b><br/> LC50 (96h): 72.5 mg/L <i>Scophthalmus maximus</i><br/> EC50 (72h): 0.16 mg/L <i>Skeletonema costatum</i><br/> LC50 (48h): 0.60 mg/L <i>Acartia tonsa</i></p> <p><b>Component 2 (10-30%)</b><br/> Natural product – exempted under chemical disclosure guidelines.</p> | Yes             |

| Fluid name<br>(and<br>Volume) | Product<br>Name | Supplier | Purpose | Product in system<br>(concentration %) | Toxicity & Ecotoxicity Information   | SDS<br>Attached |
|-------------------------------|-----------------|----------|---------|--|--|-----------------|
|                               |                 |          |         |  | <p><b><u>Chronic Toxicity</u></b><br/>           No known carcinogenic (H350, H351), chronic (H341, H370, H371, H373), mutagenic (H40) or reproductive (H360, H362) effects for this product.<br/>           A component of this product does carry the following Hazard statement: H3161 – Suspected of damaging the unborn child.</p> <p><b><u>Biodegradation</u></b><br/> <b>Component 1 (60-100%)</b><br/>           7 days: 60% (Method OPPTS 835.4300)</p> <p><b>Component 2 (10-30%)</b><br/>           Natural product – exempted under the chemical disclosure guidelines</p> <p><b><u>Bioaccumulation</u></b><br/> <b>Component 1 (60-100%)</b><br/>           Method: OECD 117 (HPLC)<br/>           Log Pow: &lt; 0</p> <p><b>Component 2 (10-30%)</b><br/>           Natural product – exempted under the chemical disclosure guidelines.</p> |                 |
| Total                         |                 |          |         | ~100                                   |  |                 |

### C. CHEMICAL LIST

| Chemicals Within Produced Water Reinjection System                   | CAS Number             | Mass Fraction (%) |
|--|------------------------|-------------------|
| Water  | 7732-18-5              | 99.934            |
| Tetrakis (hydroxymethyl) phosphonium sulphate (2:1)                  | 55566-30-8             | 0.0375            |
| Amine, N-Tallow Alkyltrimethylenedi-, ethoxylated                    | 61790-85-0             | 0.015             |
| Ammonium bisulphite  | 10192-30-0             | 0.015             |
| 2-(2-butoxyethoxy)ethanol)   | 112-34-5               | 0.005             |
| quaternary ammonium compounds, benzyl-c8-18-alkyldimethyl, chlorides | 68424-85-1             | 0.005             |
| Ethenediol   | 107-21-1               | 0.005             |
| fluorescein sodium salt  | 518-47-8               | 0.0005            |
|  | <b>Total of System</b> | <b>~100%</b>      |



## Safety Data Sheet AccuSET D197

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name AccuSET D197  
Product code D197

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Used as a cementing additive in oilfield applications

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Silicic acid, sodium salt

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name             | EC No     | CAS No    | Weight-% |
|---------------------------|-----------|-----------|----------|
| Silicic acid, sodium salt | 215-687-4 | 1344-09-8 | 10-30    |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                   |   |
|-------------------|---|
| <b>Inhalation</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>  | Please see Section 11. Toxicological Information for further information. |

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

**Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

Contact with metals may evolve flammable hydrogen gas.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>).

#### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Ensure adequate ventilation. See also section 8.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

#### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid excessive heat for prolonged periods of time. Store away from incompatibles, Metals Aluminum Copper alloys Copper Zinc.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

**Exposure limits** The product does not contain any hazardous materials with occupational exposure limits established.

### Component Information

| Chemical Name             | Arabic         | Australia      | Egypt          |
|---------------------------|----------------|----------------|----------------|
| Silicic acid, sodium salt | Not determined | Not determined | Not determined |
| Chemical Name             | India          | Indonesian     | Japan          |
| Silicic acid, sodium salt | Not determined | Not determined | Not determined |
| Chemical Name             | Kazakhstan     | Kuwait         | New Zealand    |
| Silicic acid, sodium salt | Not determined | Not determined | Not determined |
| Chemical Name             | Malaysia       | Philippines    | Russia         |
| Silicic acid, sodium salt | Not determined | Not determined | Not determined |
| Chemical Name             | Thailand       | Vietnam        | Turkey         |
| Silicic acid, sodium salt | Not determined | Not determined | Not determined |

### Notes

No biological limit allocated

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Safety glasses with side-shields Tightly fitting safety goggles

##### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training  
Impervious gloves made of: Neoprene Nitrile  
Break through time >480 minutes  
Glove thickness > 0.4 mm

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

##### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



#### 8.2.3 Environmental exposure controls

##### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Liquid         |
| Appearance     | Clear          |
| Odor           | Odorless       |
| Color          | Colorless      |
| Odor threshold | Not applicable |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | 11.44                    |         |
| pH @ dilution                | No information available |         |
| Melting / freezing point     | 0 °C / 32 °F             |         |
| Boiling point/range          | 100 °C / 212 °F          |         |
| Flash point                  | Does not flash           |         |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | 1.13                     | @20 °C  |
| Bulk density                 | No information available |         |
| Relative density             | No information available |         |
| Water solubility             | Soluble                  |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |



|                     |                          |
|---------------------|--------------------------|
| Kinematic viscosity | No information available |
| Dynamic viscosity   | No information available |
| log Pow             | No information available |

|                      |             |
|----------------------|-------------|
| Explosive properties | None known  |
| Oxidizing properties | None known. |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

Contact with metals may evolve flammable hydrogen gas.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Avoid excessive heat for prolonged periods of time.

**10.5 Incompatible materials**

Metals. Aluminum. Copper. Copper alloys. Zinc.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                        |  |
|------------------------|--|
| Inhalation             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| Eye contact            | May cause slight irritation.   |
| Skin contact           | Prolonged contact may cause redness and irritation.                                    |
| Ingestion              | Ingestion may cause stomach discomfort.  |
| Unknown acute toxicity | Not applicable.  |

**Toxicology data for the components**

| Chemical Name             | LD50 Oral            | LD50 Dermal             | LC50 Inhalation   |
|---------------------------|----------------------|-------------------------|-------------------|
| Silicic acid, sodium salt | = 1960 mg/kg ( Rat ) | > 4640 mg/kg ( Rabbit ) | No data available |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.            |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.                       |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | Skin contact. Eye contact. Inhalation.   |
| <b>Routes of entry</b>                                    | None known.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

**12. Ecological Information****12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name             | Toxicity to fish   | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|---------------------------|--|--------------------------|---|
| Silicic acid, sodium salt | = 3185 mg/L LC50 Brachydanio rerio 96 h 301 - 478 mg/L LC50 Lepomis macrochirus 96 h | No information available | = 216 mg/L EC50 Daphnia magna 96 h                  |

**12.2 Persistence and degradability**

No product level data available.

**12.3 Bioaccumulative potential**

No product level data available.

**12.4 Mobility****Mobility**

The product is water soluble, and may spread in water systems.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods****Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group  
ICAO/ANAC Packing group

Not regulated  
Not regulated

#### **14.5 Environmental hazard**

No

#### **14.6 Special precautions**

Not applicable

#### **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## **15. Regulatory Information**

### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

Silicic acid, sodium salt  
Schedule 6  
Schedule 5

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

### **International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## **16. Other Information**

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**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam  
**Supersedes Date:** 28-Oct-2015  
**Revision date** 28-Jan-2019  
**Version** 4  
**This SDS has been revised in the following section(s)** New issue.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | B |

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## Safety Data Sheet Antifoam Agent D47

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name Antifoam Agent D47  
Product code D047

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Antifoam in oilfield applications

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Contains No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

### 3. Composition/information on Ingredients

**3.1 Substances**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

**3.2 Mixtures**

Not applicable

### 4. First Aid Measures

**4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Seek medical attention if irritation occurs.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed****Notes to physician**

Treat symptomatically.

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

Do not use a solid water stream as it may scatter and spread fire.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (COx), Harmful organic chemical fumes.

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.



## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid excessive heat for prolonged periods of time. Avoid contact with: Strong acids, Strong bases, Strong oxidizing agents. |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

|                        |   |
|------------------------|---|
| <b>Exposure limits</b> | The product does not contain any hazardous materials with occupational exposure limits established. |
|------------------------|---|

#### Notes

No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation

#### Personal protective equipment

|                               |  |
|-------------------------------|--|
| <b>Eye protection</b>         | Eye protection must conform to standard EN 166. Tightly fitting safety goggles. Safety glasses with side-shields.  |
| <b>Hand protection</b>        | Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training. Repeated or prolonged contact. Use protective gloves made of: Butyl, Gloves-Neoprene, Nitrile. Unless Specified. Be aware that liquid may penetrate the gloves. Frequent change is advisable. |
| <b>Respiratory protection</b> | No personal respiratory protective equipment normally required. In case of insufficient ventilation, wear suitable respiratory equipment. Respirator with combination filter for vapour/particulate (EN 141) Type A/P2. At work in confined or poorly ventilated spaces,                         |

|                                 |  |
|---------------------------------|--|
| <b>Skin and body protection</b> | respiratory protection with air supply must be used.<br>Wear suitable protective clothing Eye wash and emergency shower must be available at the work place. |
| <b>Hygiene Measures</b>         | Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use  |



### 8.2.3 Environmental exposure controls

|                               |   |
|-------------------------------|---|
| <b>Environmental exposure</b> | Use appropriate containment to avoid environmental contamination See section 6 for more information |
|-------------------------------|---|

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Liquid         |
| <b>Appearance</b>     | Viscous        |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | Colorless      |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | No data available        |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | < -35 °C / -31 °F        |                |
| Boiling point/range          | No information available |                |
| Flash point                  | 229 °C / 444.2 °F        | ASTM D-93      |
| Evaporation rate (BuAc =1)   | No information available |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | Not applicable           |                |
| Vapor density                | No information available |                |
| Specific gravity             | 1                        |                |
| Bulk density                 | No information available |                |
| Relative density             | 1                        | @ 21.1°C.      |
| Water solubility             | Insoluble in water       |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | 414 - 496 cst            |                |
| Dynamic viscosity            | No information available |                |
| log Pow                      | Not determined           |                |
| <b>Explosive properties</b>  | Not applicable           |                |
| <b>Oxidizing properties</b>  | None known.              |                |

### 9.2 Other information

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | <0°C/32°F                |
| <b>Molecular weight</b> | No information available |

VOC content(%) None  
Density No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Avoid excessive heat for prolonged periods of time.

**10.5 Incompatible materials**

Strong acids. Strong bases. Strong oxidizing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | None known.  |
| <b>Routes of entry</b>                                    | No route of entry noted.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### 12.2 Persistence and degradability

Readily biodegradable.

### 12.3 Bioaccumulative potential

Bioaccumulation is unlikely.

### 12.4 Mobility

#### **Mobility**

The product is insoluble and floats on water.

#### **Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

**14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|   |          |
|---|----------|
| <b>USA (TSCA)</b>                                 | Complies |
| <b>Canada (DSL)</b>                               | Complies |
| <b>Philippines (PICCS)</b>                        | Complies |
| <b>Japan (ENCS)</b>                               | Complies |
| <b>China (IECSC)</b>                              | Complies |
| <b>Australia (AICS)</b>                           | Complies |
| <b>Korean (KECL)</b>                              | Complies |
| <b>New Zealand (NZIoC)</b>                        | Complies |
| <b>Eurasian Economic Union: Russian Inventory</b> | Complies |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Poh Yue Cheong

**Supersedes Date:** 21-Feb-2016

**Revision date** 03-Mar-2021

**Version** 3

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

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**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | B |

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## Safety Data Sheet Antifoam Agent D175A

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Antifoam Agent D175A  
**Product code** D175A

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None



**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Non-crystalline silica

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name          | EC No  | CAS No      | Weight-% |
|------------------------|--------|-------------|----------|
| Non-crystalline silica | Listed | Proprietary | 1 - 5    |

**Comments**

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

**Suitable extinguishing media**

Extinguish with carbon dioxide, dry chemical, foam or waterspray.

**Extinguishing media which must not be used for safety reasons**

Do not use water jet.

#### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8. Solutions extremely slippery when spilled.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

#### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

#### **6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Avoid spills and splashing during use.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep at a temperature not exceeding 25 °C. Store away from incompatibles, Strong oxidizing agents, UV or Ionising Radiation. Steel.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** Because this product is a liquid, the dust-related Workplace Exposure Limits for the components do not apply.

#### Component Information

| Chemical Name          | Arabic   | Australia                             | Egypt  |
|------------------------|--|---------------------------------------|--|
| Non-crystalline silica | Not determined                                     | 2mg/m <sup>3</sup> TWArespirable dust | Not determined   |
| Chemical Name          | India  | Indonesian                            | Japan  |
| Non-crystalline silica | 10 mg/m <sup>3</sup> TWA                           | Not determined                        | Not determined   |
| Chemical Name          | Kazakhstan   | Kuwait                                | New Zealand  |
| Non-crystalline silica | 1 mg/m <sup>3</sup> MAC<br>2 mg/m <sup>3</sup> MAC | 6.0 mg/m <sup>3</sup> TWA             | Not determined   |
| Chemical Name          | Malaysia   | Philippines                           | Russia   |
| Non-crystalline silica | Not determined                                     | Not determined                        | 3 mg/m <sup>3</sup> STEL<br>6 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>2 mg/m <sup>3</sup> TWA<br>Fibrogenic substance also vitreous, in the form of disintegration aerosol 1177<br>Fibrogenic substance in the form of condensation aerosol, containing ≥10% Silicon dioxide 1175, 1176 |
| Chemical Name          | Thailand   | Vietnam                               | Turkey   |
| Non-crystalline silica | Not determined                                     | Not determined                        | Not determined   |

#### Notes

No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**Engineering Controls**

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

**Personal protective equipment****Eye protection**

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

**Hand protection**

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Impervious gloves made of: Neoprene Nitrile Butyl Rubber

Break through time >480 minutes

Glove thickness >0.4 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

**Respiratory protection**

In case of insufficient ventilation wear suitable respiratory equipment Respirator with combination filter for vapor/particulate Type A/P2 At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection**

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

|                |                  |
|----------------|------------------|
| Physical state | Liquid           |
| Appearance     | Aqueous solution |
| Odor           | Slight           |
| Color          | Milky white      |
| Odor threshold | Not applicable   |

| <u>Property</u>            | <u>Values</u>            | <u>Remarks</u> |
|----------------------------|--------------------------|----------------|
| pH                         | ~ 5                      |                |
| pH @ dilution              | No information available |                |
| Melting / freezing point   | ~ 0 °C / 32 °F           |                |
| Boiling point/range        | 100 °C / 212 °F          |                |
| Flash point                | Not applicable           |                |
| Evaporation rate (BuAc =1) | No information available |                |
| Flammability (solid, gas)  | Not applicable           |                |
| Flammability Limit in Air  |                          |                |
| Upper flammability limit   | Not applicable           |                |

|                              |                          |         |
|------------------------------|--------------------------|---------|
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | 2.3 kPa                  | @ 20 °C |
| Vapor density                | No information available |         |
| Specific gravity             | ~ 1                      | @ 25 °C |
| Bulk density                 | No information available |         |
| Relative density             | No information available |         |
| Water solubility             | Dispersible              |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | No information available |         |
| Dynamic viscosity            | ~ 100 mPa s              | @ 25 °C |
| log Pow                      | No information available |         |

|                      |                |
|----------------------|----------------|
| Explosive properties | Not applicable |
| Oxidizing properties | None known.    |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

## Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

# 10. Stability and Reactivity

## 10.1 Reactivity

No specific reactivity hazards associated with this product.

## 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

## 10.3 Possibility of Hazardous Reactions

### Hazardous polymerization

Hazardous polymerization does not occur.

## 10.4 Conditions to avoid

Avoid heat, flames and other sources of ignition.

## 10.5 Incompatible materials

Strong oxidizing agents. UV or Ionising Radiation. Steel.

## 10.6 Hazardous decomposition products

See Section 5.2.

# 11. Toxicological Information

## 11.1 Information on toxicological effects

### Acute toxicity

|                        |  |
|------------------------|--|
| Inhalation             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| Eye contact            | May cause slight irritation.   |
| Skin contact           | Prolonged contact may cause redness and irritation.                                    |
| Ingestion              | Ingestion may cause stomach discomfort.  |
| Unknown acute toxicity | Not applicable.  |

**Toxicology data for the components**

| Chemical Name          | LD50 Oral            | LD50 Dermal             | LC50 Inhalation        |
|------------------------|----------------------|-------------------------|------------------------|
| Non-crystalline silica | = 7900 mg/kg ( Rat ) | > 2000 mg/kg ( Rabbit ) | > 2.2 mg/L ( Rat ) 1 h |

|  |  |
|--|--|
| Sensitization                                      | This product does not contain any components suspected to be sensitizing.            |
| Mutagenic effects                                  | This product does not contain any known or suspected mutagens.                       |
| Carcinogenicity                                    | This product does not contain any known or suspected carcinogens.                    |
| Reproductive toxicity                              | This product does not contain any known or suspected reproductive hazards.           |
| Routes of Exposure                                 | Skin contact. Inhalation. Ingestion. Eye contact.                                    |
| Routes of entry                                    | Inhalation.  |
| Specific target organ toxicity - Single exposure   | Not classified   |
| Specific target organ toxicity - Repeated exposure | Not classified.  |
| Aspiration hazard                                  | Not applicable.  |
| Other information                                  | Key literature references and sources for data. See Section 16 for more information. |

**12. Ecological Information****12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Toxicity to algae**

This product is not considered toxic to algae. See component information below.

**Toxicity to fish**

This product is not considered toxic to fish. See component information below.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates. See component information below.

**Toxicology data for the components**

| Chemical Name | Toxicity to fish | Toxicity to algae | Toxicity to daphnia and other |
|---------------|------------------|-------------------|-------------------------------|
|---------------|------------------|-------------------|-------------------------------|

|                        |   |  |  |
|------------------------|---|--|--|
|                        |   |  | <b>aquatic invertebrates</b>             |
| Non-crystalline silica | = 5000 mg/L LC50 Brachydanio rerio 96 h | = 440 mg/L EC50 Pseudokirchneriella subcapitata 72 h | = 7600 mg/L EC50 Ceriodaphnia dubia 48 h |

## 12.2 Persistence and degradability

The product is not expected to be biodegradable. See component information below.

| Chemical Name          | Persistence and degradability |
|------------------------|-------------------------------|
| Non-crystalline silica | No information available      |

## 12.3 Bioaccumulative potential

The product does not contain any substances expected to be bioaccumulating. See component information below.

| Chemical Name          | Bioaccumulation             |
|------------------------|-----------------------------|
| Non-crystalline silica | Not likely to bioaccumulate |

## 12.4 Mobility

### Mobility

Dispersible in water.

### Mobility in soil

No information available.

## 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

## 12.6 Other adverse effects.

None known.

## 12.7 Other information

Key literature references and sources for data. See Section 16 for more information.

# 13. Disposal considerations

## 13.1 Waste treatment methods

### Waste from residues/unused products

Dispose of in accordance with local regulations.

### Contaminated packaging

Empty containers should be taken for local recycling, recovery or waste disposal.

# 14. Transport information

**14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

No poisons schedule number allocated

New Zealand Hazard Classification Not classified

HSNO approval no. Not required

Group number Not required

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).



Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Complies        |
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Complies        |
| Japan (ENCS)        | Does not comply |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Complies        |
| New Zealand (NZIoC) | Complies        |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes Date:** 19-Jun-2015

**Revision date** 29-Apr-2020

**Version** 4

**This SDS has been revised in the following section(s)** 8, 11, 12, 15, 16 No changes with regard to classification have been made.

#### **Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

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## Safety Data Sheet Anti-Settling Agent D153

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Anti-Settling Agent D153  
**Product code** D153

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|  |            |
|--|------------|
| Specific target organ toxicity - Repeated exposure | Category 2 |
|--|------------|

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements



**Signal word**  
WARNING

**Hazard Statements**

H373 - May cause damage to organs through prolonged or repeated exposure

**Precautionary statements**

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P314 - Get medical advice/attention if you feel unwell

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Quartz, Crystalline silica

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

### 3. Composition/information on ingredients

**3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name              | EC No     | CAS No     | Weight-% |
|----------------------------|-----------|------------|----------|
| Quartz, Crystalline silica | 238-878-4 | 14808-60-7 | 60 - 100 |

**Comments**

IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

### 4. First Aid Measures

**4.1 First aid measures**

**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Skin contact**

Wash skin thoroughly with soap and water. Get medical attention if irritation persists.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn.

Get medical attention if any discomfort continues.

#### **4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### **Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

Suspended dust may present a dust explosion hazard.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors Carbon oxides (COx), React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Material becomes slippery when wet. Use caution if wet. Avoid dust formation. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. See also section 8.

## 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

### Methods for cleaning up

Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Product is slippery if wet. Take precautionary measures against static discharges. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Material becomes extremely slippery when wet. See Section 8.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits. Take precautionary measures against static discharges.                                     |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Avoid heat, flames and other sources of ignition. Avoid contact with: Hydrofluoric acid (HF). Strong oxidizing agents. |
| <b>Storage class</b>                  | Chemical storage.  |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

# 8. Exposure controls/personal protection

## 8.1 Control parameters

|                        |   |
|------------------------|---|
| <b>Exposure limits</b> | NUI = Nuisance dust, TWA 4mg/m <sup>3</sup> Respirable Dust, 10mg/m <sup>3</sup> Total Dust.<br>No biological limit allocated |
|------------------------|---|

### Component Information

| Chemical Name              | Arabic                    | Australia                               | Egypt          |
|----------------------------|---------------------------|---|----------------|
| Quartz, Crystalline silica | 0.1 mg/m <sup>3</sup> TWA | 0.1mg/m <sup>3</sup> TWArespirable dust | Not determined |
| Chemical Name              | India                     | Indonesian                              | Japan          |
| Quartz, Crystalline silica | Not determined            | 0.1 mg/m <sup>3</sup> TWA               | Not determined |
| Chemical Name              | Kazakhstan                | Kuwait                                  | New Zealand    |

|                            |                             |                    |  |
|----------------------------|-----------------------------|--------------------|--|
| Quartz, Crystalline silica | 1 mg/m <sup>3</sup> MAC     | Not determined     | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen  |
| <b>Chemical Name</b>       | <b>Malaysia</b>             | <b>Philippines</b> | <b>Russia</b>  |
| Quartz, Crystalline silica | 0.1 mg/m <sup>3</sup> TWA   | Not determined     | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance<br>glass; regulated under Quartz 1123,<br>1124 |
| <b>Chemical Name</b>       | <b>Thailand</b>             | <b>Vietnam</b>     | <b>Turkey</b>  |
| Quartz, Crystalline silica | 0.025 mg/m <sup>3</sup> TWA | Not determined     | Not determined   |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against dusts Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Impervious gloves made of: Neoprene gloves Nitrile  
Break through time >0.4 minutes  
Glove thickness >480 mm  
Frequent change is advisable

#### Respiratory protection

In case of inadequate ventilation wear respiratory protection Suitable mask with particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear appropriate personal protective clothing to prevent skin contact. Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before breaks and immediately after handling the product Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Solid          |
| <b>Appearance</b>     | Powder         |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | White          |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>              | <u>Values</u>                                      | <u>Remarks</u> |
|------------------------------|--|----------------|
| pH                           | No information available                           | @20g/l         |
| pH @ dilution                | 6-9  |                |
| Melting / freezing point     | No information available                           |                |
| Boiling point/range          | Not applicable                                     |                |
| Flash point                  | Not applicable                                     |                |
| Evaporation rate (BuAc =1)   | No information available                           |                |
| Flammability (solid, gas)    | Not applicable                                     |                |
| Flammability Limit in Air    |  |                |
| Upper flammability limit     | Not applicable                                     |                |
| Lower flammability limit     | Not applicable                                     |                |
| Vapor pressure               | No information available                           |                |
| Vapor density                | No information available                           |                |
| Specific gravity             | 2.65   |                |
| Bulk density                 | 1100 - 1600 kg/m <sup>3</sup>                      |                |
| Relative density             | No information available                           |                |
| Water solubility             | Insoluble in water                                 |                |
| Solubility in other solvents | No information available                           |                |
| Autoignition temperature     | No information available                           |                |
| Decomposition temperature    | No information available                           |                |
| Kinematic viscosity          | No information available                           |                |
| Dynamic viscosity            | No information available                           |                |
| log Pow                      | No information available                           |                |
| Explosive properties         | Suspended dust may present a dust explosion hazard |                |
| Oxidizing properties         | No information available                           |                |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

## Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

# 10. Stability and Reactivity

## 10.1 Reactivity

React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>). Dust may form explosive mixture in air.

## 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

## 10.3 Possibility of Hazardous Reactions

### Hazardous polymerization

Hazardous polymerization does not occur.

## 10.4 Conditions to avoid

Protect from moisture. Avoid dust formation. Take precautionary measures against static charges. Keep away from open flames, hot surfaces and sources of ignition.

## 10.5 Incompatible materials

Hydrofluoric acid (HF). Strong oxidizing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. May cause respiratory irritation. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer. |
| <b>Eye contact</b>            | Dust contact with the eyes can lead to mechanical irritation.  |
| <b>Skin contact</b>           | Repeated exposure may cause skin dryness or cracking.  |
| <b>Ingestion</b>              | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| Chemical Name              | LD50 Oral           | LD50 Dermal       | LC50 Inhalation   |
|----------------------------|---------------------|-------------------|-------------------|
| Quartz, Crystalline silica | = 500 mg/kg ( Rat ) | No data available | No data available |

|   |   |
|---|---|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.                                 |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.  |
| <b>Carcinogenicity</b>                                    | Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.                                |
| <b>Routes of exposure</b>                                 | Inhalation. Skin contact. Eye contact.  |
| <b>Routes of entry</b>                                    | Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified  |
| <b>Specific target organ toxicity - Repeated exposure</b> | Category 2.   |
| <b>Target organ effects</b>                               | Respiratory system. Lungs.  |
| <b>Aspiration hazard</b>                                  | Not applicable.   |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.                      |

**12. Ecological Information**



**12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Listed on PLONOR list of OSPAR

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name              | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|----------------------------|--------------------------|--------------------------|---|
| Quartz, Crystalline silica | No information available | No information available | No information available                            |

**12.2 Persistence and degradability**

No product level data available.

**12.3 Bioaccumulative potential**

No product level data available.

**12.4 Mobility****Mobility**

The product is insoluble and sinks in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

### 13.1 Waste treatment methods

**Waste from residues / unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

### 14.1. UN number

Not regulated

### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

### 14.3 Hazard class(es)

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

### 14.4 Packing group

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

### 14.5 Environmental hazard

No

### 14.6 Special precautions

None

### 14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Complies        |
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Does not comply |
| Japan (ENCS)        | Does not comply |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Complies        |
| New Zealand (NZIoC) | Complies        |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes Date:** 30-Jul-2015

**Revision date** 28-Mar-2018

**Version** 3

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

#### Key literature references and sources for data

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

#### Training Advice

Do not handle until all safety precautions have been read and understood

#### Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate

agreement between the parties.

## Safety Data Sheet BENTONITE

### 1. Identification of the substance/preparation and of the Company/undertaking

#### 1.1 Product identifier

**Product name** BENTONITE  
**Product code** PID211  
**Synonyms** API BENTONITE, OCMA BENTONITE, WYOMING BENTONITE  
**REACH registration name** Exempt Annex V ENTRY 7.  
**Denmark Pr. no.:** OCMA Bentonite: PR.No.: 1900124

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Viscosifier.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

MISDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

|                |  |
|----------------|--|
| <b>Denmark</b> | Poison Control Hotline (DK): +45 82 12 12 12 |
| <b>Germany</b> | +49 69 222 25285                             |
| <b>Norway</b>  | Poison information centre: +47 22 59 13 00   |

### 2. Hazards identification

#### 2.1 Classification of the substance or mixture

**Classification according to (EC) No. 1272/2008**

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

## 2.2 Label elements

### Signal word

None

### Hazard statements

This product is not classified as hazardous therefore no (H) hazard statements assigned.

### Precautionary Statements - EU (§28, 1272/2008)

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

-

### Contains

Crystalline silica (impurity)

## 2.3 Other data

Not classified as PBT/vPvB by current EU criteria

### Australian statement of hazardous/dangerous nature

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on ingredients

### 3.1 Substances

| Chemical Name                 | EC-No.    | CAS No     | Weight-% | Classification (67/548) | Classification (Reg. 1272/2008) | REACH registration number |
|-------------------------------|-----------|------------|----------|-------------------------|---------------------------------|---------------------------|
| Crystalline silica (impurity) | 238-878-4 | 14808-60-7 | 1-5      | Xn; R48/20              | STOT Rep. 2 - H373              | Exempt                    |

### 3.2 Mixtures

Not applicable

### Comments

Naturally occurring mineral.

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

The product contains other ingredients which do not contribute to the overall classification.

## 4. First aid measures

#### **4.1 First-Aid Measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Get medical attention if any discomfort continues.                     |

#### **4.2 Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Main symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-fighting measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

##### **Extinguishing media which must not be used for safety reasons**

Do not use water jet.

#### **5.2 Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

### 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

#### **Methods for containment**

Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent further leakage or spillage if safe to do so.

#### **Methods for cleaning up**

Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and storage

### 7.1 Precautions for safe handling

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. If spilled, take caution, as material can cause surfaces to become very slippery.

#### **Hygiene measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.                         |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid wet and humid conditions. |
| <b>Storage class</b>                  | Chemical storage.  |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

### 7.3 Specific end uses

See Section 1.2.

## 8. Exposure controls/personal protection

### 8.1 Control parameters



**Exposure limits** No biological limit allocated

| Chemical Name                 | EU OEL   | Austria  | Australia   | Denmark   |
|-------------------------------|--|--|---|---|
| Crystalline silica (impurity) | Not determined   | 0.15 mg/m <sup>3</sup> TWA<br>alveolar dust, respirable fraction | 0.1 mg/m <sup>3</sup> TWA respirable dust           | 0.1 mg/m <sup>3</sup>   |
| Chemical Name                 | Malaysia   | France   | Germany   | Hungary   |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA  | 0.1 mg/m <sup>3</sup> TWA  | Not determined                                      | 0.15 mg/m <sup>3</sup> TWA  |
| Chemical Name                 | New Zealand  | Italy  | Netherlands   | Norway  |
| Crystalline silica (impurity) | 0.2 mg/m <sup>3</sup> TWA<br>Known or presumed human carcinogen  | Not determined   | 0.075 mg/m <sup>3</sup>                             | 0.3 mg/m <sup>3</sup> TWA total dust<br>0.1 mg/m <sup>3</sup> TWA respirable dust<br>0.3 mg/m <sup>3</sup> STEL total dust<br>0.1 mg/m <sup>3</sup> STEL respirable dust<br>Carcinogen  |
| Chemical Name                 | Poland   | Portugal   | Romania   | Russia  |
| Crystalline silica (impurity) | 2 mg/m <sup>3</sup> TWA NDS >50% free crystalline silica<br>0.3 mg/m <sup>3</sup> TWA NDS >50% free crystalline silica<br>4.0 mg/m <sup>3</sup> TWA NDS 2% to 50% free crystalline silica<br>1.0 mg/m <sup>3</sup> TWA NDS 2% to 50% free crystalline silica | 0.025 mg/m <sup>3</sup> TWA respirable fraction                  | 0.1 mg/m <sup>3</sup> TWA respirable fraction, dust | 3 mg/m <sup>3</sup> STEL 1123 disintegration aerosol, total mass of aerosols<br>3 mg/m <sup>3</sup> STEL 1124 total mass of aerosols<br>1 mg/m <sup>3</sup> TWA 1123<br>1 mg/m <sup>3</sup> TWA 1124<br>Fibrogenic substance glass; regulated under Quartz 1123, 1124 |
| Chemical Name                 | Spain  | Switzerland  | Turkey  | UK  |
| Crystalline silica (impurity) | 0.05 mg/m <sup>3</sup> TWA VLA-ED  | 0.15 mg/m <sup>3</sup> TWA MAK                                   | Not determined                                      | Not determined  |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering measures to reduce exposure

Ensure adequate ventilation. Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Tightly fitting safety goggles. Safety glasses with side-shields.

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders  
Use protective gloves made of: Neoprene Nitrile  
Frequent change is advisable

#### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment, Suitable mask with particle filter P3 (European Norm 143), At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.

### Hygiene measures

Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.



## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder         |
| Odor           | Odorless       |
| Color          | Cream - Gray   |
| Odor threshold | Not applicable |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | No information available |         |
| pH @ dilution                | 9-10                     |         |
| Melting / freezing point     | > 450 °C / 842 °F        |         |
| Boiling point/range          | No information available |         |
| Flash point                  | No information available |         |
| Evaporation rate (BuAc =1)   | Not applicable           |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | 2.3 - 2.6                | 20 °C   |
| Bulk density                 | 750 – 950 kg/m³          |         |
| Relative density             | No information available |         |
| Water solubility             | Negligible               |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | > 500 °C / 932°F         |         |
| Kinematic viscosity          | Not applicable           |         |
| Dynamic viscosity            | . Not applicable         |         |
| log Pow                      | No information available |         |
| Explosive properties         | Not applicable           |         |
| Oxidizing properties         | None known.              |         |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

## 10. Stability and reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### **10.3 Possibility of Hazardous Reactions**

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### **10.4 Conditions to avoid**

Avoid wet and humid conditions. Avoid dust formation.

### **10.5 Incompatible materials**

No materials to be especially mentioned.

### **10.6 Hazardous decomposition products**

See Section 5.

## **11. Toxicological information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

#### **Product information**

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis.

#### **Inhalation**

Inhalation of dust in high concentration may cause irritation of respiratory system.

#### **Eye contact**

Dust may cause mechanical irritation.

#### **Skin contact**

Prolonged contact may cause redness and irritation.

#### **Ingestion**

Ingestion may cause stomach discomfort.

| Chemical Name                 | LD50 Oral           | LD50 Dermal       | LC50 Inhalation   |
|-------------------------------|---------------------|-------------------|-------------------|
| Crystalline silica (impurity) | = 500 mg/kg ( Rat ) | No data available | No data available |

#### **Sensitization**

This product does not contain any components suspected to be sensitizing.

#### **Mutagenic effects**

This product does not contain any known or suspected mutagens.

#### **Carcinogenicity**

Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

#### **Reproductive toxicity**

This product does not contain any known or suspected reproductive hazards.

#### **Routes of exposure**

Inhalation.

#### **Routes of entry**

Inhalation.

**Specific target organ toxicity (single exposure)** Not classified

**Specific target organ toxicity (repeated exposure)** Not classified.

**Aspiration hazard** Not applicable.

## 12. Ecological information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

Listed on PLONOR list of OSPAR

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

| Chemical Name                 | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|-------------------------------|--------------------------|--------------------------|---|
| Crystalline silica (impurity) | No information available | No information available | No information available                            |

### 12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

### 12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

### 12.4 Mobility in soil

#### Mobility

Insoluble in water.

### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

### 12.6 Other adverse effects.

None known.

## 13. Disposal considerations

### 13.1 Waste treatment methods

|  |   |
|--|---|
| <b>Waste from residues / unused products</b> | Dispose of in accordance with local regulations.  |
| <b>Contaminated packaging</b>                | Empty containers should be taken for local recycling, recovery or waste disposal.   |
| <b>EWC Waste Disposal No</b>                 | According to the European Waste Catalog, Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: EWC waste disposal No: 01 05 99 |

## 14. Transport information

### 14.1. UN number

Not regulated

### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

### 14.3 Hazard class(es)

|                                     |               |
|-------------------------------------|---------------|
| <b>ADR/RID/ADN/ADG Hazard class</b> | Not regulated |
| <b>IMDG Hazard class</b>            | Not regulated |
| <b>ICAO Hazard class/division</b>   | Not regulated |

### 14.4 Packing group

|                                      |               |
|--------------------------------------|---------------|
| <b>ADR/RID/ADN/ADG Packing group</b> | Not regulated |
| <b>IMDG Packing group</b>            | Not regulated |
| <b>ICAO Packing group</b>            | Not regulated |

### 14.5 Environmental hazard

No

### 14.6 Special precautions

Not applicable

### 14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code

Please contact MISDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

|   |                               |
|---|-------------------------------|
| <b>Germany, Water Endangering Classes (VwVwS)</b> | Water endangering class = nwg |
|---|-------------------------------|

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**  
No Poisons Schedule number allocated

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

This safety data sheet complies with the requirements of Regulation (EC) No. 1272/2008.

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

Dutch Mining Regulations: In accordance with Mining Regulations 9.2 and Chapter 4 of the Working Conditions Decree.

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP) International inventories

|                                    |                 |
|------------------------------------|-----------------|
| USA (TSCA)                         | Complies        |
| European Union (EINECS and ELINCS) | Complies        |
| Canada (DSL)                       | Complies.       |
| Philippines (PICCS)                | Complies        |
| Japan (ENCS)                       | Does not Comply |
| China (IECSC)                      | Complies        |
| Australia (AICS)                   | Complies        |
| Korean (KECL)                      | Complies        |
| New Zealand (NZIoC)                | Complies        |

## 15.2 Chemical Safety Report

No information available

## 16. Other information

|                        |  |
|------------------------|--|
| <b>Prepared by</b>     | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse |
| <b>Supersedes date</b> | 18-Feb-2015  |
| <b>Revision date</b>   | 02-Jan-2017  |

**Version** 8

**This SDS has been revised in the following section(s)** 2, 3, 4, 6, 8, 9, 11, 12, 15, 16. Product Code change No changes with regard to classification have been made.

**Text of R phrases mentioned in Section 3**

R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation

**Full text of H-Statements referred to under sections 2 and 3**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

**Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

|          |                |             |                                 |
|----------|----------------|-------------|---------------------------------|
| Version  | Revision Date: | SDS Number: | Date of last issue: 28.03.2019  |
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| (GHS_AU) |                |             |                                 |

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### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : OMYACAL 12, 50, 250; OMYACARB 10, 20, 40, 50;  
CIRCAL Y, 60/16, 1000; CALCIPRILL +B, 110;  
DD; DD12; DD135; MARBLE CHIP 000, 00, 0, 1, 2,3;  
SELGRIT; ABGRIT; STONEDUST;  
T GRADE; Y GRADE; AGRICULTURAL GRADE;  
F70 SUPERFINE; WHITE POOL DUST.

#### Manufacturer or supplier's details

Company : Omya Australia Pty Ltd.  
Address : Pacific Highway  
Lindfield NSW 2070  
Telephone : +611800251306  
Emergency telephone number : +61 439 592 932

#### Recommended use of the chemical and restrictions on use

Recommended use : Manufacture of paper and paperboard  
Chemical-Technical Industry  
Manufacture of paints, varnishes and similar coatings, printing  
ink and mastics  
Manufacture of rubber products  
Manufacture of plastics products  
Manufacture of soap and detergents, cleaning and polishing  
mixtures  
Feed industry  
Building and construction work  
Water treatment chemical  
Filler or Pigment

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Other hazards which do not result in classification

None known.

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance  
Substance name : Calciumcarbonate GCC c powder  
CAS-No. : 1317-65-3



# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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### Components

| Chemical name             | CAS-No.   | Concentration (% w/w) |
|---------------------------|-----------|-----------------------|
| Natural Calcium Carbonate | 1317-65-3 | >= 98 -< 99           |

### SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.  
If symptoms persist, call a physician.
- In case of skin contact : Take off contaminated clothing and shoes immediately.  
Wash off with soap and plenty of water.
- In case of eye contact : Flush eyes with water as a precaution.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : None known.

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Hazardous combustion products : No hazardous combustion products are known
- Specific extinguishing methods : Standard procedure for chemical fires.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Avoid dust formation.
- Environmental precautions : No special environmental precautions required.
- Methods and materials for containment and cleaning up : Sweep up and shovel.  
Keep in suitable, closed containers for disposal.

### SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Avoid dust formation.  
Provide appropriate exhaust ventilation at places where dust is formed.
- Advice on safe handling : For personal protection see section 8.

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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Hygiene measures : No special handling advice required.  
Conditions for safe storage : General industrial hygiene practice.  
Materials to avoid : Keep container tightly closed in a dry and well-ventilated place.  
Further information on storage stability : Do not store near acids.  
Keep in a dry place.  
No decomposition if stored and applied as directed.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

| Components   | CAS-No.   | Value type<br>(Form of exposure) | Control parameters /<br>Permissible concentration | Basis  |
|--|-----------|----------------------------------|---|--------|
| Natural Calcium Carbonate  | 1317-65-3 | TWA                              | 10 mg/m <sup>3</sup><br>(Calcium carbonate)       | AU OEL |
| Further information: This value is for inhalable dust containing no asbestos and < 1% crystalline silica |           |                                  |   |        |

#### Personal protective equipment

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
Hand protection : Half mask with a particle filter P2 (EN 143)  
Remarks : For prolonged or repeated contact use protective gloves.  
Eye protection : Safety glasses  
Skin and body protection : Protective suit

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : powder  
Colour : white  
Odour : characteristic  
Odour Threshold : Not relevant  
pH : 8.5 - 9.5 (20 °C)  
Concentration: 100 g/l  
Method: DIN-ISO 787/9  
Melting point/range : > 800 °C  
(1,013 hPa)  
Decomposition: Decomposes below the melting point.  
Boiling point/boiling range : Decomposition: Decomposes below the boiling point.  
Flash point : does not flash

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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|  |  |
|--|--|
| Flammability (solid, gas)                        | : The product is not flammable.  |
| Burning number                                   | : 1  |
| Upper explosion limit / Upper flammability limit | : Upper flammability limit<br>Not applicable                               |
| Lower explosion limit / Lower flammability limit | : Lower flammability limit<br>Not applicable                               |
| Vapour pressure                                  | : Not applicable   |
| Density  | : 2.3 - 2.8 g/cm <sup>3</sup> (20 °C, 1,013 hPa)<br>Method: DIN-ISO 787/10 |
| Solubility(ies)                                  |  |
| Water solubility                                 | : 0.014 g/l (20 °C, 1,013 hPa)   |
| Partition coefficient: n-octanol/water           | : Not applicable   |
| Auto-ignition temperature                        | : Not applicable   |
| Decomposition temperature                        | : > 600 °C   |
| Explosive properties                             | : Not explosive<br>Not explosive   |
| Minimum ignition energy                          | : > 1,000 mJ (20 °C, 1,013 hPa)  |

### SECTION 10. STABILITY AND REACTIVITY

|                                    |   |
|------------------------------------|---|
| Reactivity                         | : Stable under recommended storage conditions.  |
| Chemical stability                 | : No decomposition if stored and applied as directed.   |
| Possibility of hazardous reactions | : Stable under recommended storage conditions.<br>No decomposition if used as directed.<br>Reacts with acids. It forms carbon dioxide (CO <sub>2</sub> ). This displaces the oxygen in the air in closed spaces. (danger of suffocation). |
| Conditions to avoid                | : No data available   |
| Hazardous decomposition products   | : Carbon dioxide (CO <sub>2</sub> )   |

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

##### Product:

|                     |                                  |
|---------------------|----------------------------------|
| Acute oral toxicity | : LD50 Oral (Rat): > 5,000 mg/kg |
|---------------------|----------------------------------|

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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### Components:

#### **Natural Calcium Carbonate:**

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

#### **Respiratory or skin sensitisation**

### Product:

No data available

#### **Chronic toxicity**

#### **Further information**

### Product:

No data available

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## SECTION 12. ECOLOGICAL INFORMATION

### **Ecotoxicity**

#### Product:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 10,000 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : NOEC (Desmodesmus subspicatus (green algae)): 75 mg/l  
plants Exposure time: 72 h

EC50 (Desmodesmus subspicatus (green algae)): 289 mg/l  
Exposure time: 72 h

### Components:

#### **Natural Calcium Carbonate:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 10,000 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : EC50 (Desmodesmus subspicatus (green algae)): > 200 mg/l  
plants Exposure time: 72 h

### **Persistence and degradability**

#### Product:

Biodegradability : Not applicable

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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### Bioaccumulative potential

#### Components:

##### Natural Calcium Carbonate:

Partition coefficient: n-octanol/water : Not applicable

##### Mobility in soil

No data available

##### Other adverse effects

#### Product:

Additional ecological information : In solid state these minerals are a major part of the rocks of the earth's surface.  
They are dissolved in a natural state and indispensable part of the natural waters.  
These minerals are not biodegradable.  
Negative effects on the environment should therefore be excluded.  
Restrictions may indicate that concentrated suspensions with these minerals in natural waters may have an unfavorable effect on water organisms (disturbance of the micro flora and - fauna in the sediment and subsequent detriment to the existence of higher water organisms).

#### Components:

##### Natural Calcium Carbonate:

Results of PBT and vPvB assessment : Non-classified PBT substance Non-classified vPvB substance

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.  
Contaminated packaging : Empty remaining contents.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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Not regulated as a dangerous good

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

Not applicable for product as supplied.

## SECTION 15. REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

Standard for the Uniform : No poison schedule number allocated  
Scheduling of Medicines and  
Poisons

Prohibition/Licensing Requirements : There is no applicable prohibition, authorisation and restricted use requirements, including for carcinogens referred to in Schedule 10 of the model WHS Act and Regulations.

## SECTION 16. OTHER INFORMATION

### Further information

Revision Date : 18.08.2020  
Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification.  
Sources of key data used to : Information taken from reference works and the literature.  
compile the Safety Data  
Sheet  
Date format : dd.mm.yyyy

### Full text of other abbreviations

AU OEL : Australia. Workplace Exposure Standards for Airborne Contaminants.

AU OEL / TWA : Exposure standard - time weighted average

AICS - Australian Inventory of Chemical Substances; AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC

# SAFETY DATA SHEET



## Calcium Carbonate – coarse products

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- International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



## Safety Data Sheet Calcium Chloride S1

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Calcium Chloride S1  
**Product code** S001

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                                   |            |
|-----------------------------------|------------|
| Serious eye damage/eye irritation | Category 2 |
|-----------------------------------|------------|

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements



**Signal word**  
WARNING**Hazard Statements**

H319 - Causes serious eye irritation

**Precautionary statements**

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear protective gloves and eye/face protection

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Calcium chloride

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name    | EC No     | CAS No     | Weight-% |
|------------------|-----------|------------|----------|
| Calcium chloride | 233-140-8 | 10043-52-4 | 60 - 100 |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

**Skin contact**

Wash off immediately with soap and plenty of water while removing all contaminated

clothes and shoes. Get medical attention if irritation persists.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed****General advice**

The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

**Symptoms****Inhalation**

Please see Section 11. Toxicological Information for further information.

**Ingestion**

Please see Section 11. Toxicological Information for further information.

**Skin contact**

Please see Section 11. Toxicological Information for further information.

**Eye contact**

Please see Section 11. Toxicological Information for further information.

**4.3 Indication of any immediate medical attention and special treatment needed****Notes to physician**

Treat symptomatically.

## 5. Fire-Fighting Measures

**5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

**6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

## 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

### Methods for cleaning up

Avoid generating or breathing dust. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing. Do not eat, drink or smoke when using this product.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid: High temperatures. Avoid contact with water and moist air - product is hygroscopic. Steel. Bromine trifluoride. Furan-2-peroxycarboxylic acid. Acids.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

### Component Information

| Chemical Name    | Arabic         | Australia      | Egypt                             |
|------------------|----------------|----------------|-----------------------------------|
| Calcium chloride | Not determined | Not determined | Not determined                    |
| Chemical Name    | India          | Indonesia      | Japan                             |
| Calcium chloride | Not determined | Not determined | Not determined                    |
| Chemical Name    | Kazakhstan     | Kuwait         | New Zealand                       |
| Calcium chloride | Not determined | Not determined | Not determined                    |
| Chemical Name    | Malaysia       | Philippines    | Russia                            |
| Calcium chloride | Not determined | Not determined | 2 mg/m <sup>3</sup> MAC (aerosol) |
| Chemical Name    | Thailand       | Vietnam        | Turkey                            |
| Calcium chloride | Not determined | Not determined | Not determined                    |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against dusts It is good practice to wear goggles when handling any chemical Tightly fitting safety goggles

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use protective gloves made of: polyvinyl alcohol or nitrile-butyl rubber gloves Frequent change is advisable

#### Respiratory protection

No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Effective dust mask. Half mask with a particle filter P2 (European Norm EN 143 = former DIN 3181) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



## 8.2.3 Environmental exposure controls

### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Granules       |
| Odor           | Odorless       |
| Color          | White          |
| Odor threshold | Not applicable |

| Property                   | Values                   | Remarks              |
|----------------------------|--------------------------|----------------------|
| pH                         | No information available |                      |
| pH @ dilution              | 9 - 10.5                 | (100 g/l soln @20°C) |
| Melting / freezing point   | No information available |                      |
| Boiling point/range        | > 1600 °C                |                      |
| Flash point                | Not applicable           |                      |
| Evaporation rate (BuAc =1) | No information available |                      |
| Flammability (solid, gas)  | Not applicable           |                      |
| Flammability Limit in Air  |                          |                      |

|                              |                          |         |
|------------------------------|--------------------------|---------|
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | No information available |         |
| Bulk density                 | 800 mg/m <sup>3</sup>    |         |
| Relative density             | 2.2                      | @ 20°C. |
| Water solubility             | Soluble in water         |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | >772°C                   |         |
| Kinematic viscosity          | No information available |         |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |

|                      |                          |
|----------------------|--------------------------|
| Explosive properties | No information available |
| Oxidizing properties | No information available |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

Hygroscopic.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Avoid dust formation. Avoid contact with water and moist air - product is hygroscopic. High temperatures.

### 10.5 Incompatible materials

Water. Bromine trifluoride. Furan-2-peroxycarboxylic acid. Acids. Steel.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute toxicity

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. |
| <b>Eye contact</b>            | Causes serious eye irritation.   |
| <b>Skin contact</b>           | May cause skin irritation and/or dermatitis.   |
| <b>Ingestion</b>              | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.                    |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| <b>Chemical Name</b> | <b>LD50 Oral</b>     | <b>LD50 Dermal</b>      | <b>LC50 Inhalation</b> |
|----------------------|----------------------|-------------------------|------------------------|
| Calcium chloride     | = 1000 mg/kg ( Rat ) | > 5000 mg/kg ( Rabbit ) | No data available      |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.            |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.                       |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | Eye contact. Inhalation.   |
| <b>Routes of entry</b>                                    | Eye contact. Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | No hazard from product as supplied.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Listed on PLONOR list of OSPAR

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

See component information below.

**Toxicity to daphnia and other aquatic invertebrates**

See component information below.

**Toxicology data for the components**

| Chemical Name    | Toxicity to fish                                  | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|------------------|---|--------------------------|---|
| Calcium chloride | = 10650 mg/L LC50 <i>Lepomis macrochirus</i> 96 h | No information available | 2,400 mg/L EC50 ( <i>Daphnia magna</i> ) = 48 h     |

**12.2 Persistence and degradability**

Not Applicable - Inorganic chemical.

| Chemical Name    | Persistence and degradability |
|------------------|-------------------------------|
| Calcium chloride | Inorganic compound            |

**12.3 Bioaccumulative potential**

Not Applicable - Inorganic chemical.

| Chemical Name    | Bioaccumulation                |
|------------------|--------------------------------|
| Calcium chloride | Product/Substance is inorganic |

**12.4 Mobility****Mobility**

The product is water soluble, and may spread in water systems.

| Chemical Name    | Mobility         |
|------------------|------------------|
| Calcium chloride | Soluble in water |

**Mobility in soil**

See component information below.

| Chemical Name    | Mobility in soil                              |
|------------------|---|
| Calcium chloride | After release, disperses through ground water |

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods****Waste from residues/unused**

Dispose of in accordance with local regulations.

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products

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

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**14. Transport information**

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**14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)****ADR/RID/ADN/ADG Hazard class** Not regulated**IMDG/ANTAQ Hazard class** Not regulated**ICAO/ANAC Hazard class/division** Not regulated**14.4 Packing group****ADR/RID/ADN/ADG Packing group** Not regulated**IMDG/ANTAQ Packing group** Not regulated**ICAO/ANAC Packing group** Not regulated**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

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**15. Regulatory Information**

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Classified**HSNO approval no.** HSR003389**Group number** 6.1D, 6.1E, 6.3A, 6.4A, 9.3C**Safe Work Australia.****Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)****International inventories****USA (TSCA)** Complies



|                     |          |
|---------------------|----------|
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|   |   |
|---|---|
| Prepared by   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Ingrid Helland     |
| Supersedes Date:                                      | 13-Mar-2015   |
| Revision date   | 09-Oct-2018   |
| Version   | 3   |
| This SDS has been revised in the following section(s) | 1, 7, 8, 12, 15, 16<br>No changes with regard to classification have been made. |

### Key literature references and sources for data

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

### Disclaimer

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## Safety Data Sheet Caustic Soda M2

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Caustic Soda M2  
**Product code** M002  
  
**CAS No** 1310-73-2  
**EC No** 215-185-5

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                                   |                           |
|-----------------------------------|---------------------------|
| Skin corrosion/irritation         | Category 1 Subcategory 1A |
| Serious eye damage/eye irritation | Category 1                |

**Environmental hazards** Not classified

##### Physical Hazards

|  |            |
|--|------------|
| Substances/mixtures corrosive to metal | Category 1 |
|--|------------|

## 2.2 Label elements

**Signal word**

DANGER

**Hazard Statements**

H314 - Causes severe skin burns and eye damage

H290 - May be corrosive to metals

**Precautionary statements**

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P406 - Store in corrosion resistant container with a resistant inner liner

**Supplementary precautionary statements**

P234 - Keep only in original container

P264 - Wash face, hands and any exposed skin thoroughly after handling

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P363 - Wash contaminated clothing before reuse

P390 - Absorb spillage to prevent material damage

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Sodium hydroxide

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

| Chemical Name    | EC No     | CAS No    | Weight-% |
|------------------|-----------|-----------|----------|
| Sodium hydroxide | 215-185-5 | 1310-73-2 | 60-100   |

### 3.2 Mixtures

Not applicable

## 4. First Aid Measures

#### **4.1 First aid measures**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | Move the exposed person to fresh air at once. If breathing is difficult, (trained personnel should) give oxygen. If not breathing, give artificial respiration. Seek medical attention at once.  |
| <b>Ingestion</b>    | Do NOT induce vomiting. Get immediate medical attention. Rinse mouth. Risk of product entering the lungs on vomiting after ingestion. Never give anything by mouth to an unconscious person.   |
| <b>Skin contact</b> | Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns must be treated by a physician. |
| <b>Eye Contact</b>  | Remove contact lenses, if worn. Immediately flush eyes with water for 15 minutes while holding eyelids open. Immediate medical attention is required.  |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | Seek medical attention for all burns, regardless how minor they may seem. The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

##### **Extinguishing media which must not be used for safety reasons**

Do not use a solid water stream as it may scatter and spread fire.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

Contact with metals may evolve flammable hydrogen gas. The product reacts with water and will generate heat.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of toxic and corrosive gases/vapors Sodium oxides.

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Do not get on skin or clothing. Wash thoroughly after handling. Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Use personal protective equipment. See also section 8.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

#### **Methods for cleaning up**

Avoid dust formation. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin or on clothing. Avoid dust formation. Do not breathe dust. Never add water directly to this product - may cause vigorous reaction/boiling. Always dilute by carefully pouring the product into the water.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### **7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Store in original container. Protect from moisture. High temperatures. Avoid contact with: Acids, Water, Oxidizing agents, Metals, Halogenated hydrocarbons, Ammonium salts.

**Storage class** Corrosive storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

#### Component Information

| Chemical Name    | Arabic                      | Australia                   | Egypt                       |
|------------------|-----------------------------|-----------------------------|-----------------------------|
| Sodium hydroxide | Not determined              | 2 mg/m <sup>3</sup> Peak    | 2 mg/m <sup>3</sup> Ceiling |
| Chemical Name    | India                       | Indonesian                  | Japan                       |
| Sodium hydroxide | 2 mg/m <sup>3</sup> Ceiling | 2 mg/m <sup>3</sup> Ceiling | Not determined              |
| Chemical Name    | Kazakhstan                  | Kuwait                      | New Zealand                 |
| Sodium hydroxide | Not determined              | 2.0 mg/m <sup>3</sup> STEL  | 2 mg/m <sup>3</sup> Ceiling |
| Chemical Name    | Malaysia                    | Philippines                 | Russia                      |
| Sodium hydroxide | 2 mg/m <sup>3</sup> Ceiling | 2 mg/m <sup>3</sup> TWA     | Not determined              |
| Chemical Name    | Thailand                    | Vietnam                     | Turkey                      |
| Sodium hydroxide | 2 mg/m <sup>3</sup> TWA     | Not determined              | Not determined              |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed Keep airborne concentrations below exposure limits

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against dusts Chemical splash goggles and/or face shield

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders  
Impervious gloves made of: Nitrile Rubber  
Break through time >480 minutes  
Glove thickness 0.35-0.4 mm  
PVC Butyl rubber Break through time >480 minutes  
Glove thickness >0.5 mm  
Frequent change is advisable

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Respirator with combination filter for vapour/particulate (EN 141) Type B/P2 Suitable mask with particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

##### Hygiene Measures

Wash hands before breaks and immediately after handling the product Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more

information

**9. Physical and Chemical Properties****9.1 Information on basic physical and chemical properties**

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Flakes         |
| Odor           | Odorless       |
| Color          | White          |
| Odor threshold | Not applicable |

| <u>Property</u>              | <u>Values</u>               | <u>Remarks</u> |
|------------------------------|-----------------------------|----------------|
| pH                           | Not applicable              |                |
| pH @ dilution                | >14                         | 10 g/ 100ml    |
| Melting / freezing point     | 323 °C / 613.4 °F           |                |
| Boiling point/range          | 1388 °C / 2530.4 °F         |                |
| Flash point                  |                             |                |
| Evaporation rate (BuAc =1)   | No information available    |                |
| Flammability (solid, gas)    | Not applicable              |                |
| Flammability Limit in Air    |                             |                |
| Upper flammability limit     | Not applicable              |                |
| Lower flammability limit     | Not applicable              |                |
| Vapor pressure               | 0.1 kPa                     | @ 739 °C       |
| Vapor density                | >1 (air = 1)                |                |
| Specific gravity             | 2.1                         | @ 20 °C        |
| Bulk density                 | 1.1 - 2.13 g/cm³            |                |
| Relative density             | 2.1                         | @ 20°C.        |
| Water solubility             | Soluble in water 42g/ 100ml |                |
| Solubility in other solvents | Ethanol Methanol            |                |
| Autoignition temperature     | No information available    |                |
| Decomposition temperature    | No information available    |                |
| Kinematic viscosity          | No information available    |                |
| Dynamic viscosity            | 0.997 - 2.228 mPa.s         |                |
| log Pow                      | No information available    |                |
| Explosive properties         | Not applicable              |                |
| Oxidizing properties         | Not applicable              |                |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

Corrosive to Metals. Contact with metals may evolve flammable hydrogen gas. Reacts violently with water.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions**

**Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Protect from moisture. High temperatures.

**10.5 Incompatible materials**

Acids. Metals. Water. Oxidizing agents. Halogenated hydrocarbons. Ammonium salts.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Contact with moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. Inhaled corrosive substances can lead to a toxic edema of the lungs. |
| <b>Eye contact</b>            | Causes serious eye damage.   |
| <b>Skin contact</b>           | Causes severe skin burns.  |
| <b>Ingestion</b>              | Ingestion causes burns of the upper digestive and respiratory tracts.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

| Chemical Name    | LD50 Oral         | LD50 Dermal           | LC50 Inhalation   |
|------------------|-------------------|-----------------------|-------------------|
| Sodium hydroxide | No data available | 1350 mg/kg ( Rabbit ) | No data available |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.  |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.             |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.          |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards. |
| <b>Routes of exposure</b>                                 | Skin contact. Eye contact. Inhalation. Ingestion.                          |
| <b>Routes of entry</b>                                    | Inhalation. Skin contact. Eye contact.                                     |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |



## Other information

Key literature references and sources for data. See Section 16 for more information.

**12. Ecological Information****12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

| Chemical Name    | Toxicity to fish                          | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|------------------|---|--------------------------|---|
| Sodium hydroxide | = 45.4 mg/L LC50 Oncorhynchus mykiss 96 h | No information available | No information available                            |

**12.2 Persistence and degradability**

Not Applicable - Inorganic chemical.

| Chemical Name    | Persistence and degradability |
|------------------|-------------------------------|
| Sodium hydroxide | Inorganic compound            |

**12.3 Bioaccumulative potential**

Not Applicable - Inorganic chemical.

| Chemical Name    | Bioaccumulation                |
|------------------|--------------------------------|
| Sodium hydroxide | Product/Substance is inorganic |

**12.4 Mobility****Mobility**

Soluble in water.

| Chemical Name    | Mobility         |
|------------------|------------------|
| Sodium hydroxide | Soluble in water |

**Mobility in soil**

No information available.

| Chemical Name    | Mobility in soil               |
|------------------|--------------------------------|
| Sodium hydroxide | Not expected to adsorb on soil |

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

|                             |        |
|-----------------------------|--------|
| UN/ID No. (ADR/RID/ADN/ADG) | UN1823 |
| UN No. (IMDG/ANTAQ)         | UN1823 |
| UN No. (ICAO/ANAC)          | UN1823 |

**14.2. UN proper shipping name**

SODIUM HYDROXIDE, SOLID,

**14.3 Hazard class(es)**

|                                 |   |
|---------------------------------|---|
| ADR/RID/ADN/ADG Hazard class    | 8 |
| IMDG/ANTAQ Hazard class         | 8 |
| ICAO/ANAC Hazard class/division | 8 |

**14.4 Packing group**

|                               |    |
|-------------------------------|----|
| ADR/RID/ADN/ADG Packing group | II |
| IMDG/ANTAQ Packing group      | II |
| ICAO/ANAC Packing group       | II |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

|                                |          |
|--------------------------------|----------|
| Hazard identification no (ADR) | 80       |
| EmS (IMDG)                     | F-A, S-B |
| Emergency Action Code (EAC)    | 2W       |
| Tunnel restriction code        | (E)      |

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

Sodium hydroxide  
Schedule 6  
Schedule 5

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

ADG Code – Australian Dangerous Goods Code

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

**International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

**16. Other Information**

|   |   |
|---|---|
| Prepared by   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Ingrid Helland |
| Supersedes Date:                                      | 25-Apr-2017   |
| Revision date   | 08-Oct-2018   |
| Version   | 5   |
| This SDS has been revised in the following section(s) | 1, 8, 15, 16<br>No changes with regard to classification have been made.    |

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 3 |
| Flammability    | 0 |
| Physical hazard | 1 |
| PPE             | X |

**Disclaimer**

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## Safety Data Sheet Cement Class G D907

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Cement Class G D907  
**Product code** D907  
**Country Limitations** This SDS is not for use in the European Union (EU).

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|  |                 |
|--|-----------------|
| Skin corrosion/irritation                        | Category 2      |
| Serious eye damage/eye irritation                | Category 1      |
| Skin sensitization                               | Sub-Category 1B |
| Specific target organ toxicity - Single exposure | Category 3      |

**Environmental hazards** Not classified

**Physical Hazards** Not classified

## 2.2 Label elements



### Signal word

DANGER

### Hazard Statements

H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H335 - May cause respiratory irritation

### Precautionary statements

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician

### Supplementary precautionary statements

P264 - Wash face, hands and any exposed skin thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P272 - Contaminated work clothing should not be allowed out of the workplace  
P362 - Take off contaminated clothing and wash before reuse  
P332 + P313 - If skin irritation occurs: Get medical advice/attention  
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention  
P362 + P364 - Take off contaminated clothing and wash it before reuse  
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### Contains

Portland Cement Clinker

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

### Australian statement of hazardous/dangerous nature

Classified as Hazardous according to the criteria of NOHSC.  
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name           | EC No     | CAS No     | Weight-% |
|-------------------------|-----------|------------|----------|
| Portland Cement Clinker | 266-043-4 | 65997-15-1 | 60-100   |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.                             |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors. React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8. Avoid dust formation. Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with the skin and the eyes.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

#### **Methods for cleaning up**

Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Pick up and transfer to properly labeled containers. Keep in suitable, closed containers for disposal. Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapors/dust. Avoid contact with skin and eyes. Avoid handling causing generation of dust. Persons susceptible to allergic reactions should not handle this product.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### **7.2 Conditions for safe storage, including any incompatibilities**

#### **Technical measures/precautions**

Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

#### **Storage precautions**

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store away from incompatibles, Powdered aluminum Acids Oxidizing agents Hydrofluoric acid (HF).



**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** NUI = Nuisance dust, TWA 4mg/m<sup>3</sup> Respirable Dust, 10mg/m<sup>3</sup> Total Dust.

No biological limit allocated

### Component Information

| Chemical Name           | Arabic                   | Australia                | Egypt  |
|-------------------------|--------------------------|--------------------------|--|
| Portland Cement Clinker | 10 mg/m <sup>3</sup> TWA | 10 mg/m <sup>3</sup> TWA | Not determined                                     |
| Chemical Name           | India                    | Indonesian               | Japan  |
| Portland Cement Clinker | 10 mg/m <sup>3</sup> TWA | 10 mg/m <sup>3</sup> TWA | 4 mg/m <sup>3</sup> OEL<br>1 mg/m <sup>3</sup> OEL |
| Chemical Name           | Kazakhstan               | Kuwait                   | New Zealand  |
| Portland Cement Clinker | Not determined           | Not determined           | 10 mg/m <sup>3</sup> TWA                           |
| Chemical Name           | Malaysia                 | Philippines              | Russia   |
| Portland Cement Clinker | 10 mg/m <sup>3</sup> TWA | Not determined           | Not determined                                     |
| Chemical Name           | Thailand                 | Vietnam                  | Turkey   |
| Portland Cement Clinker | Not determined           | Not determined           | Not determined                                     |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Tightly fitting safety goggles Safety glasses with side-shields

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Impervious gloves made of: PVC disposable gloves Rubber gloves Frequent change is advisable

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Effective dust mask. Type P2/P3 At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before breaks and immediately after handling the product Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

**Environmental exposure** Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder         |
| Odor           | Odorless       |
| Color          | Gray or White  |
| Odor threshold | Not applicable |

| Property                     | Values                      | Remarks   |
|------------------------------|-----------------------------|-----------|
| pH                           | Not applicable              |           |
| pH @ dilution                | 11 - 13                     | @ 10% sol |
| Melting / freezing point     | > 1250 °C / 2282 °F         |           |
| Boiling point/range          | No information available    |           |
| Flash point                  | Not applicable              |           |
| Evaporation rate (BuAc =1)   | Not applicable              |           |
| Flammability (solid, gas)    | Not applicable              |           |
| Flammability Limit in Air    |                             |           |
| Upper flammability limit     | Not applicable              |           |
| Lower flammability limit     | Not applicable              |           |
| Vapor pressure               | No information available    |           |
| Vapor density                | No information available    |           |
| Specific gravity             | ~ 3                         |           |
| Bulk density                 | 0.9 - 1.5 g/cm <sup>3</sup> |           |
| Relative density             | 2.75 - 3.20                 |           |
| Water solubility             | 0.1-1.5 g/L @ 20 °C         |           |
| Solubility in other solvents | No information available    |           |
| Autoignition temperature     | Not applicable              |           |
| Decomposition temperature    | No information available    |           |
| Kinematic viscosity          | No information available    |           |
| Dynamic viscosity            | No information available    |           |
| log Pow                      | No information available    |           |
| Explosive properties         | Not applicable              |           |
| Oxidizing properties         | Not applicable              |           |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | Not applicable           |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Protect from moisture. Avoid dust formation.

**10.5 Incompatible materials**

Acids. Powdered aluminum. Strong oxidizing agents. Hydrofluoric acid (HF).

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity****Inhalation**

Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Contact with moist mucous membranes of the respiratory system can cause caustic condition resulting in burns.

**Eye contact**

Causes serious eye damage.

**Skin contact**

Causes skin irritation. May cause an allergic skin reaction.

**Ingestion**

Ingestion may cause irritation to mucous membranes.

**Unknown acute toxicity**

Not applicable.

**Toxicology data for the components**

| Chemical Name           | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|-------------------------|-------------------|-------------------|-------------------|
| Portland Cement Clinker | No data available | No data available | No data available |

**Sensitization**

May cause allergic skin reaction.

**Mutagenic effects**

This product does not contain any known or suspected mutagens.

**Carcinogenicity**

This product does not contain any known or suspected carcinogens.

**Reproductive toxicity**

This product does not contain any known or suspected reproductive hazards.

**Routes of exposure**

Skin contact. Inhalation. Eye contact.

**Routes of entry**

Inhalation. Skin contact. Eye contact.

**Specific target organ toxicity -  
Single exposure**

Category 3

**Specific target organ toxicity -**

Not classified.

**Repeated exposure****Target organ effects** Respiratory system. Lungs.**Aspiration hazard** Not applicable.**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name           | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|-------------------------|--------------------------|--------------------------|---|
| Portland Cement Clinker | No information available | No information available | No information available                            |

### 12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

| Chemical Name           | Persistence and degradability |
|-------------------------|-------------------------------|
| Portland Cement Clinker | Inorganic compound            |

### 12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

| Chemical Name           | Bioaccumulation                |
|-------------------------|--------------------------------|
| Portland Cement Clinker | Product/Substance is inorganic |

### 12.4 Mobility

**Mobility**

Slightly soluble in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

**14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

None

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**

Portland Cement Clinker  
Schedule 4  
Schedule 6  
Schedule 5

**New Zealand Hazard Classification** Classified

**HSNO approval no.** 6.5B, 6.3A, 8.3A

**Group number** HSR002544

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes Date:** 05-Mar-2014

**Revision date** 01-Aug-2018

**Version** 5

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |     |
|-----------------|-----|
| Health          | 3 * |
| Flammability    | 1   |
| Physical hazard | 0   |
| PPE             | E   |

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## Safety Data Sheet Cement Liquid Dispersant D80

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name Cement Liquid Dispersant D80  
Product code D080

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Used as a cementing additive in oilfield applications

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518, Canada 001 613 996 6666

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

Health hazards Not classified

##### Environmental hazards

|                          |            |
|--------------------------|------------|
| Chronic aquatic toxicity | Category 2 |
|--------------------------|------------|

Physical Hazards Not classified

#### 2.2 Label elements



**Signal word**

None

**Hazard Statements**

H411 - Toxic to aquatic life with long lasting effects

**Precautionary statements**

P273 - Avoid release to the environment

P391 - Collect spillage

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

Classified as Hazardous according to the criteria of NOHSC.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name  | EC No   | CAS No    | Weight-% |
|--|---------|-----------|----------|
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Polymer | 9008-63-3 | 30-60    |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

**Skin contact**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if symptoms occur.

**Eye Contact** Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

#### **4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### **Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

#### **Unusual fire and explosion hazards**

None known.

#### **Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (COx), Sulphur oxides.

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**Hazchem code ADG** 3Z

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

## 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

### Methods for cleaning up

Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations (see Section 13). After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Avoid spills and splashing during use. Do not breathe vapors or spray mist.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. Wash hands and face before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Do not freeze. Store above 0°C. Avoid contact with: Oxidizing agents, Acids.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

**Exposure limits** The product does not contain any hazardous materials with occupational exposure limits established.

### Component Information

| Chemical Name  | Arabic         | Australia      | Egypt          |
|--|----------------|----------------|----------------|
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Not determined | Not determined | Not determined |
| Chemical Name  | India          | Indonesian     | Japan          |
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Not determined | Not determined | Not determined |

| Chemical Name  | Kazakhstan     | Kuwait         | New Zealand    |
|--|----------------|----------------|----------------|
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Not determined | Not determined | Not determined |
| Chemical Name  | Malaysia       | Philippines    | Russia         |
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Not determined | Not determined | Not determined |
| Chemical Name  | Thailand       | Vietnam        | Turkey         |
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | Not determined | Not determined | Not determined |

**Notes**

No biological limit allocated

**8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**Engineering Controls**

Ensure adequate ventilation, especially in confined areas

**Personal protective equipment****Eye protection**

Use eye protection according to EN 166, designed to protect against liquid splashes. Tightly fitting safety goggles. Safety glasses with side-shields.

**Hand protection**

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training.

Wear chemical resistant gloves such as nitrile or neoprene.

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

**Respiratory protection**

No personal respiratory protective equipment normally required. In case of insufficient ventilation wear suitable respiratory equipment. Respirator with combination filter for vapour/particulate (EN 141) Type A/P2. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection**

Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination. See section 6 for more information.

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties****Physical state**

Liquid

**Appearance**

Opaque

**Odor**

Pungent

Color Dark brown  
Odor threshold Not applicable

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | 6 - 8                    |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | - 2 °C/ 28 °F            |                |
| Boiling point/range          | 100 °C / 212 °F          |                |
| Flash point                  | Does not flash           |                |
| Evaporation rate (BuAc =1)   | No information available |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | No information available |                |
| Vapor density                | > 1 (air = 1)            |                |
| Specific gravity             | 1.2 g/cm <sup>3</sup>    | 20 °C          |
| Bulk density                 | No information available |                |
| Relative density             | No information available |                |
| Water solubility             | Soluble in water         |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | 60 mPa s                 |                |
| log Pow                      | No information available |                |

Explosive properties No information available  
Oxidizing properties No information available

#### 9.2 Other information

Pour point No information available  
Molecular weight No information available  
VOC content(%) No information available  
Density No information available

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Do not freeze. Store above 0°C.

**10.5 Incompatible materials**

Oxidizing agents. Acids.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| Chemical Name  | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|-------------------|-------------------|-------------------|
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | No data available | No data available | No data available |

|                          |   |
|--------------------------|---|
| <b>Sensitization</b>     | This product does not contain any components suspected to be sensitizing. |
| <b>Mutagenic effects</b> | This product does not contain any known or suspected mutagens.            |
| <b>Carcinogenicity</b>   | This product does not contain any known or suspected carcinogens.         |

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | None known.  |
| <b>Routes of entry</b>                                    | No route of entry noted.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

**12. Ecological Information**

**12.1 Toxicity**

Toxic to aquatic life with long lasting effects

**Toxicity to algae**

EC50 1.46 mg/l Skeletonema Costatum 48 h.

**Toxicity to fish**

Not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

LC50 > 100 mg/l Acartia tonsa 48 h.

**Toxicology data for the components**

| Chemical Name  | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|--|--------------------------|--------------------------|---|
| Naphthalenesulfonic acid, sodium salt, polymer with formaldehyde | No information available | No information available | No information available                            |

**12.2 Persistence and degradability**

Product is not biodegradable.

**12.3 Bioaccumulative potential**

Bioaccumulation is unlikely.

**12.4 Mobility****Mobility**

Soluble in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

UN/ID No. (ADR/RID/ADN/ADG) UN3082  
UN No. (IMDG/ANTAQ) UN3082  
UN No. (ICAO/ANAC) UN3082

**14.2. UN proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Sodium polynaphthalene sulfonate)

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class 9  
IMDG/ANTAQ Hazard class 9  
ICAO/ANAC Hazard class/division 9

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group III  
IMDG/ANTAQ Packing group III  
ICAO/ANAC Packing group III

**14.5 Environmental hazard**

Yes

**14.6 Special precautions**

Hazard identification no (ADR) 90  
EmS (IMDG) F-A, S-F  
Emergency Action Code (EAC) 3Z  
Tunnel restriction code (-)  
Hazchem code ADG 3Z

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information**



**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Construction Products (Subsidiary Hazard) Group Standard 2020

**HSNO approval no.** HSR002544

**Group number** 9.1B

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

ADG Code – Australian Dangerous Goods Code

**International inventories**

|  |          |
|--|----------|
| USA (TSCA)                                 | Complies |
| Canada (DSL)                               | Complies |
| Philippines (PICCS)                        | Complies |
| Japan (ENCS)                               | Complies |
| China (IECSC)                              | Complies |
| Australia (AICS)                           | Complies |
| Korean (KECL)                              | Complies |
| New Zealand (NZIoC)                        | Complies |
| Eurasian Economic Union: Russian Inventory | Complies |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam

**Supersedes Date:** 22-Jan-2016

**Revision date** 10-Feb-2021

**Version** 4

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

---

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | B |

**Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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## Safety Data Sheet Cement Retarder D110

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Cement Retarder D110  
**Product code** D110

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains** No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of irritating gases and vapors

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                                 |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.                                  |
| <b>Eye Contact</b>  | Remove contact lenses, if worn. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

**Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (COx), Harmful organic chemical fumes.

#### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

#### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

#### **6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product

### 7.2 Conditions for safe storage, including any incompatibilities

|                                |  |
|--------------------------------|--|
| Technical measures/precautions | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.   |
| Storage precautions            | Keep containers tightly closed in a dry, cool and well-ventilated place Do not freeze Store above 0°C Store away from incompatibles, Strong oxidizing agents |
| Storage class                  | Chemical storage.  |
| Packaging materials            | Use specially constructed containers only. High density polyethylene (HDPE) drum   |

## 8. Exposure controls/personal protection

### 8.1 Control parameters

|                 |   |
|-----------------|---|
| Exposure limits | The product does not contain any hazardous materials with occupational exposure limits established. |
|-----------------|---|

#### Notes

No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation

#### Personal protective equipment

##### Eye protection

It is good practice to wear goggles when handling any chemical Use eye protection according to EN 166, designed to protect against liquid splashes Tightly fitting safety goggles

##### Hand protection

Wear chemical resistant gloves such as nitrile or neoprene. Repeated or prolonged contact Rubber gloves Neoprene Nitrile Break through time >480 minutes Glove thickness 0.5 mm

##### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable. No personal respiratory protective equipment normally required In case of insufficient

**Skin and body protection** ventilation wear suitable respiratory equipment Respirator with combination filter for vapour/particulate (EN 141) Type A/P2  
Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures** Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

**Environmental exposure** Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Liquid         |
| <b>Appearance</b>     | Opaque         |
| <b>Odor</b>           | Sweet          |
| <b>Color</b>          | Brown          |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>                     | <u>Values</u>            | <u>Remarks</u> |
|-------------------------------------|--------------------------|----------------|
| <b>pH</b>                           | 6 - 9                    |                |
| <b>pH @ dilution</b>                | No information available |                |
| <b>Melting / freezing point</b>     | -4 °C / 24.8 °F          |                |
| <b>Boiling point/range</b>          | 100 °C / 212 °F          |                |
| <b>Flash point</b>                  | > 100 °C / > 212 °F      |                |
| <b>Evaporation rate (BuAc =1)</b>   | No information available |                |
| <b>Flammability (solid, gas)</b>    | Not applicable           |                |
| <b>Flammability Limit in Air</b>    |                          |                |
| Upper flammability limit            | Not applicable           |                |
| Lower flammability limit            | Not applicable           |                |
| <b>Vapor pressure</b>               | No information available |                |
| <b>Vapor density</b>                | No information available |                |
| <b>Specific gravity</b>             | 1.14                     | 20 °C          |
| <b>Bulk density</b>                 | No information available |                |
| <b>Relative density</b>             | No information available |                |
| <b>Water solubility</b>             | Soluble                  |                |
| <b>Solubility in other solvents</b> | No information available |                |
| <b>Autoignition temperature</b>     | No information available |                |
| <b>Decomposition temperature</b>    | >242°C / >467.6 °F       |                |
| <b>Kinematic viscosity</b>          | No information available |                |
| <b>Dynamic viscosity</b>            | 1.5cst                   | @ 40 °C        |
| <b>log Pow</b>                      | Does not bioaccumulate   |                |
| <b>Explosive properties</b>         | None known               |                |
| <b>Oxidizing properties</b>         | None known.              |                |

### 9.2 Other information

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |

VOC content(%) None  
Density No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

**Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Do not freeze. Store above 0°C.

### 10.5 Incompatible materials

Strong oxidizing agents.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

**Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.



|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | Skin contact. Eye contact.   |
| <b>Routes of entry</b>                                    | No route of entry noted.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

Not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

Not considered toxic.

### 12.2 Persistence and degradability

Product is biodegradable.

### 12.3 Bioaccumulative potential

Does not bioaccumulate.

### 12.4 Mobility

#### **Mobility**

The product is water soluble, and may spread in water systems.

#### **Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues / unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].****National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].****National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

Safe Work Australia.

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).****Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)****International inventories**

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Complies        |
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Does not comply |
| Japan (ENCS)        | Complies        |
| China (IECSC)       | Does not comply |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Does not comply |
| New Zealand (NZIoC) | Does not comply |

**16. Other Information****Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Ingrid Helland**Supersedes Date:** 20-Feb-2015**Revision date** 06-Jun-2018**Version** 3**This SDS has been revised in the following section(s)** 1, 2, 7, 8, 9, 10, 11, 15, 16  
No changes with regard to classification have been made.**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | E |

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



**Safety Data Sheet**  
**Citric acid, anhydrous**  
**Revision 5, Date 18 Mar 2020**

## 1. IDENTIFICATION

|                            |  |
|----------------------------|--|
| <b>Product Name</b>        | <b>Citric acid, anhydrous</b>  |
| <b>Other Names</b>         | 1,2,3-Propanetricarboxylic acid, 2-hydroxy; 2-Hydroxy-1,2,3-propanetricarboxylic acid; 2-Hydroxypropane-1,2,3-tricarboxylic acid |
| <b>Uses</b>                | Food applications.   |
| <b>Chemical Family</b>     | No Data Available  |
| <b>Chemical Formula</b>    | C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>   |
| <b>Chemical Name</b>       | 1,2,3-Propanetricarboxylic acid, 2-hydroxy-  |
| <b>Product Description</b> | Organic acid   |

### Contact Details of the Supplier of this Safety Data Sheet

| <b>Organisation</b>     | <b>Location</b>  | <b>Telephone</b> |
|-------------------------|--|------------------|
| Redox Pty Ltd           | 2 Swettenham Road<br>Minto NSW 2566<br>Australia   | +61-2-97333000   |
| Redox Pty Ltd           | 11 Mayo Road<br>Wiri Auckland 2104<br>New Zealand  | +64-9-2506222    |
| Redox Inc.              | 3960 Paramount Boulevard<br>Suite 107<br>Lakewood CA 90712<br>USA  | +1-424-675-3200  |
| Redox Chemicals Sdn Bhd | Level 2, No. 8, Jalan Sapir 33/7<br>Seksyen 33, Shah Alam Premier Industrial Park<br>40400 Shah Alam<br>Sengalor, Malaysia | +60-3-5614-2111  |

### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

| <b>Organisation</b>        | <b>Location</b> | <b>Telephone</b>             |
|----------------------------|-----------------|------------------------------|
| Poisons Information Centre | Westmead NSW    | 1800-251525<br>131126        |
| Chemcall                   | Australia       | 1800-127406<br>+64-4-9179888 |

## 2. HAZARD IDENTIFICATION

|                                |               |
|--------------------------------|---------------|
| <b>Poisons Schedule (Aust)</b> | Not Scheduled |
|--------------------------------|---------------|

### Globally Harmonised System

|                              |  |
|------------------------------|--|
| <b>Hazard Classification</b> | Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)                               |
| <b>Hazard Categories</b>     | Skin Corrosion/Irritation - Category 2<br>Serious Eye Damage/Irritation - Category 2A<br>Specific Target Organ Toxicity (Single Exposure) - Category 3 |

Redox Pty Ltd  
Perth Office  
27 Howson Way  
Bibra Lake WA 6163  
Australia

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Los Angeles



## Pictograms



## Signal Word

Warning

## Hazard Statements

**H315** Causes skin irritation.  
**H319** Causes serious eye irritation.  
**H335** May cause respiratory irritation.

## Precautionary Statements

|            |                           |  |
|------------|---------------------------|--|
| Prevention | <b>P280</b>               | Wear protective gloves/eye protection/face protection.   |
|            | <b>P261</b>               | Avoid breathing dust.  |
|            | <b>P271</b>               | Use only outdoors or in a well-ventilated area.  |
| Response   | <b>P302 + P352</b>        | IF ON SKIN: Wash with plenty of soap and water.  |
|            | <b>P337 + P313</b>        | If eye irritation persists: Get medical advice/attention.  |
|            | <b>P312</b>               | Call a POISON CENTER or doctor/physician if you feel unwell.   |
|            | <b>P332 + P313</b>        | If skin irritation occurs: Get medical advice/attention.   |
|            | <b>P362</b>               | Take off contaminated clothing and wash before reuse.  |
|            | <b>P305 + P351 + P338</b> | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
|            | <b>P304 + P340</b>        | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                 |
| Storage    | <b>P403 + P233</b>        | Store in a well-ventilated place. Keep container tightly closed.   |
|            | <b>P405</b>               | Store locked up.   |
| Disposal   | <b>P501</b>               | Dispose of contents/container in accordance with local / regional / national / international regulations.                        |

## National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road &amp; Rail (ADG Code)

## Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road &amp; Rail (ADG Code)

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

## Ingredients

| Chemical Entity | Formula | CAS Number | Proportion |
|-----------------|---------|------------|------------|
| Citric acid     | C6H8O7  | 77-92-9    | <=100 %    |

## 4. FIRST AID MEASURES

## Description of necessary measures according to routes of exposure

**Swallowed** IF SWALLOWED: Rinse mouth with water, then drink plenty of water. Do NOT induce vomiting. Get medical advice/attention.

**Eye** IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

**Skin** IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.



|  |   |
|--|---|
| <b>Inhaled</b>                                   | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult. |
| <b>Advice to Doctor</b>                          | Treat symptomatically.  |
| <b>Medical Conditions Aggravated by Exposure</b> | No information available.   |

## 5. FIRE FIGHTING MEASURES

|   |  |
|---|--|
| <b>General Measures</b>                   | If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.                         |
| <b>Flammability Conditions</b>            | Combustible material; May burn but does not ignite readily.  |
| <b>Extinguishing Media</b>                | Use dry chemical, Carbon dioxide (CO <sub>2</sub> ), foam or water spray for extinction.   |
| <b>Fire and Explosion Hazard</b>          | Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.           |
| <b>Hazardous Products of Combustion</b>   | Fire may produce irritating, toxic and/or corrosive fumes, including oxides of Carbon.   |
| <b>Special Fire Fighting Instructions</b> | Contain runoff from fire control or dilution water - Runoff may pollute waterways.   |
| <b>Personal Protective Equipment</b>      | Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection. |
| <b>Flash Point</b>                        | 345 °C   |
| <b>Lower Explosion Limit</b>              | No Data Available  |
| <b>Upper Explosion Limit</b>              | No Data Available  |
| <b>Auto Ignition Temperature</b>          | No Data Available  |
| <b>Hazchem Code</b>                       | No Data Available  |

## 6. ACCIDENTAL RELEASE MEASURES

|   |   |
|---|---|
| <b>General Response Procedure</b>           | Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.                                 |
| <b>Clean Up Procedures</b>                  | Collect material (sweep or vacuum up) and place into suitable containers for disposal (see SECTION 13). Avoid dispersal of dust in the air (i.e. clearing dusty surfaces with compressed air). Non-sparking tools should be used. |
| <b>Containment</b>                          | Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Prevent dust cloud.  |
| <b>Decontamination</b>                      | Neutralise residues with lime or soda ash; Wash away remainder with plenty of water.  |
| <b>Environmental Precautionary Measures</b> | Prevent entry into drains and waterways.  |
| <b>Evacuation Criteria</b>                  | Spill or leak area should be isolated immediately. Keep unauthorised personnel away.  |
| <b>Personal Precautionary Measures</b>      | Use personal protective equipment as required (see SECTION 8).  |

## 7. HANDLING AND STORAGE

|                 |  |
|-----------------|--|
| <b>Handling</b> | Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. |
| <b>Storage</b>  | Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10).<br><br>Keep in the original container.   |



Container

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

|                                      |   |
|--------------------------------------|---|
| <b>General</b>                       | No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards:<br>- Safe Work Australia Exposure Standard for Nuisance dusts: 8 hr TWA = 10 mg/m <sup>3</sup> (measured as inhalable dust).<br>- New Zealand WES for Particulates not otherwise classified: TWA = 10 mg/m <sup>3</sup> ; TWA = 3 mg/m <sup>3</sup> (respirable dust).<br>- OSHA PEL for Particulates not otherwise regulated: TWA = 15 mg/m <sup>3</sup> (total); TWA = 5 mg/m <sup>3</sup> (respirable). |
| <b>Exposure Limits</b>               | No Data Available   |
| <b>Biological Limits</b>             | No information available.   |
| <b>Engineering Measures</b>          | A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.  |
| <b>Personal Protection Equipment</b> | - Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Dust mask/particulate filter respirator (refer to AS/NZS 1715 & 1716).<br>- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles.<br>- Hand protection: Wear protective gloves. Recommended: Impervious gloves.<br>- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes.              |
| <b>Special Hazards Precautions</b>   | No information available.   |
| <b>Work Hygienic Practices</b>       | Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.   |

**9. PHYSICAL AND CHEMICAL PROPERTIES**

|                                  |                                 |
|----------------------------------|---------------------------------|
| <b>Physical State</b>            | Solid                           |
| <b>Appearance</b>                | Crystalline powder              |
| <b>Odour</b>                     | Odourless                       |
| <b>Colour</b>                    | Colourless to white             |
| <b>pH</b>                        | 2.0 - 2.5 (1% solution)         |
| <b>Vapour Pressure</b>           | No Data Available               |
| <b>Relative Vapour Density</b>   | No Data Available               |
| <b>Boiling Point</b>             | Decomposes before boiling       |
| <b>Melting Point</b>             | ca. 153 °C                      |
| <b>Freezing Point</b>            | No Data Available               |
| <b>Solubility</b>                | Soluble in water (590 g/L) 20°C |
| <b>Specific Gravity</b>          | 1.665                           |
| <b>Flash Point</b>               | 345 °C                          |
| <b>Auto Ignition Temp</b>        | No Data Available               |
| <b>Evaporation Rate</b>          | No Data Available               |
| <b>Bulk Density</b>              | No Data Available               |
| <b>Corrosion Rate</b>            | No Data Available               |
| <b>Decomposition Temperature</b> | No Data Available               |
| <b>Density</b>                   | No Data Available               |
| <b>Specific Heat</b>             | No Data Available               |
| <b>Molecular Weight</b>          | No Data Available               |
| <b>Net Propellant Weight</b>     | No Data Available               |
| <b>Octanol Water Coefficient</b> | No Data Available               |
| <b>Particle Size</b>             | No Data Available               |
| <b>Partition Coefficient</b>     | No Data Available               |





|   |  |
|---|--|
| <b>Saturated Vapour Concentration</b>                                 | No Data Available  |
| <b>Vapour Temperature</b>   | No Data Available  |
| <b>Viscosity</b>  | No Data Available  |
| <b>Volatile Percent</b>   | No Data Available  |
| <b>VOC Volume</b>   | No Data Available  |
| <b>Additional Characteristics</b>                                     | No information available.  |
| <b>Potential for Dust Explosion</b>                                   | Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. |
| <b>Fast or Intensely Burning Characteristics</b>                      | No information available.  |
| <b>Flame Propagation or Burning Rate of Solid Materials</b>           | No information available.  |
| <b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b> | No information available.  |
| <b>Properties That May Initiate or Contribute to Fire Intensity</b>   | Combustible material; May burn but does not ignite readily.  |
| <b>Reactions That Release Gases or Vapours</b>                        | Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including oxides of Carbon.                                     |
| <b>Release of Invisible Flammable Vapours and Gases</b>               | No information available.  |

## 10. STABILITY AND REACTIVITY

|   |  |
|---|--|
| <b>General Information</b>              | Reacts exothermically with alkalis.  |
| <b>Chemical Stability</b>               | Stable under normal storage and handling conditions.   |
| <b>Conditions to Avoid</b>              | Avoid generating dust. Keep away from heat and sources of ignition.                                  |
| <b>Materials to Avoid</b>               | Incompatible/reactive with strong oxidising agents, alkalis, carbon steel.                           |
| <b>Hazardous Decomposition Products</b> | Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including oxides of Carbon. |
| <b>Hazardous Polymerisation</b>         | Will not occur.  |

## 11. TOXICOLOGICAL INFORMATION

|                            |   |
|----------------------------|---|
| <b>General Information</b> | <ul style="list-style-type: none"> <li>- Acute toxicity: No adverse health affects expected; Swallowing (large amounts) may cause abdominal pain, nausea, vomiting and irritation to the mouth and throat. Physiological disturbances may include acidosis and calcium deficiency; The substance may have effects on the teeth, resulting in erosion.</li> <li>- Skin corrosion/irritation: Causes skin irritation, redness.</li> <li>- Eye damage/irritation: Causes serious eye irritation.</li> <li>- Respiratory/skin sensitisation: No evidence of sensitisation.</li> <li>- Germ cell mutagenicity: No evidence of mutagenicity.</li> <li>- Carcinogenicity: No evidence of carcinogenicity.</li> <li>- Reproductive toxicity: No evidence of reproductive or developmental toxicity.</li> <li>- STOT (single exposure): May cause respiratory irritation; Inhalation of citric acid aerosols may induce coughing and broncho-constriction [NICNAS].</li> <li>- STOT (repeated exposure): Not considered to cause serious damage to health from repeated (oral) exposure [NICNAS].</li> <li>- Aspiration toxicity: No information available.</li> </ul> |
| <b>Acute</b>               |   |
| <b>Ingestion</b>           | Acute toxicity (Oral):<br>- LD50, Mouse: 5,400 - 5,790 mg/kg [equiv. OECD TG 401; ECHA].<br>- LD50, Rat: 11,700 mg/kg [equiv. OECD TG 401; ECHA].   |
| <b>Other</b>               | Acute toxicity (Dermal):<br>- LD50, Rats: >2,000 mg/kg bw. [NICNAS].  |
| <b>Carcinogen Category</b> | None  |



**12. ECOLOGICAL INFORMATION**

|                                  |  |
|----------------------------------|--|
| <b>Ecotoxicity</b>               | Aquatic toxicity:<br>- LC50, Fish ( <i>Leuciscus idus melanotus</i> ): 440 mg/L (48 h) [ECHA].<br>- EC50, Crustacea ( <i>Daphnia magna</i> ): 1,535 mg/L (24 h) mobility [ECHA]. |
| <b>Persistence/Degradability</b> | Readily biodegradable.   |
| <b>Mobility</b>                  | No information available.  |
| <b>Environmental Fate</b>        | Prevent entry into drains and waterways.   |
| <b>Bioaccumulation Potential</b> | Low potential for bioaccumulation.   |
| <b>Environmental Impact</b>      | No Data Available  |

**13. DISPOSAL CONSIDERATIONS**

|  |   |
|--|---|
| <b>General Information</b>               | Dispose of contents/container in accordance with local/regional/national regulations. |
| <b>Special Precautions for Land Fill</b> | No information available.   |

**14. TRANSPORT INFORMATION****Land Transport (Australia)**

ADG Code

|                             |  |
|-----------------------------|--|
| <b>Proper Shipping Name</b> | Citric acid, anhydrous                                 |
| <b>Class</b>                | No Data Available                                      |
| <b>Subsidiary Risk(s)</b>   | No Data Available                                      |
| <b>UN Number</b>            | No Data Available                                      |
| <b>Hazchem</b>              | No Data Available                                      |
| <b>Pack Group</b>           | No Data Available                                      |
| <b>Special Provision</b>    | No Data Available                                      |
| <b>Comments</b>             | NON-DANGEROUS GOODS: Not regulated for LAND transport. |

**Sea Transport**

IMDG Code

|                             |   |
|-----------------------------|---|
| <b>Proper Shipping Name</b> | Citric acid, anhydrous                                |
| <b>Class</b>                | No Data Available                                     |
| <b>Subsidiary Risk(s)</b>   | No Data Available                                     |
| <b>UN Number</b>            | No Data Available                                     |
| <b>Hazchem</b>              | No Data Available                                     |
| <b>Pack Group</b>           | No Data Available                                     |
| <b>Special Provision</b>    | No Data Available                                     |
| <b>EMS</b>                  | No Data Available                                     |
| <b>Marine Pollutant</b>     | No  |
| <b>Comments</b>             | NON-DANGEROUS GOODS: Not regulated for SEA transport. |



## Air Transport

IATA DGR

|                             |   |
|-----------------------------|---|
| <b>Proper Shipping Name</b> | Citric acid, anhydrous                                |
| <b>Class</b>                | No Data Available                                     |
| <b>Subsidiary Risk(s)</b>   | No Data Available                                     |
| <b>UN Number</b>            | No Data Available                                     |
| <b>Hazchem</b>              | No Data Available                                     |
| <b>Pack Group</b>           | No Data Available                                     |
| <b>Special Provision</b>    | No Data Available                                     |
| <b>Comments</b>             | NON-DANGEROUS GOODS: Not regulated for AIR transport. |

## National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

|                                       |   |
|---------------------------------------|---|
| <b>Dangerous Goods Classification</b> | NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) |
|---------------------------------------|---|

## 15. REGULATORY INFORMATION

|                                |   |
|--------------------------------|---|
| <b>General Information</b>     | WCO (World Customs organisation) HS Code: 2918.14 |
| <b>Poisons Schedule (Aust)</b> | Not Scheduled                                     |

## National/Regional Inventories

|   |                |
|---|----------------|
| <b>Australia (AICS)</b>                               | Listed         |
| <b>Canada (DSL)</b>                                   | Not Determined |
| <b>Canada (NDSL)</b>                                  | Not Determined |
| <b>China (IECSC)</b>                                  | Not Determined |
| <b>Europe (EINECS)</b>                                | Not Determined |
| <b>Europe (REACH)</b>                                 | Not Determined |
| <b>Japan (ENCS/METI)</b>                              | Not Determined |
| <b>Korea (KECI)</b>                                   | Not Determined |
| <b>Malaysia (EHS Register)</b>                        | Not Determined |
| <b>New Zealand (NZIoC)</b>                            | Listed         |
| <b>Philippines (PICCS)</b>                            | Not Determined |
| <b>Switzerland (Giftliste 1)</b>                      | Not Determined |
| <b>Switzerland (Inventory of Notified Substances)</b> | Not Determined |
| <b>Taiwan (NCSR)</b>                                  | Not Determined |
| <b>USA (TSCA)</b>                                     | Not Determined |



## 16. OTHER INFORMATION

## Related Product Codes

CIACID0200, CIACID0201, CIACID0205, CIACID0206, CIACID0208, CIACID0300, CIACID0301, CIACID0400,  
 CIACID0401, CIACID0600, CIACID0601, CIACID0602, CIACID0603, CIACID0604, CIACID0605, CIACID0700,  
 CIACID0701, CIACID0702, CIACID0750, CIACID0800, CIACID0801, CIACID0900, CIACID0901, CIACID1000,  
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 CIACID5300, CIACID5400, CIACID5401, CIACID5402, CIACID5500, CIACID5501, CIACID5502, CIACID5510,  
 CIACID5800, CIACID5801, CIACID5900, CIACID5901, CIACID6000, CIACID6001, CIACID6002, CIACID6003,  
 CIACID6004, CIACID6012, CIACID6100, CIACID6101, CIACID6150, CIACID6160, CIACID6200, CIACID6201, CIACID6202,  
 CIACID6203, CIACID6300, CIACID6301, CIACID6500, CIACID6501, CIACID6502, CIACID6503, CIACID6504,  
 CIACID6600, CIACID6601, CIACID6700, CIACID6701, CIACID6800, CIACID6801, CIACID6900, CIACID6901,  
 CIACID6902, CIACID6903, CIACID7000, CIACID7100, CIACID7101, CIACID7102, CIACID7200, CIACID7201,  
 CIACID7202, CIACID7203, CIACID7300, CIACID7301, CIACID7302, CIACID7303, CIACID7304, CIACID7305,  
 CIACID7400, CIACID7401, CIACID7600, CIACID7601, CIACID7602, CIACID7700, CIACID7701, CIACID7900,  
 CIACID8000, CIACID8001, CIACID8100, CIACID8400, CIACID8500, CIACID8501, CIACID8502, CIACID8600,  
 CIACID8700, CIACID8800, CIACID8801, CIACID8802, CIACID9100, CIACID9101, CIACID9102, CIACID9200,  
 CIACID9201, CIACID9300, CIACID9500, CIACID9501, CIACID9502, CIACID9600, CIACID9602, CIACID9603,  
 CIACID9604, CIACID9605, CIACID9610, CIACID9620, CIACID9621, CIACID9800, CIACID9801, CIACID9802,  
 CIACID9803, CIACID9805, CIACID9810, CIACID9900, CIACID9901, CIACID9902, CIACID9903, CIACID9904,  
 CIACID9905, CIACID9906, CIACID9907, CIACID9910, CIACID9920, CIACID9950, CIACIR1000, CIACIR2000,  
 CIACIR3000, CIACIR3500, CIACIR4000, CIACIR4100, CIACIR4200, CIACIT2500, CIACRR5000, CIACRR6000,  
 CIACRR7000

Revision

5



**Revision Date**

18 Mar 2020

**Key/Legend**

< Less Than  
> Greater Than  
**AICS** Australian Inventory of Chemical Substances  
**atm** Atmosphere  
**CAS** Chemical Abstracts Service (Registry Number)  
**cm<sup>2</sup>** Square Centimetres  
**CO<sub>2</sub>** Carbon Dioxide  
**COD** Chemical Oxygen Demand  
**deg C (°C)** Degrees Celcius  
**EPA (New Zealand)** Environmental Protection Authority of New Zealand  
**deg F (°F)** Degrees Fahrenheit  
**g** Grams  
**g/cm<sup>3</sup>** Grams per Cubic Centimetre  
**g/l** Grams per Litre  
**HSNO** Hazardous Substance and New Organism  
**IDLH** Immediately Dangerous to Life and Health  
**immiscible** Liquids are insoluble in each other.  
**inHg** Inch of Mercury  
**inH<sub>2</sub>O** Inch of Water  
**K** Kelvin  
**kg** Kilogram  
**kg/m<sup>3</sup>** Kilograms per Cubic Metre  
**lb** Pound  
**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.  
**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.  
**ltr** or **L** Litre  
**m<sup>3</sup>** Cubic Metre  
**mbar** Millibar  
**mg** Milligram  
**mg/24H** Milligrams per 24 Hours  
**mg/kg** Milligrams per Kilogram  
**mg/m<sup>3</sup>** Milligrams per Cubic Metre  
**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.  
**mm** Millimetre  
**mmH<sub>2</sub>O** Millimetres of Water  
**mPa.s** Millipascals per Second  
**N/A** Not Applicable  
**NIOSH** National Institute for Occupational Safety and Health  
**NOHSC** National Occupational Health and Safety Commission  
**OECD** Organisation for Economic Co-operation and Development  
**Oz** Ounce  
**PEL** Permissible Exposure Limit  
**Pa** Pascal  
**ppb** Parts per Billion  
**ppm** Parts per Million  
**ppm/2h** Parts per Million per 2 Hours  
**ppm/6h** Parts per Million per 6 Hours  
**psi** Pounds per Square Inch  
**R** Rankine  
**RCP** Reciprocal Calculation Procedure  
**STEL** Short Term Exposure Limit  
**TLV** Threshold Limit Value  
**tne** Tonne  
**TWA** Time Weighted Average  
**ug/24H** Micrograms per 24 Hours  
**UN** United Nations  
**wt** Weight





## Safety Data Sheet Class G - Silica Blend D956

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Class G - Silica Blend D956  
**Product code** D956

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|  |             |
|--|-------------|
| Skin corrosion/irritation                          | Category 2  |
| Serious eye damage/eye irritation                  | Category 1  |
| Skin sensitization                                 | Category 1B |
| Specific target organ toxicity - Single exposure   | Category 3  |
| Specific target organ toxicity - Repeated exposure | Category 2  |

**Environmental hazards** Not classified

**Physical Hazards** Not classified

## 2.2 Label elements



### Signal word

DANGER

### Hazard Statements

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

H373 - May cause damage to organs through prolonged or repeated exposure

### Precautionary statements

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

### Supplementary precautionary statements

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P264 - Wash face, hands and any exposed skin thoroughly after handling

P271 - Use only outdoors or in a well-ventilated area

P272 - Contaminated work clothing should not be allowed out of the workplace

P332 + P313 - If skin irritation occurs: Get medical advice/attention

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P362 + P364 - Take off contaminated clothing and wash it before reuse

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### Contains

Portland cement

Quartz, Crystalline silica

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

### Australian statement of hazardous/dangerous nature

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name              | EC No     | CAS No     | Weight-% |
|----------------------------|-----------|------------|----------|
| Portland cement            | 266-043-4 | 65997-15-1 | 60 - 80  |
| Quartz, Crystalline silica | 238-878-4 | 14808-60-7 | 10-30    |

**Comments**

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.                             |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**



None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors. React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Do not get on skin or clothing. Wash thoroughly after handling. Avoid dust formation. Do not breathe dust. Use personal protective equipment. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Prevent dust cloud. Cover powder spill with plastic sheet or tarp to minimize spreading.

**Methods for cleaning up**

Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Pick up and transfer to properly labeled containers. Keep in suitable, closed containers for disposal. Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

**7. Handling and Storage****7.1 Precautions for safe handling****Handling**

Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapors/dust. Avoid contact with skin and eyes. Avoid handling causing generation of dust. Persons susceptible to allergic reactions should not handle this product.

**Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Do not eat, drink or smoke when using this product. Remove contaminated clothing.

**7.2 Conditions for safe storage, including any incompatibilities**

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place Protect from moisture<br>Store away from incompatibles, Powdered aluminum Oxidizing agents Hydrofluoric acid (HF) Strong bases Strong acids |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** NUI = Nuisance dust, TWA 4mg/m<sup>3</sup> Respirable Dust, 10mg/m<sup>3</sup> Total Dust.

### Component Information

| Chemical Name              | Arabic                      | Australia                                 | Egypt  |
|----------------------------|-----------------------------|---|--|
| Portland cement            | 10 mg/m <sup>3</sup> TWA    | 10mg/m <sup>3</sup> TW A inhalable dust   | Not determined   |
| Quartz, Crystalline silica | 0.1 mg/m <sup>3</sup> TWA   | 0.1mg/m <sup>3</sup> TW A respirable dust | Not determined   |
| Chemical Name              | India                       | Indonesian                                | Japan  |
| Portland cement            | 10 mg/m <sup>3</sup> TWA    | 10 mg/m <sup>3</sup> TWA                  | 4 mg/m <sup>3</sup> OEL<br>1 mg/m <sup>3</sup> OEL   |
| Quartz, Crystalline silica | Not determined              | 0.1 mg/m <sup>3</sup> TWA                 | Not determined   |
| Chemical Name              | Kazakhstan                  | Kuwait                                    | New Zealand  |
| Portland cement            | Not determined              | Not determined                            | 10 mg/m <sup>3</sup> TWA   |
| Quartz, Crystalline silica | 1 mg/m <sup>3</sup> MAC     | Not determined                            | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen  |
| Chemical Name              | Malaysia                    | Philippines                               | Russia   |
| Portland cement            | 10 mg/m <sup>3</sup> TWA    | Not determined                            | Not determined   |
| Quartz, Crystalline silica | 0.1 mg/m <sup>3</sup> TWA   | Not determined                            | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance<br>glass; regulated under Quartz 1123,<br>1124 |
| Chemical Name              | Thailand                    | Vietnam                                   | Turkey   |
| Portland cement            | Not determined              | Not determined                            | Not determined   |
| Quartz, Crystalline silica | 0.025 mg/m <sup>3</sup> TWA | Not determined                            | Not determined   |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Safety glasses with side-shields Tightly fitting safety goggles

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Impervious gloves made of: Butyl Neoprene Nitrile Rubber Frequent change is advisable

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Suitable mask with particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

|                                 |   |
|---------------------------------|---|
| <b>Skin and body protection</b> | Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.                    |
| <b>Hygiene Measures</b>         | Wash hands before breaks and immediately after handling the product Remove and wash contaminated clothing before re-use |



### 8.2.3 Environmental exposure controls

|                               |   |
|-------------------------------|---|
| <b>Environmental exposure</b> | Use appropriate containment to avoid environmental contamination See section 6 for more information |
|-------------------------------|---|

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Solid          |
| <b>Appearance</b>     | Powder         |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | Gray           |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>              | <u>Values</u>              | <u>Remarks</u> |
|------------------------------|----------------------------|----------------|
| pH                           | No information available   |                |
| pH @ dilution                | 11.0 - 13.5                |                |
| Melting / freezing point     | > 1250 °C/ 2282 °F         |                |
| Boiling point/range          | No information available   |                |
| Flash point                  | No information available   |                |
| Evaporation rate (BuAc =1)   | No information available   |                |
| Flammability (solid, gas)    | Not applicable             |                |
| Flammability Limit in Air    |                            |                |
| Upper flammability limit     | Not applicable             |                |
| Lower flammability limit     | Not applicable             |                |
| Vapor pressure               | No information available   |                |
| Vapor density                | No information available   |                |
| Specific gravity             | No information available   |                |
| Bulk density                 | No information available   |                |
| Relative density             | 2.75-3.20                  |                |
| Water solubility             | Slightly soluble in water. |                |
| Solubility in other solvents | No information available   |                |
| Autoignition temperature     | No information available   |                |
| Decomposition temperature    | No information available   |                |
| Kinematic viscosity          |                            |                |
| Dynamic viscosity            | No information available   |                |
| log Pow                      | No information available   |                |
| Explosive properties         | Not applicable             |                |
| Oxidizing properties         | None known.                |                |

### 9.2 Other information

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | No information available |

**Density** No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Protect from moisture.

### 10.5 Incompatible materials

Powdered aluminum. Strong oxidizing agents. Hydrofluoric acid (HF). Strong acids. Strong bases.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Inhalation

Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. May cause respiratory irritation. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

##### Eye contact

Causes serious eye damage.

##### Skin contact

Causes skin irritation. Contact with moist skin may cause skin burns. May cause an allergic skin reaction.

##### Ingestion

Ingestion may cause irritation to mucous membranes.

##### Unknown acute toxicity

Not applicable.

| Chemical Name              | LD50 Oral           | LD50 Dermal       | LC50 Inhalation   |
|----------------------------|---------------------|-------------------|-------------------|
| Portland cement            | No data available   | No data available | No data available |
| Quartz, Crystalline silica | = 500 mg/kg ( Rat ) | No data available | No data available |

**Sensitization** May cause allergic skin reaction.

|   |   |
|---|---|
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.  |
| <b>Carcinogenicity</b>                                    | Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.  |
| <b>Routes of exposure</b>                                 | Ingestion. Inhalation. Skin contact. Eye contact.   |
| <b>Routes of entry</b>                                    | Inhalation. Ingestion.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Category 3  |
| <b>Specific target organ toxicity - Repeated exposure</b> | Category 2.   |
| <b>Target organ effects</b>                               | Respiratory system. Lungs.  |
| <b>Aspiration hazard</b>                                  | Not applicable.   |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.  |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

| Chemical Name              | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|----------------------------|--------------------------|--------------------------|---|
| Portland cement            | No information available | No information available | No information available                            |
| Quartz, Crystalline silica | No information available | No information available | No information available                            |

### 12.2 Persistence and degradability

No product level data available.

| Chemical Name              | Persistence and degradability |
|----------------------------|-------------------------------|
| Quartz, Crystalline silica | Inorganic compound            |

### 12.3 Bioaccumulative potential

No product level data available.

| Chemical Name              | Bioaccumulation                |
|----------------------------|--------------------------------|
| Quartz, Crystalline silica | Product/Substance is inorganic |

#### **12.4 Mobility**

##### **Mobility**

Slightly soluble in water.

##### **Mobility in soil**

No information available.

#### **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

#### **12.6 Other adverse effects.**

None known.

#### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### **13.1 Waste treatment methods**

##### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

##### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### **14.1. UN number**

Not regulated

#### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

#### **14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

#### **14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

None

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**Portland cement  
Schedule 4  
Schedule 6  
Schedule 5**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].****National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].****National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].****Safe Work Australia.****Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).****Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)****International inventories**

|                            |          |
|----------------------------|----------|
| <b>USA (TSCA)</b>          | Complies |
| <b>Canada (DSL)</b>        | Complies |
| <b>Philippines (PICCS)</b> | Complies |
| <b>Japan (ENCS)</b>        | Complies |
| <b>China (IECSC)</b>       | Complies |
| <b>Australia (AICS)</b>    | Complies |
| <b>Korean (KECL)</b>       | Complies |
| <b>New Zealand (NZIoC)</b> | Complies |

**16. Other Information****Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel**Supersedes Date:** 04-Aug-2016

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**Revision date** 27-Jul-2018**Version** 5**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |    |
|-----------------|----|
| Health          | 3* |
| Flammability    | 1  |
| Physical hazard | 0  |
| PPE             | C  |

**Disclaimer**

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**CRW24830**

## 1. Identification of the material and supplier

|                                   |  |
|-----------------------------------|--|
| <b>Product identifier</b>         | : CRW24830   |
| <b>Product code</b>               | : CRW24830   |
| <b>ADG</b>                        | : AMINES, LIQUID, CORROSIVE, N.O.S. (contains oxyalkylated amine)  |
| <b>Product type</b>               | : Liquid.  |
| <b>Identified uses</b>            | : Hydrotest Corrosion Inhibitor  |
| <b>Supplier's details</b>         | : Baker Hughes, Australia<br>5 Walker Street,<br>Braeside,<br>Victoria 3195,<br>Australia<br><br>Tel: +613 9580 9004<br>Fax: +613 9580 6004  |
| <b>Emergency telephone number</b> | : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):<br>- Australia: (02) 9037 2994<br>- New Zealand: 9801 0034<br>- PNG: +(61) 2 9037 2994<br>-----<br>- UK: +(44) 870-820-0418<br>- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour) |

## 2. Hazards identification

|   |   |
|---|---|
| <b>Classification of the substance or mixture</b> | : ACUTE TOXICITY (oral) - Category 4<br>SKIN CORROSION/IRRITATION - Category 1B<br>ACUTE AQUATIC HAZARD - Category 1<br>LONG-TERM AQUATIC HAZARD - Category 2 |
|---|---|

### GHS label elements

#### **Hazard pictograms**



#### **Signal word**

: DANGER

#### **Hazard statements**

: H302 - Harmful if swallowed.  
H314 - Causes severe skin burns and eye damage.  
H400 - Very toxic to aquatic life.  
H411 - Toxic to aquatic life with long lasting effects.

### Precautionary statements

#### **Prevention**

: Wear protective gloves: > 8 hours (breakthrough time): Rubber gloves.. Wear eye or face protection. Wear protective clothing. Avoid release to the environment.

#### **Response**

: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: Immediately call a POISON CENTER or physician.

#### **Storage**

: Store locked up.

#### **Disposal**

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

## 2. Hazards identification

**Precautionary statements (Code)** : P280, P273, P304 + P340 + P310, P301 + P310 + P331, P303 + P361 + P353 + P310, P305 + P310, P405, P501

**Supplemental label elements** : Not applicable.

**Other hazards which do not result in classification** : None known.

## 3. Composition/information on ingredients

**Substance/mixture** : Mixture

| <b>Ingredient name</b>  | <b>% (w/w)</b> | <b>CAS number</b>        |
|---|----------------|--------------------------|
| Amines, N-tallow alkyltrimethylenedi-, ethoxylated                    | 10 - 30        | 61790-85-0               |
| ammonium hydrogensulphite   | 10 - 30        | 10192-30-0               |
| 2-(2-butoxyethoxy)ethanol   | 5 - 10         | 112-34-5                 |
| Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides | 5 - 10         | .68424-85-1 (outside EU) |
| ethanediol  | 5 - 10         | 107-21-1                 |

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## 4. First aid measures

### Description of necessary first aid measures

**Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

**Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion** : Call a poison center or physician. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

### Most important symptoms/effects. acute and delayed

#### Potential acute health effects

**Eye contact** : Causes serious eye damage.

**Inhalation** : No known significant effects or critical hazards.

**Skin contact** : Causes severe burns.

**Ingestion** : Harmful if swallowed.

## 4 . First aid measures

### Over-exposure signs/symptoms

|                     |   |
|---------------------|---|
| <b>Eye contact</b>  | : pain, watering, redness                           |
| <b>Inhalation</b>   | : No specific data.                                 |
| <b>Skin contact</b> | : pain or irritation, redness, blistering may occur |
| <b>Ingestion</b>    | : stomach pains                                     |

### Indication of immediate medical attention and special treatment needed, if necessary

|                                   |   |
|-----------------------------------|---|
| <b>Notes to physician</b>         | : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.   |
| <b>Specific treatments</b>        | : No specific treatment.  |
| <b>Protection of first-aiders</b> | : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |

See toxicological information (Section 11)

## 5 . Firefighting measures

### Extinguishing media

|                                       |   |
|---------------------------------------|---|
| <b>Suitable extinguishing media</b>   | : Use an extinguishing agent suitable for the surrounding fire. |
| <b>Unsuitable extinguishing media</b> | : None known.   |

|   |  |
|---|--|
| <b>Specific hazards arising from the chemical</b>     | : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. |
| <b>Special protective actions for fire-fighters</b>   | : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.  |
| <b>Special protective equipment for fire-fighters</b> | : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.  |
| <b>Hazardous thermal decomposition products</b>       | : carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides  |
| <b>Hazchem code</b>                                   | : 2X   |

## 6 . Accidental release measures

### Personal precautions, protective equipment and emergency procedures

|                                    |  |
|------------------------------------|--|
| <b>For non-emergency personnel</b> | : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| <b>For emergency responders</b>    | : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".  |

## 6 . Accidental release measures

**Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## 7 . Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

## 8 . Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

### Control parameters

#### Occupational exposure limits

| Ingredient name                             | Exposure limits  |
|---|--|
| 2-(2-butoxyethoxy)ethanol<br><br>ethanediol | <b>ACGIH TLV (United States, 3/2016).</b><br>TWA: 10 ppm 8 hours. Form: Inhalable fraction and vapor<br><b>Safe Work Australia (Australia, 1/2014).</b><br><b>Absorbed through skin.</b><br>TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Particulate<br>STEL: 104 mg/m <sup>3</sup> 15 minutes. Form: Vapour |

## 8 . Exposure controls/personal protection

TWA: 52 mg/m<sup>3</sup> 8 hours. Form: Vapour  
TWA: 20 ppm 8 hours. Form: Vapour  
STEL: 40 ppm 15 minutes. Form: Vapour

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Recommended: > 8 hours (breakthrough time): Rubber gloves.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## 9 . Physical and chemical properties

### Appearance

- Physical state** : Liquid.
- Colour** : Brown. With yellow/green tinge.
- Odour** : Mild.
- Odour threshold** : Not available.
- pH** : 5 to 7 [Conc. (% w/w): 100%]
- Melting point** : Not available.
- Boiling point** : Not available.
- Flash point** : Closed cup: Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.

## 9 . Physical and chemical properties

|   |  |
|---|--|
| <b>Lower and upper explosive (flammable) limits</b> | : Not available.   |
| <b>Vapour pressure</b>                              | : Not available.   |
| <b>Vapour density</b>                               | : Not available.   |
| <b>Relative density</b>                             | : 1.08 (20°C)  |
| <b>Solubility</b>                                   | : Easily soluble in the following materials: cold water. |
| <b>Partition coefficient: n-octanol/water</b>       | : Not available.   |
| <b>Auto-ignition temperature</b>                    | : Not available.   |
| <b>Decomposition temperature</b>                    | : Not available.   |
| <b>Viscosity</b>                                    | : Not available.   |

## 10 . Stability and reactivity

|   |  |
|---|--|
| <b>Reactivity</b>                         | : No specific test data related to reactivity available for this product or its ingredients.           |
| <b>Chemical stability</b>                 | : The product is stable.   |
| <b>Possibility of hazardous reactions</b> | : Under normal conditions of storage and use, hazardous reactions will not occur.                      |
| <b>Conditions to avoid</b>                | : No specific data.  |
| <b>Incompatible materials</b>             | : Not available.   |
| <b>Hazardous decomposition products</b>   | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## 11 . Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name  | Result                 | Species | Dose        | Exposure |
|--|------------------------|---------|-------------|----------|
| 2-(2-butoxyethoxy)ethanol<br><br>Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides<br>ethanediol | LD50 Dermal            | Rabbit  | 2700 mg/kg  | -        |
|  | LD50 Oral              | Rat     | 4500 mg/kg  | -        |
|  | LD50 Oral              | Rat     | 426 mg/kg   | -        |
|  | LC50 Inhalation Vapour | Rat     | >2.5 mg/l   | 6 hours  |
|  | LD50 Dermal            | Mouse   | >3500 mg/kg | -        |

**Conclusion/Summary** : May be harmful if ingested. Can cause target organ damage.

#### Irritation/Corrosion

| Product/ingredient name  | Result                   | Species | Score | Exposure                | Observation |
|--|--------------------------|---------|-------|-------------------------|-------------|
| 2-(2-butoxyethoxy)ethanol<br><br>Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides<br>ethanediol | Eyes - Moderate irritant | Rabbit  | -     | 24 hours 20 milligrams  | -           |
|  | Eyes - Severe irritant   | Rabbit  | -     | 20 milligrams           | -           |
|  | Skin - Severe irritant   | Rabbit  | -     | 25 milligrams           | -           |
|  | Eyes - Mild irritant     | Rabbit  | -     | 24 hours 500 milligrams | -           |
|  | Eyes - Mild irritant     | Rabbit  | -     | 1 hours 100 milligrams  | -           |
|  | Eyes - Moderate irritant | Rabbit  | -     | 6 hours 1440 milligrams | -           |
|  | Skin - Mild irritant     | Rabbit  | -     | 555 milligrams          | -           |
|  |                          |         |       |                         |             |
|  |                          |         |       |                         |             |

#### Conclusion/Summary

**Skin** : Causes pain and burns in contact with skin. May cause permanent skin damage.

## 11 . Toxicological information

**Eyes** : Risk of serious damage to eyes. May cause eye burns and permanent eye injury.

**Respiratory** : No known significant effects or critical hazards.

### Sensitisation

#### Conclusion/Summary

**Skin** : No known significant effects or critical hazards.

**Respiratory** : No known significant effects or critical hazards.

### Mutagenicity

**Conclusion/Summary** : No known significant effects or critical hazards.

### Carcinogenicity

**Conclusion/Summary** : No known significant effects or critical hazards.

### Reproductive toxicity

**Conclusion/Summary** : No known significant effects or critical hazards.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

| Name           | Category | Route of exposure | Target organs |
|----------------|----------|-------------------|---------------|
| Not available. |          |                   |               |

### Specific target organ toxicity (repeated exposure)

| Name           | Category | Route of exposure | Target organs |
|----------------|----------|-------------------|---------------|
| Not available. |          |                   |               |

### Aspiration hazard

| Name           | Result |
|----------------|--------|
| Not available. |        |

**Information on likely routes of exposure** : Not available.

### Potential acute health effects

**Eye contact** : Causes serious eye damage.

**Inhalation** : No known significant effects or critical hazards.

**Skin contact** : Causes severe burns.

**Ingestion** : Harmful if swallowed.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : pain, watering, redness

**Inhalation** : No specific data.

**Skin contact** : pain or irritation, redness, blistering may occur

**Ingestion** : stomach pains

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure



## 11 . Toxicological information

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

**General** : No known significant effects or critical hazards.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : No known significant effects or critical hazards.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

## 12 . Ecological information

**Toxicity** : Very toxic to aquatic organisms. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Product/ingredient name   | Result                                    | Species                               | Exposure |
|---|---|---------------------------------------|----------|
| Amines, N-tallow alkyltrimethylenedi-, ethoxylated<br>2-(2-butoxyethoxy)ethanol ethanediol; ethylene glycol | Acute LC50 2723 mg/l Marine water         | Crustaceans - Corophium Volutator     | 10 days  |
|   | Acute LC50 1300000 µg/l Fresh water       | Fish - Lepomis macrochirus            | 96 hours |
|   | Acute EC50 6500 to 13000 mg/l Fresh water | Algae                                 | 72 hours |
|   | Acute EC50 >100 mg/l Fresh water          | Daphnia                               | 48 hours |
|   | Acute LC50 >100000 µg/l Marine water      | Crustaceans - Crangon crangon - Adult | 48 hours |
|   | Acute LC50 10000000 µg/l Fresh water      | Daphnia - Daphnia magna               | 48 hours |
|   | Acute LC50 72860 mg/l Fresh water         | Fish                                  | 96 hours |
|   | Acute LC50 10000000 µg/l Fresh water      | Fish - Pimephales promelas            | 96 hours |

### Persistence and degradability

| Product/ingredient name  | Aquatic half-life | Photolysis | Biodegradability |
|--|-------------------|------------|------------------|
| Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides<br>ethanediol; ethylene glycol | -                 | -          | Readily          |
|  | -                 | -          | Readily          |

### Bioaccumulative potential

| Product/ingredient name                 | LogP <sub>ow</sub> | BCF | Potential |
|---|--------------------|-----|-----------|
| 2-(2-butoxyethoxy)ethanol<br>ethanediol | 1                  | -   | low       |
|   | -1.36              | -   | low       |

**Other adverse effects** : No known significant effects or critical hazards.








## 13 . Disposal considerations

**Disposal methods** : Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.



## 14 . Transport information

### International transport regulations

| Regulatory information | UN number | Proper shipping name  | Transport hazard class(es) | PG* | Label   |
|------------------------|-----------|---|----------------------------|-----|---|
| <b>ADR/RID</b>         | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S. (contains oxyalkylated amine) | 8                          | III |   |
| <b>ADG</b>             | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S. (contains oxyalkylated amine) | 8                          | III |   |
| <b>IMDG</b>            | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S. (contains oxyalkylated amine) | 8                          | III |   |
| <b>IATA</b>            | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S. (contains oxyalkylated amine) | 8                          | III |    |

PG\* : Packing group

| Regulatory information | Environmental hazards | Additional information**  |
|------------------------|-----------------------|---|
| <b>ADR/RID Class</b>   | Yes.                  | The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.<br><br><b>Hazchem code</b><br>2X |
| <b>ADG Class</b>       | No.                   | <b>Hazchem code</b><br>2X   |
| <b>IMDG Class</b>      | Yes.                  | -   |
| <b>IATA Class</b>      | No.                   | -   |

Additional information\*\*: A • in the Hazchem code indicates that Alcohol Resistant Foam is the preferred extinguishing medium. If not available, use the extinguishing medium indicated by the number in the Hazchem code.

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

## 15 . Regulatory information

### Standard Uniform Schedule of Medicine and Poisons

5

### Model Work Health and Safety Regulations - Scheduled Substances

**Australia inventory (AICS)** : All components are listed or exempted.

## 15 . Regulatory information

**References** : National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

## 16 . Other information

### History

**Date of printing** : 6 August 2017.

**Date of issue/Date of revision** : 6 August 2017

**Date of previous issue** : 13 April 2014

**Version** : 3

**Key to abbreviations** : ADG = Australian Dangerous Goods  
 ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 LogPow = logarithm of the octanol/water partition coefficient  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 NOHSC = National Occupational Health and Safety Commission  
 SUSMP = Standard Uniform Schedule of Medicine and Poisons  
 UN = United Nations

### Procedure used to derive the classification

| Classification          | Justification      |
|-------------------------|--------------------|
| Acute Tox. 4, H302      | Calculation method |
| Skin Corr. 1B, H314     | Calculation method |
| Aquatic Acute 1, H400   | Calculation method |
| Aquatic Chronic 2, H411 | Calculation method |

**References** : Not available.

Indicates information that has changed from previously issued version.

### Disclaimer

## 16 . Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



## Safety Data Sheet D095 Cement Additive

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** D095 Cement Additive  
**Product code** D095

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains** No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of irritating gases and vapors

### 3. Composition/information on ingredients

**3.1 Substances**

Not applicable

**3.2 Mixtures Not applicable**

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

### 4. First Aid Measures

**4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.         |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed****Notes to physician**

Treat symptomatically.

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment identified in Section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

**Methods for cleaning up**

Avoid generating or breathing dust. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

**7. Handling and Storage**

### 7.1 Precautions for safe handling

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing. Do not eat, drink or smoke when using this product.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid dust formation.       |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

## **8. Exposure controls/personal protection**

### 8.1 Control parameters

|                        |  |
|------------------------|--|
| <b>Exposure limits</b> | NUI = Nuisance dust, TWA 4mg/m <sup>3</sup> Respirable Dust, 10mg/m <sup>3</sup> Total Dust. |
|------------------------|--|

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### **Engineering Controls**

Ensure adequate ventilation. Mechanical ventilation or local exhaust ventilation is required.

#### **Personal protective equipment**

##### **Eye protection**

Tightly fitting safety goggles. Safety glasses with side-shields.

##### **Hand protection**

Use protective gloves made of: PVC, Neoprene, Nitrile, Rubber. Frequent change is advisable.

##### **Respiratory protection**

In case of insufficient ventilation, wear suitable respiratory equipment. Effective dust mask. Type P1. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### **Skin and body protection**

Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.

#### **Hygiene Measures**

Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.



### 8.2.3 Environmental exposure controls

**Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

**9. Physical and Chemical Properties****9.1 Information on basic physical and chemical properties**

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Fibers         |
| Odor           | None           |
| Color          | White          |
| Odor threshold | Not applicable |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | No information available |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | > 500 °C / 932 °F        |                |
| Boiling point/range          | No information available |                |
| Flash point                  | No information available |                |
| Evaporation rate (BuAc =1)   | Not applicable           |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | No information available |                |
| Vapor density                | No information available |                |
| Specific gravity             | 2.6                      | 20 °C          |
| Bulk density                 | No information available |                |
| Relative density             | No information available |                |
| Water solubility             | Insoluble                |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | No information available |                |
| log Pow                      | No information available |                |
| Explosive properties         | None known               |                |
| Oxidizing properties         | No information available |                |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.



**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Avoid dust formation.

**10.5 Incompatible materials**

No materials to be especially mentioned.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. |
| <b>Eye contact</b>            | Dust may cause mechanical irritation.  |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.  |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of exposure** Inhalation. Skin contact. Eye contact.

**Routes of entry** Inhalation.

**Specific target organ toxicity - Single exposure** Not classified

**Specific target organ toxicity - Repeated exposure** Not classified.

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## **12. Ecological Information**

### **12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### **12.2 Persistence and degradability**

Not applicable.

### **12.3 Bioaccumulative potential**

Not applicable.

### **12.4 Mobility**

#### **Mobility**

The product is insoluble and sinks in water.

#### **Mobility in soil**

No information available.

### **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

### **12.6 Other adverse effects.**

None known.

### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

### 13.1 Waste treatment methods

**Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

### 14.1. UN number

Not regulated

### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

### 14.3 Hazard class(es)

**ADR/RID/ADN/ADG Hazard class** Not regulated**IMDG/ANTAQ Hazard class** Not regulated**ICAO/ANAC Hazard class/division** Not regulated

### 14.4 Packing group

**ADR/RID/ADN/ADG Packing group** Not regulated**IMDG/ANTAQ Packing group** Not regulated**ICAO/ANAC Packing group** Not regulated

### 14.5 Environmental hazard

No

### 14.6 Special precautions

None

### 14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

#### International inventories

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Does not comply |
| Canada (DSL)        | Does not comply |
| Philippines (PICCS) | Does not comply |
| Japan (ENCS)        | Does not comply |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Does not comply |
| Korean (KECL)       | Does not comply |
| New Zealand (NZIoC) | Complies        |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Ingrid Helland

**Supersedes Date:** 09-May-2016

**Revision date** 30-May-2018

**Version** 5

**This SDS has been revised in the following section(s)** 1, 7, 8, 15, 16 No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

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## Safety Data Sheet

### D600G GASBLOK\* Gas Migration Control Additive

#### 1. Identification of the substance/mixture and of the company/undertaking

##### 1.1 Product identifier

**Product name** D600G GASBLOK\* Gas Migration Control Additive  
**Product code** D600G

##### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Gas control agent Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

##### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
Schlumberger Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
Level 5, 10 Telethon Avenue  
Perth WA 6000

SDS@slb.com

##### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518, Canada 001 613 996 6666

#### 2. Hazards Identification

##### 2.1 Classification of the substance or mixture

###### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

##### 2.2 Label elements

###### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

C12-15 alcohol ethoxylated

Sodium dodecyl sulphate

1,4-Dioxane (Impurity)

5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name   | EC No     | CAS No     | Weight-%      |
|---|-----------|------------|---------------|
| C12-15 alcohol ethoxylated  | 500-195-7 | 68131-39-5 | 1-<5          |
| Sodium dodecyl sulphate   | 205-788-1 | 151-21-3   | >= 0.1 - <0.3 |
| 1,4-Dioxane (Impurity)  | 204-661-8 | 123-91-1   | <=0.1         |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | mixture   | 55965-84-9 | < 0.0015      |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

**Skin contact**

Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

**4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

**Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Water spray, dry chemical, carbon dioxide (CO<sub>2</sub>), or foam.

**Extinguishing media which must not be used for safety reasons**

High volume water jet.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

Heating of containers may cause pressure rise, with risk of bursting.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>), Sulphur oxides, Sodium oxides.

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

#### Methods for containment

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

#### Methods for cleaning up

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use. Repeated or prolonged contact may cause allergic reactions in very susceptible persons. Persons susceptible to allergic reactions should not handle this product.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from heat and sources of ignition. Avoid frost. Incompatible with materials which react with water. Avoid contact with: Strong acids, Strong bases, Strong oxidizing agents, Strong reducing agents.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** No biological limit allocated

#### Component Information

| Chemical Name   | Arabic  | Australia                           | Egypt  |
|---|---|-------------------------------------|--|
| C12-15 alcohol ethoxylated  | Not determined  | Not determined                      | Not determined   |
| Sodium dodecyl sulphate   | Not determined  | Not determined                      | Not determined   |
| 1,4-Dioxane (Impurity)  | 90 ppm STEL<br>135 mg/m <sup>3</sup> STEL<br>25 ppm TWA<br>90 mg/m <sup>3</sup> TWA | 10ppmTWA<br>36mg/m <sup>3</sup> TWA | Skin designation<br>Suspected Human Carcinogen<br>20 ppm TWA<br>72 mg/m <sup>3</sup> TWA |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | Not determined  | Not determined                      | Not determined   |
| Chemical Name   | India   | Indonesian                          | Japan  |



|   |   |   |  |
|---|---|---|--|
| C12-15 alcohol ethoxylated  | Not determined  | Not determined  | Not determined   |
| Sodium dodecyl sulphate   | Not determined  | Not determined  | Not determined   |
| 1,4-Dioxane (Impurity)  | Not determined  | 20 ppm TWA<br>90 mg/m <sup>3</sup> TWA<br>Skin notation                                   | May cause substantial skin absorption<br>10 ppm ACL<br>1 ppm OEL<br>3.6 mg/m <sup>3</sup> OEL                        |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | Not determined  | Not determined  | Not determined   |
| <b>Chemical Name</b>  | <b>Kazakhstan</b>   | <b>Kuwait</b>   | <b>New Zealand</b>   |
| C12-15 alcohol ethoxylated  | Not determined  | Not determined  | Not determined   |
| Sodium dodecyl sulphate   | Not determined  | Not determined  | Not determined   |
| 1,4-Dioxane (Impurity)  | 10 mg/m <sup>3</sup> MAC                                  | 90.0 mg/m <sup>3</sup> TWA<br>25.0 ppm TWA<br>Skin notation<br>3.6 mg/m <sup>3</sup> STEL | 25 ppm TWA<br>90 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen<br>Possibility of significant uptake through the skin |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | Not determined  | Not determined  | Not determined   |
| <b>Chemical Name</b>  | <b>Malaysia</b>   | <b>Philippines</b>  | <b>Russia</b>  |
| C12-15 alcohol ethoxylated  | Not determined  | Not determined  | Not determined   |
| Sodium dodecyl sulphate   | Not determined  | Not determined  | Not determined   |
| 1,4-Dioxane (Impurity)  | 20 ppm TWA<br>72.1 mg/m <sup>3</sup> TWA<br>Skin notation | skin - potential for cutaneous absorption<br>100 ppm TWA<br>360 mg/m <sup>3</sup> TWA     | Skin notation<br>10 mg/m <sup>3</sup> MAC<br>Skin  |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | Not determined  | Not determined  | Not determined   |
| <b>Chemical Name</b>  | <b>Thailand</b>   | <b>Vietnam</b>  | <b>Turkey</b>  |
| C12-15 alcohol ethoxylated  | Not determined  | Not determined  | Not determined   |
| Sodium dodecyl sulphate   | Not determined  | Not determined  | Not determined   |
| 1,4-Dioxane (Impurity)  | 100 ppm TWA   | 10 mg/m <sup>3</sup> TWA  | 20 ppm TWA<br>73 mg/m <sup>3</sup> TWA   |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | Not determined  | Not determined  | Not determined   |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Eye protection must conform to standard EN 166 Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training  
Use protective gloves made of: Neoprene Nitrile PVC

#### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Respirator with combination filter for vapour/particulate (EN 141) Type A/P2 At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

|                                 |  |
|---------------------------------|--|
| <b>Skin and body protection</b> | Wear suitable protective clothing Eye wash and emergency shower must be available at the work place. |
| <b>Hygiene Measures</b>         | Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use    |



### 8.2.3 Environmental exposure controls

|                               |   |
|-------------------------------|---|
| <b>Environmental exposure</b> | Use appropriate containment to avoid environmental contamination See section 6 for more information |
|-------------------------------|---|

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |             |
|-----------------------|-------------|
| <b>Physical state</b> | Liquid      |
| <b>Appearance</b>     | Viscous     |
| <b>Odor</b>           | Slight      |
| <b>Color</b>          | Milky white |

| <u>Property</u>                            | <u>Values</u>            | <u>Remarks</u> |
|--|--------------------------|----------------|
| pH   | 6 - 8                    |                |
| pH @ dilution                              | No information available |                |
| Melting / freezing point                   | No information available |                |
| Boiling point/range                        | 100 °C / 212 °F          |                |
| Flash point                                | > 100 °C / > 212 °F      | Closed cup     |
| Evaporation rate (BuAc =1)                 | No information available |                |
| Flammability                               | Not applicable           |                |
| Explosion limits:                          |                          |                |
| Upper explosion limit                      | 12.60 %(V)               |                |
| Lower explosion limit                      | 2.60 %(V)                |                |
| Vapor pressure                             | < 23.5 mmHg (31.33 hPa)  | @ 25 °C        |
| Relative Vapor Density                     | No information available |                |
| Specific gravity                           | 1.01 - 1.02              | @ 20 °C        |
| Bulk density                               | No information available |                |
| Water solubility                           | Dispersible              |                |
| Solubility in other solvents               | No information available |                |
| Autoignition temperature                   | No information available |                |
| Decomposition temperature                  | No information available |                |
| Kinematic viscosity                        | No information available |                |
| Dynamic viscosity                          | No information available |                |
| Partition Coefficient<br>(n-octanol/water) | No information available |                |
| Density and/or Relative Density            | No information available |                |
| Explosive properties                       | No information available |                |
| Oxidizing properties                       | No information available |                |

### 9.2 Other information

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Do not freeze. Store away from heat and sources of ignition.

**10.5 Incompatible materials**

Incompatible with materials which react with water. Strong acids. Strong bases. Strong oxidizing agents. Strong reducing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| Chemical Name  | LD50 Oral                                 | LD50 Dermal             | LC50 Inhalation                                 |
|--|---|-------------------------|---|
| C12-15 alcohol ethoxylated   | 2.500- 5.000 mg/kg                        | = 2500 mg/kg ( Rabbit ) | No data available                               |
| Sodium dodecyl sulphate  | = 1288 mg/kg ( Rat )                      | = 200 mg/kg ( Rabbit )  | > 3900 mg/m <sup>3</sup> ( Rat ) 1 h            |
| 1,4-Dioxane (Impurity)   | = 4200 mg/kg ( Rat ) = 5170 mg/kg ( Rat ) | = 7600 mg/kg ( Rabbit ) | = 46 mg/L ( Rat ) 2 h                           |
| 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one | = 53 mg/kg ( Rat )                        | No data available       | = 1.23 mg/L ( Rat ) 4 h = 0.11 mg/L ( Rat ) 4 h |

**Sensitization**

EUH208 - Contains ( 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one ). May produce an allergic reaction.

|   |  |
|---|--|
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.             |
| <b>Carcinogenicity</b>                                    | Contains a known or suspected carcinogen.                                  |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards. |
| <b>Routes of Exposure</b>                                 | Inhalation. Skin contact. Eye contact.                                     |
| <b>Routes of entry</b>                                    | Skin contact.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |

## 11.2 Information on other hazards

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name              | Toxicity to fish   | Toxicity to algae   | Toxicity to daphnia and other aquatic invertebrates                    |
|----------------------------|--|---|--|
| C12-15 alcohol ethoxylated | 3.1 mg/L LC50 (Scophthalmus maximus) = 96 h  | 1 - 3.2 mg/L EC50 (Skeletonema costatum) = 72 h   | 0.88 mg/L LC50 (Acartia tonsa) = 48 h                                  |
| Sodium dodecyl sulphate    | = 1.31 mg/L LC50 Cyprinus carpio 96 h 10.8 - 16.6 mg/L LC50 Poecilia reticulata 96 h 13.5 - 18.3 mg/L LC50 Poecilia reticulata 96 h 6.2 - 9.6 mg/L LC50 Pimephales promelas 96 h 10.2 - 22.5 mg/L LC50 Pimephales promelas 96 h 5.8 - 7.5 mg/L LC50 Pimephales promelas 96 h = 4.5 mg/L LC50 Lepomis macrochirus 96 h 4.2 - 4.8 mg/L LC50 Lepomis macrochirus 96 h 4.06 - 5.75 mg/L LC50 Lepomis macrochirus 96 h 9.9 - 20.1 mg/L LC50 Brachydanio rerio 96 h = 7.97 mg/L LC50 Brachydanio rerio 96 h = 4.2 mg/L LC50 Oncorhynchus mykiss 96 h = 4.62 mg/L LC50 Oncorhynchus mykiss 96 h 4.3 - 8.5 | = 42 mg/L EC50 Desmodesmus subspicatus 96 h = 117 mg/L EC50 Pseudokirchneriella subcapitata 96 h = 53 mg/L EC50 Desmodesmus subspicatus 72 h 30 - 100 mg/L EC50 Desmodesmus subspicatus 96 h 3.59 - 15.6 mg/L EC50 Pseudokirchneriella subcapitata 96 h | = 1.8 mg/L EC50 Daphnia magna 48 h = 21.2 mg/L EC50 Daphnia magna 24 h |

|   |  |   |   |
|---|--|---|---|
|   | mg/L LC50 Oncorhynchus mykiss<br>96 h 22.1 - 22.8 mg/L LC50<br>Pimephales promelas 96 h 15 - 18.9<br>mg/L LC50 Pimephales promelas<br>96 h 8 - 12.5 mg/L LC50<br>Pimephales promelas 96 h = 4.1<br>mg/L LC50 Leuciscus idus 48 h |   |   |
| 1,4-Dioxane (Impurity)  | = 9850 mg/L LC50 Pimephales<br>promelas 96 h 10306 - 14742 mg/L<br>LC50 Pimephales promelas 96 h ><br>10000 mg/L LC50 Lepomis<br>macrochirus 96 h  | No information available  | = 163 mg/L EC50 water flea 48 h   |
| 5-chloro-2-methyl-4-isothiazolin-3-one and<br>2-methyl-4-isothiazolin-3-one | = 1.6 mg/L LC50 Oncorhynchus<br>mykiss 96 h  | 0.11 - 0.16 mg/L EC50<br>Pseudokirchneriella subcapitata 72<br>h 0.03 - 0.13 mg/L EC50<br>Pseudokirchneriella subcapitata 96<br>h = 0.31 mg/L EC50 Anabaena<br>flos-aquae 120 h | 0.12 - 0.3 mg/L EC50 Daphnia<br>magna 48 h 0.71 - 0.99 mg/L EC50<br>Daphnia magna 48 h = 4.71 mg/L<br>EC50 Daphnia magna 48 h |

**12.2 Persistence and degradability**

See component information below.

| Chemical Name              | Persistence and degradability               |
|----------------------------|---|
| C12-15 alcohol ethoxylated | Readily degradable in marine screening test |

**12.3 Bioaccumulative potential**

See component information below.

| Chemical Name              | Bioaccumulation             |
|----------------------------|-----------------------------|
| C12-15 alcohol ethoxylated | Not likely to bioaccumulate |

**12.4 Mobility****Mobility**

Dispersible in water. See component information below.

| Chemical Name              | Mobility         |
|----------------------------|------------------|
| C12-15 alcohol ethoxylated | Soluble in water |

**Mobility in soil**

See component information below.

| Chemical Name              | Mobility in soil         |
|----------------------------|--------------------------|
| C12-15 alcohol ethoxylated | No information available |

**12.5 Other adverse effects**

None known. Check for additional information in sect. 7.

**12.6 Other information.**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods****Waste from residues/unused  
products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)****ADR/RID/ADN/ADG Hazard class** Not regulated**IMDG/ANTAQ Hazard class** Not regulated**ICAO/ANAC Hazard class/division** Not regulated**14.4 Packing group****ADR/RID/ADN/ADG Packing group** Not regulated**IMDG/ANTAQ Packing group** Not regulated**ICAO/ANAC Packing group** Not regulated**14.5 Environmental hazard**

No

**Marine pollutant**

No

**14.6 Special precautions**

Not applicable

**14.7 Maritime transport in bulk according to IMO instruments**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

1,4-Dioxane (Impurity)

Schedule 6

5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one

Schedule 6

**New Zealand Hazard Classification** Not classified**HSNO approval no.** Not required**Group number** Not required**Safe Work Australia.**

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|  |                 |
|--|-----------------|
| USA (TSCA)                                 | Complies        |
| Canada (DSL)                               | Does not comply |
| Philippines (PICCS)                        | Does not comply |
| Japan (ENCS)                               | Does not comply |
| China (IECSC)                              | Complies        |
| Australia (AICS)                           | Complies        |
| Korean (KECL)                              | Does not comply |
| New Zealand (NZIoC)                        | Complies        |
| Eurasian Economic Union: Russian Inventory | Complies        |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam

**Supersedes Date:** 15-Jul-2016

**Revision date** 26-Apr-2021

**Version** 4

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

#### **Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

#### **HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | B |

#### **Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no

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## Safety Data Sheet DEEPCLEAN\*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** DEEPCLEAN\*  
**Product code** PID16970  
**Country Limitations** This SDS is not for use in EU/EEA.

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Completion fluid additive.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|   |            |
|---|------------|
| Aspiration toxicity                       | Category 1 |
| Acute toxicity - Oral                     | Category 4 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 4 |
| Skin corrosion/irritation                 | Category 2 |
| Serious eye damage/eye irritation         | Category 1 |
| Skin sensitization                        | Category 1 |

**Environmental hazards** Not classified

**Physical Hazards** Not classified

## **2.2 Label elements**



### **Signal word**

DANGER

### **Hazard Statements**

H302 - Harmful if swallowed  
H304 - May be fatal if swallowed and enters airways  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H332 - Harmful if inhaled

### **Precautionary statements**

P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P331 - Do NOT induce vomiting

### **Supplementary precautionary statements**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P271 - Use only outdoors or in a well-ventilated area  
P272 - Contaminated work clothing should not be allowed out of the workplace  
P330 - Rinse mouth  
P332 + P313 - If skin irritation occurs: Get medical advice/attention  
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention  
P337 + P313 - If eye irritation persists: Get medical advice/attention  
P362 + P364 - Take off contaminated clothing and wash it before reuse  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### **Contains**

D-Glucopyranose, oligomeric, C8-10 glycosides

2-butoxyethanol

Citrus Extract

Distillates, petroleum, hydrotreated light

## **2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

### Australian statement of hazardous/dangerous nature

Classified as Hazardous according to the criteria of NOHSC.  
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name                                 | EC No          | CAS No     | Weight-% |
|---|----------------|------------|----------|
| D-Glucopyranose, oligomeric, C8-10 glycosides | 500-220-1      | 68515-73-1 | 30-60    |
| 2-butoxyethanol                               | 203-905-0      | 111-76-2   | 10-30    |
| Citrus Extract                                | Not applicable | 68647-72-3 | 10-30    |
| Distillates, petroleum, hydrotreated light    | 265-149-8      | 64742-47-8 | 10-30    |

### Comments

Citrus extract can use either CAS# 8028-48-6 or 68647-72-3.

## 4. First Aid Measures

### 4.1 First aid measures

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Do not induce vomiting without medical advice. If vomiting occurs spontaneously, minimize the risk of aspiration by properly positioning the affected person. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs. |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if any discomfort continues.  |

### 4.2. Most important symptoms and effects, both acute and delayed

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

### Symptoms

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

### 4.3 Indication of any immediate medical attention and special treatment needed

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## 5. Fire-Fighting Measures

### 5.1 Extinguishing media

**Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

### 5.2. Special hazards arising from the substance or mixture

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

### 5.3 Advice for firefighters

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

### 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

## Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

## Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands before eating, drinking or smoking Remove contaminated clothing

## 7.2 Conditions for safe storage, including any incompatibilities

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place Avoid contact with: Heat, flames and sparks Strong oxidizing agents Strong acids Strong alkalis. Strong reducing agents |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

|                        |   |
|------------------------|---|
| <b>Exposure limits</b> | OEL for "Normal and branched chain alkanes, > C7: 1200 mg/m <sup>3</sup><br>No biological limit allocated |
|------------------------|---|

### Component Information

| Chemical Name                                 | Arabic                                  | Australia   | Egypt   |
|---|---|---|---|
| D-Glucopyranose, oligomeric, C8-10 glycosides | Not determined                          | Not determined  | Not determined  |
| 2-butoxyethanol                               | 25 ppm TWA<br>121 mg/m <sup>3</sup> TWA | 50ppmSTEL<br>242mg/m <sup>3</sup> STEL<br>20ppmTWA<br>96.9mg/m <sup>3</sup> TWA | Not determined  |
| Citrus Extract                                | Not determined                          | Not determined  | Not determined  |
| Distillates, petroleum, hydrotreated light    | Not determined                          | Not determined  | Not determined  |
| Chemical Name                                 | India                                   | Indonesian  | Japan   |
| D-Glucopyranose, oligomeric, C8-10 glycosides | Not determined                          | Not determined  | Not determined  |
| 2-butoxyethanol                               | Not determined                          | 25 ppm TWA<br>121 mg/m <sup>3</sup> TWA<br>Skin notation                        | 20 ppm Ceiling<br>97 mg/m <sup>3</sup> Ceiling<br>25 ppm ACL                                  |
| Citrus Extract                                | Not determined                          | Not determined  | Not determined  |
| Distillates, petroleum, hydrotreated light    | Not determined                          | Not determined  | Not determined  |
| Chemical Name                                 | Kazakhstan                              | Kuwait  | New Zealand   |
| D-Glucopyranose, oligomeric, C8-10 glycosides | Not determined                          | Not determined  | Not determined  |
| 2-butoxyethanol                               | 5 mg/m <sup>3</sup> MAC                 | Not determined  | 25 ppm TWA<br>121 mg/m <sup>3</sup> TWA<br>Possibility of significant uptake through the skin |
| Citrus Extract                                | Not determined                          | Not determined  | Not determined  |
| Distillates, petroleum, hydrotreated light    | Not determined                          | Not determined  | Not determined  |
| Chemical Name                                 | Malaysia                                | Philippines   | Russia  |
| D-Glucopyranose, oligomeric, C8-10 glycosides | Not determined                          | Not determined  | Not determined  |
| 2-butoxyethanol                               | 20 ppm TWA                              | skin - potential for cutaneous  | 5 mg/m <sup>3</sup> MAC   |

|   |   |   |   |
|---|---|---|---|
|   | 96.7 mg/m <sup>3</sup> TWA<br>Skin notation | absorption<br>50 ppm TWA<br>240 mg/m <sup>3</sup> TWA |   |
| Citrus Extract                                | Not determined                              | Not determined  | Not determined  |
| Distillates, petroleum, hydrotreated light    | Not determined                              | Not determined  | 300 mg/m <sup>3</sup> STEL<br>100 mg/m <sup>3</sup> TWA                                     |
| <b>Chemical Name</b>                          | <b>Thailand</b>                             | <b>Vietnam</b>  | <b>Turkey</b>   |
| D-Glucopyranose, oligomeric, C8-10 glycosides | Not determined                              | Not determined  | Not determined  |
| 2-butoxyethanol                               | 50 ppm TWA                                  | Not determined  | 50 ppm STEL<br>246 mg/m <sup>3</sup> STEL<br>Skin<br>20 ppm TWA<br>98 mg/m <sup>3</sup> TWA |
| Citrus Extract                                | Not determined                              | Not determined  | Not determined  |
| Distillates, petroleum, hydrotreated light    | Not determined                              | Not determined  | Not determined  |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Impervious gloves made of: Nitrile Neoprene  
Break through time >480 minutes  
Glove thickness >=0.4 mm

#### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | No information available |
| Odor           | Citrus                   |
| Color          | Yellow                   |
| Odor threshold | Not applicable           |

| Property                     | Values                   | Remarks    |
|------------------------------|--------------------------|------------|
| pH                           | No information available |            |
| pH @ dilution                | No information available |            |
| Melting / freezing point     | No information available |            |
| Boiling point/range          | No information available |            |
| Flash point                  | 61 °C / 143 °F           | Closed cup |
| Evaporation rate (BuAc =1)   | No information available |            |
| Flammability (solid, gas)    | Not applicable           |            |
| Flammability Limit in Air    |                          |            |
| Upper flammability limit     | Not applicable           |            |
| Lower flammability limit     | Not applicable           |            |
| Vapor pressure               | No information available |            |
| Vapor density                | No information available |            |
| Specific gravity             | 0.90 - 0.94              | 20 °C      |
| Bulk density                 | No information available |            |
| Relative density             | No information available |            |
| Water solubility             | Dispersible              |            |
| Solubility in other solvents | No information available |            |
| Autoignition temperature     | No information available |            |
| Decomposition temperature    | No information available |            |
| Kinematic viscosity          | No information available |            |
| Dynamic viscosity            | No information available |            |
| log Pow                      | No information available |            |
| Explosive properties         | Not applicable           |            |
| Oxidizing properties         | None known.              |            |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | -27°C / -16.6°F          |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

#### **10.4 Conditions to avoid**

Heat, flames and sparks.

#### **10.5 Incompatible materials**

Strong oxidizing agents. Strong acids. Strong reducing agents. Strong alkalies.

#### **10.6 Hazardous decomposition products**

See Section 5.2.

### **11. Toxicological Information**

#### **11.1 Information on toxicological effects**

##### **Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Harmful by inhalation.  |
| <b>Eye contact</b>            | Causes serious eye damage.  |
| <b>Skin contact</b>           | Causes skin irritation. May cause an allergic skin reaction. May be absorbed through the skin in harmful amounts. |
| <b>Ingestion</b>              | Harmful if swallowed. May be fatal if swallowed and enters airways.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

##### **Toxicology data for the components**

| <b>Chemical Name</b>                          | <b>LD50 Oral</b>     | <b>LD50 Dermal</b>      | <b>LC50 Inhalation</b>                      |
|---|----------------------|-------------------------|---|
| D-Glucopyranose, oligomeric, C8-10 glycosides | No data available    | No data available       | No data available                           |
| 2-butoxyethanol                               | = 470 mg/kg ( Rat )  | = 99 mg/kg ( Rabbit )   | = 450 ppm ( Rat ) 4 h = 486 ppm ( Rat ) 4 h |
| Citrus Extract                                | No data available    | No data available       | No data available                           |
| Distillates, petroleum, hydrotreated light    | > 5000 mg/kg ( Rat ) | > 2000 mg/kg ( Rabbit ) | > 5.2 mg/L ( Rat ) 4 h                      |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | May cause sensitization by skin contact.                                   |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.             |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.          |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards. |
| <b>Routes of exposure</b>                                 | Skin contact. Inhalation. Ingestion. Eye contact.                          |
| <b>Routes of entry</b>                                    | Skin absorption. Inhalation. Ingestion.                                    |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |



**Aspiration hazard** May be fatal if swallowed and enters airways.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

#### Toxicology data for the components

| Chemical Name                                 | Toxicity to fish   | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates  |
|---|--|--------------------------|--|
| D-Glucopyranose, oligomeric, C8-10 glycosides | No information available   | No information available | No information available   |
| 2-butoxyethanol                               | = 2950 mg/L LC50 <i>Lepomis macrochirus</i> 96 h = 1490 mg/L LC50 <i>Lepomis macrochirus</i> 96 h  | No information available | 1698 - 1940 mg/L EC50 <i>Daphnia magna</i> 24 h > 1000 mg/L EC50 <i>Daphnia magna</i> 48 h |
| Citrus Extract                                | No information available   | No information available | No information available   |
| Distillates, petroleum, hydrotreated light    | = 45 mg/L LC50 <i>Pimephales promelas</i> 96 h = 2.2 mg/L LC50 <i>Lepomis macrochirus</i> 96 h = 2.4 mg/L LC50 <i>Oncorhynchus mykiss</i> 96 h | No information available | = 4720 mg/L LC50 <i>Den-dronereides heteropoda</i> 96 h                                    |

### 12.2 Persistence and degradability

Product is biodegradable. See component information below.

| Chemical Name                              | Persistence and degradability |
|--|-------------------------------|
| Distillates, petroleum, hydrotreated light | Readily biodegradable         |

### 12.3 Bioaccumulative potential

The product contains potentially bioaccumulating substances.

### 12.4 Mobility

#### Mobility

Dispersible in water.

#### Mobility in soil

No information available.

#### **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

#### **12.6 Other adverse effects.**

None known.

#### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### **13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### **14.1. UN number**

Not regulated

#### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

#### **14.3 Hazard class(es)**

|  |               |
|--|---------------|
| <b>ADR/RID/ADN/ADG Hazard class</b>    | Not regulated |
| <b>IMDG/ANTAQ Hazard class</b>         | Not regulated |
| <b>ICAO/ANAC Hazard class/division</b> | Not regulated |

#### **14.4 Packing group**

|                                      |               |
|--------------------------------------|---------------|
| <b>ADR/RID/ADN/ADG Packing group</b> | Not regulated |
| <b>IMDG/ANTAQ Packing group</b>      | Not regulated |
| <b>ICAO/ANAC Packing group</b>       | Not regulated |

#### **14.5 Environmental hazard**

No

#### **14.6 Special precautions**

Not applicable

#### **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

2-butoxyethanol  
Schedule 6

**New Zealand Hazard Classification** Classified

**HSNO approval no.** HSR002503

**Group number** 6.1E, 6.1D, 6.3A, 6.5B, 8.3A

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|                            |                 |
|----------------------------|-----------------|
| <b>USA (TSCA)</b>          | Complies        |
| <b>Canada (DSL)</b>        | Complies        |
| <b>Philippines (PICCS)</b> | Complies        |
| <b>Japan (ENCS)</b>        | Does not comply |
| <b>China (IECSC)</b>       | Complies        |
| <b>Australia (AICS)</b>    | Complies        |
| <b>Korean (KECL)</b>       | Complies        |
| <b>New Zealand (NZIoC)</b> | Complies        |

This SDS is not for use in EU/EEA.

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse

**Supersedes Date:** 19-Sep-2016

**Revision date** 01-Dec-2018

**Version** 4

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 3 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | J |

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## Safety Data Sheet DEFOAM PLUS\* NS

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name DEFOAM PLUS\* NS  
Product code PID18960

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Defoamer

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

**Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains** No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of irritating gases and vapors

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

### 3. Composition/information on Ingredients

**3.1 Substances**

Not applicable

**3.2 Mixtures**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

### 4. First Aid Measures

**4.1 First aid measures**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.   |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                          |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

**Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

## **6.4 Reference to other sections**

See section 13 for more information.

# **7. Handling and Storage**

## **7.1 Precautions for safe handling**

### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## **7.2 Conditions for safe storage, including any incompatibilities**

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.                              |

# **8. Exposure Controls/Personal Protection**

## **8.1 Control parameters**

|                        |   |
|------------------------|---|
| <b>Exposure limits</b> | The product does not contain any hazardous materials with occupational exposure limits established. No biological limit allocated |
|------------------------|---|

## **8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### **Engineering Controls**

Ensure adequate ventilation

### **Personal protective equipment**

|                               |   |
|-------------------------------|---|
| <b>Eye protection</b>         | Use eye protection according to EN 166, designed to protect against liquid splashes. Safety glasses with side-shields. Tightly fitting safety goggles.  |
| <b>Hand protection</b>        | Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training. Impervious gloves made of: Neoprene, Nitrile, PVC.<br>Break through time >480 minutes<br>Glove thickness ≥0.4 mm<br>Be aware that liquid may penetrate the gloves. Frequent change is advisable. |
| <b>Respiratory protection</b> | In case of insufficient ventilation, wear suitable respiratory equipment. Respirator with a vapor filter (EN 141). Use respirator with organic vapor protection (A, brown). At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.                   |



**Skin and body protection**

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



**8.2.3 Environmental exposure controls**

**Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | No information available |
| Odor           | Slight                   |
| Color          | Clear                    |
| Odor threshold | Not applicable           |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | No information available |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | No information available |                |
| Boiling point/range          | No information available |                |
| Flash point                  | > 100 °C / > 212 °F      |                |
| Evaporation rate (BuAc =1)   | No information available |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | No information available |                |
| Vapor density                | No information available |                |
| Specific gravity             | No information available |                |
| Bulk density                 | No information available |                |
| Relative density             | 0.95 - 0.97 kg/l         | @ 20°C.        |
| Water solubility             | Insoluble in water       |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | No information available |                |
| log Pow                      | No information available |                |
| Explosive properties         | Not applicable           |                |
| Oxidizing properties         | None known.              |                |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |

**Density** No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

**Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

None known.

### 10.5 Incompatible materials

No materials to be especially mentioned.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

**Acute toxicity**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>  | May cause slight irritation.   |
| <b>Skin contact</b> | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>    | Ingestion may cause stomach discomfort.  |

|                  |  |
|------------------|--|
| <b>LD50 Oral</b> | > 2000 mg/kg (rat) (based on components) (MIXTURE) |
|------------------|--|

|                      |   |
|----------------------|---|
| <b>Sensitization</b> | This product does not contain any components suspected to be sensitizing. |
|----------------------|---|

|                          |  |
|--------------------------|--|
| <b>Mutagenic effects</b> | This product does not contain any known or suspected mutagens. |
|--------------------------|--|

|                        |   |
|------------------------|---|
| <b>Carcinogenicity</b> | This product does not contain any known or suspected carcinogens. |
|------------------------|---|

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | None known.  |
| <b>Routes of entry</b>                                    | No route of entry noted.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### **Toxicity to algae**

This product is not considered toxic to algae. (LC50 > 100 mg/l - aquatic species (MIXTURE)).

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### 12.2 Persistence and degradability

Not readily biodegradable.

### 12.3 Bioaccumulative potential

The product contains potentially bioaccumulating substances.

### 12.4 Mobility

#### **Mobility**

Insoluble in water.

#### **Mobility in soil**

No information available.

## **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

## **12.6 Other adverse effects.**

None known.

## **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

# **13. Disposal considerations**

## **13.1 Waste treatment methods**

### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

# **14. Transport information**

## **14.1. UN number**

Not regulated

## **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

## **14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

## **14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

## **14.5 Environmental hazard**

No

## **14.6 Special precautions**

Not applicable

## **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

# **15. Regulatory Information**

## **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

## The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

### Australian Standard for the Uniform Scheduling of Drugs and Poisons

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

### International inventories

|                            |                 |
|----------------------------|-----------------|
| <b>USA (TSCA)</b>          | Complies        |
| <b>Canada (DSL)</b>        | Complies        |
| <b>Philippines (PICCS)</b> | Does not comply |
| <b>Japan (ENCS)</b>        | Does not comply |
| <b>China (IECSC)</b>       | Complies        |
| <b>Australia (AICS)</b>    | Complies        |
| <b>Korean (KECL)</b>       | Complies        |
| <b>New Zealand (NZIoC)</b> | Complies        |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse

**Supersedes Date:** 09-Oct-2015

**Revision date** 28-Jan-2019

**Version** 4

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made. Updated according to GHS/CLP.

### **Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

---

National occupational exposure limits

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**Diaseal M® Lost Circulation Material**

Version 1.9

Revision Date 2019-08-01

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product information**

Product Name : Diaseal M® Lost Circulation Material  
Material : 1016804, 1017933

Use : Lost Circulation Material

**Company** : Chevron Phillips Chemical Company LP  
Drilling Specialties Company LLC  
10001 Six Pines Drive  
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals Australia Pte Ltd  
Suite 409  
685 Burke Road  
Camberwell, Victoria  
Australia 3124  
Hours of Operation: 9:00 a.m. - 5:00 p.m.

SDS Requests: 61 3 8080 5700  
Technical Information: 61 3 8080 5700  
Responsible Party: Product Safety Group  
Email:sds@cpchem.com

**Emergency telephone:****Health:**

866.442.9628 (North America)  
1.832.813.4984 (International)  
61 3 8080 5700 (Australia)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)  
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090  
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
Mexico CHEMTREC 01-800-681-9531 (24 hours)  
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600  
Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group  
E-mail address : SDS@CPChem.com  
Website : www.CPChem.com

**Diaseal M® Lost Circulation Material**

Version 1.9

Revision Date 2019-08-01

**SECTION 2: Hazards identification****Classification of the substance or mixture**

**Model Work Health and Safety Regulations 2011, Model Code of Practice for the Labelling of Workplace Hazardous Chemicals (2011), Guidance on the Classification of Hazardous Chemicals under the WHS Regulations (2012) (GHS 2009)**

**Classification**

: Skin corrosion/irritation, Category 2  
 Serious eye damage/eye irritation, Category 1  
 Carcinogenicity, Category 1A, Inhalation

**Labeling**

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H315: Causes skin irritation.  
 H318: Causes serious eye damage.  
 H350i: May cause cancer by inhalation.

Precautionary Statements

: **Prevention:**  
 P201: Obtain special instructions before use.  
 P202: Do not handle until all safety precautions have been read and understood.  
 P264: Wash skin thoroughly after handling.  
 P280: Wear protective gloves/ eye protection/ face protection.  
 P281: Use personal protective equipment as required.  
**Response:**  
 P302 + P352: IF ON SKIN: Wash with plenty of soap and water.  
 P305 + P351 + P338 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.  
 P308 + P313: IF exposed or concerned: Get medical advice/ attention.  
 P332 + P313: If skin irritation occurs: Get medical advice/ attention.  
 P362: Take off contaminated clothing and wash before reuse.  
**Storage:**  
 P405: Store locked up.  
**Disposal:**  
 P501: Dispose of contents/ container to an approved waste disposal plant.

**SECTION 3: Composition/information on ingredients**

Synonyms

: LCM  
 Lost Circulation Material



**Diaseal M® Lost Circulation Material**

Version 1.9

Revision Date 2019-08-01

Molecular formula : Mixture

| Chemical name      | CAS-No. / EINECS-No. | Concentration [wt%] |
|--------------------|----------------------|---------------------|
| Diatomaceous Earth | 61790-53-2           | 60 - 90             |
| Cellulose          | 9004-34-6            | 5 - 15              |
| Calcium Hydroxide  | 1305-62-0            | 7 - 13              |
| Crystalline Silica | 14808-60-7           | 0.1 - 1             |

**SECTION 4: First aid measures**

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Do not leave the victim unattended.
- If inhaled : Move to fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Induce vomiting immediately and call a physician. Keep respiratory tract clear. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

- Flash point : Not applicable
- Autoignition temperature : Not applicable
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Standard procedure for chemical fires.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Fire and explosion protection : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.
- Hazardous decomposition products : None.

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**SECTION 6: Accidental release measures**

- Personal precautions : Use personal protective equipment. Avoid dust formation. Avoid breathing dust.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up : Keep in suitable, closed containers for disposal.

**SECTION 7: Handling and storage****Handling**

- Advice on safe handling : Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

**Storage**

- Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.
- Use : Lost Circulation Material

**SECTION 8: Exposure controls/personal protection****Ingredients with workplace control parameters****AU**

| Components         | Basis  | Value | Control parameters | Note              |
|--------------------|--------|-------|--------------------|-------------------|
| Diatomaceous Earth | AU OEL | TWA   | 10 mg/m3           | a,                |
| Calcium Hydroxide  | AU OEL | TWA   | 5 mg/m3            |                   |
| Cellulose          | AU OEL | TWA   | 10 mg/m3           | a,                |
| Crystalline Silica | AU OEL | TWA   | 0.1 mg/m3          | (respirable dust) |

a This value is for inhalable dust containing no asbestos and < 1% crystalline silica

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

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- |                          |  |
|--------------------------|--|
| Respiratory protection   | : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection. |
| Hand protection          | : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.   |
| Eye protection           | : Eye wash bottle with pure water. Tightly fitting safety goggles.   |
| Skin and body protection | : Choose body protection according to the amount and concentration of the dangerous substance at the work place. Wear as appropriate:. Protective suit. Safety shoes.  |
| Hygiene measures         | : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.   |

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****Appearance**

- |                |                |
|----------------|----------------|
| Physical state | : Solid        |
| Color          | : Light brown  |
| Odor           | : Mild, earthy |

**Safety data**

- |                          |                  |
|--------------------------|------------------|
| Flash point              | : Not applicable |
| Lower explosion limit    | : Not applicable |
| Upper explosion limit    | : Not applicable |
| Oxidizing properties     | : no             |
| Autoignition temperature | : Not applicable |
| Molecular formula        | : Mixture        |
| Molecular weight         | : Not applicable |
| pH                       | : Not applicable |

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|  |                     |
|--|---------------------|
| Pour point                             | : No data available |
| Boiling point/boiling range            | : Not applicable    |
| Vapor pressure                         | : Not applicable    |
| Relative density                       | : 2<br>Water = 1.0  |
| Bulk density                           | : 20.2 LB/FT3       |
| Water solubility                       | : No data available |
| Partition coefficient: n-octanol/water | : No data available |
| Viscosity, kinematic                   | : No data available |
| Relative vapor density                 | : Not applicable    |
| Evaporation rate                       | : No data available |

**SECTION 10: Stability and reactivity**

|   |   |
|---|---|
| <b>Reactivity</b>                         | : Stable at normal ambient temperature and pressure.  |
| <b>Chemical stability</b>                 | : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.          |
| <b>Possibility of hazardous reactions</b> |   |
| <b>Hazardous reactions</b>                | : Hazardous reactions: Hazardous polymerization does not occur.<br><br>Further information: No decomposition if stored and applied as directed. |
| <b>Conditions to avoid</b>                | : Generation of Dusts.  |
| <b>Materials to avoid</b>                 | : Strong acids.   |
| <b>Hazardous decomposition products</b>   | : None  |
| <b>Other data</b>                         | : No decomposition if stored and applied as directed.   |

**SECTION 11: Toxicological information****Acute oral toxicity**

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Calcium Hydroxide : LD50: 7,340 mg/kg  
Species: Rat

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**Skin irritation** : Irritating to skin.

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**Eye irritation** : Risk of serious damage to eyes.

**Diaseal M® Lost Circulation Material**

**Aspiration toxicity** : No aspiration toxicity classification.

**CMR effects**

Crystalline Silica : Carcinogenicity: Positive evidence from human epidemiological studies (inhalation)

**Further information**

Crystalline Silica : Chronic Health Hazard.

**SECTION 12: Ecological information****Ecotoxicity effects****Toxicity to fish**

Calcium Hydroxide : LC50: 160 mg/l  
Exposure time: 96 h  
Species: Gambusia affinis (Fish, fresh water)  
static test

Biodegradability : Not applicable

Elimination information (persistence and degradability)

Bioaccumulation : This material is not expected to bioaccumulate.

Mobility : immobile

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Additional ecological information : This material is not expected to be harmful to aquatic organisms.

**Ecotoxicology Assessment**

Short-term (acute) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

Long-term (chronic) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

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**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

**SECTION 14: Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE**

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**OF DANGEROUS GOODS BY INLAND WATERWAYS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

**SECTION 15: Regulatory information****Notification status**

|                                     |   |   |
|-------------------------------------|---|---|
| Europe REACH                        | : | This mixture contains only ingredients which have been registered according to Regulation (EU) No. 1907/2006 (REACH).   |
| Switzerland CH INV                  | : | On the inventory, or in compliance with the inventory   |
| United States of America (USA) TSCA | : | On or in compliance with the active portion of the TSCA inventory   |
| Canada DSL                          | : | All components of this product are on the Canadian DSL  |
| Australia AICS                      | : | On the inventory, or in compliance with the inventory   |
| New Zealand NZIoC                   | : | On the inventory, or in compliance with the inventory   |
| Japan ENCS                          | : | On the inventory, or in compliance with the inventory   |
| Korea KECI                          | : | A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance. |
| Philippines PICCS                   | : | On the inventory, or in compliance with the inventory   |
| China IECSC                         | : | On the inventory, or in compliance with the inventory   |
| Taiwan TCSI                         | : | On the inventory, or in compliance with the inventory   |

**SECTION 16: Other information****Further information**

Legacy SDS Number : 59340

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

|       |                        |      |                 |
|-------|------------------------|------|-----------------|
| ACGIH | American Conference of | LD50 | Lethal Dose 50% |
|-------|------------------------|------|-----------------|

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|        |  |       |  |
|--------|--|-------|--|
|        | Government Industrial Hygienists                         |       |  |
| AICS   | Australia, Inventory of Chemical Substances              | LOAEL | Lowest Observed Adverse Effect Level   |
| DSL    | Canada, Domestic Substances List                         | NFPA  | National Fire Protection Agency  |
| NDSL   | Canada, Non-Domestic Substances List                     | NIOSH | National Institute for Occupational Safety & Health                                  |
| CNS    | Central Nervous System                                   | NTP   | National Toxicology Program  |
| CAS    | Chemical Abstract Service                                | NZIoC | New Zealand Inventory of Chemicals   |
| EC50   | Effective Concentration                                  | NOAEL | No Observable Adverse Effect Level   |
| EC50   | Effective Concentration 50%                              | NOEC  | No Observed Effect Concentration   |
| EGEST  | EOSCA Generic Exposure Scenario Tool                     | OSHA  | Occupational Safety & Health Administration  |
| EOSCA  | European Oilfield Specialty Chemicals Association        | PEL   | Permissible Exposure Limit   |
| EINECS | European Inventory of Existing Chemical Substances       | PICCS | Philippines Inventory of Commercial Chemical Substances                              |
| MAK    | Germany Maximum Concentration Values                     | PRNT  | Presumed Not Toxic   |
| GHS    | Globally Harmonized System                               | RCRA  | Resource Conservation Recovery Act   |
| >=     | Greater Than or Equal To                                 | STEL  | Short-term Exposure Limit  |
| IC50   | Inhibition Concentration 50%                             | SARA  | Superfund Amendments and Reauthorization Act.  |
| IARC   | International Agency for Research on Cancer              | TLV   | Threshold Limit Value  |
| IECSC  | Inventory of Existing Chemical Substances in China       | TWA   | Time Weighted Average  |
| ENCS   | Japan, Inventory of Existing and New Chemical Substances | TSCA  | Toxic Substance Control Act  |
| KECI   | Korea, Existing Chemical Inventory                       | UVCB  | Unknown or Variable Composition, Complex Reaction Products, and Biological Materials |
| <=     | Less Than or Equal To                                    | WHMIS | Workplace Hazardous Materials Information System                                     |
| LC50   | Lethal Concentration 50%                                 |       |  |



## Safety Data Sheet DUO-VIS\*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name DUO-VIS\*  
Product code PID510

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Viscosifier.

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### **Supplier**

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### **GHS Classification**

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

**Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Glyoxal

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria  
Product dust may be irritating to eyes, skin and respiratory system  
Suspended dust may present a dust explosion hazard

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients**

**3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name | EC No     | CAS No   | Weight-% |
|---------------|-----------|----------|----------|
| Glyoxal       | 203-474-9 | 107-22-2 | <1       |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures**

**4.1 First aid measures**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.   |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                          |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if symptoms occur.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

## Symptoms

|              |   |
|--------------|---|
| Inhalation   | Please see Section 11. Toxicological Information for further information. |
| Ingestion    | Please see Section 11. Toxicological Information for further information. |
| Skin contact | Please see Section 11. Toxicological Information for further information. |
| Eye contact  | Please see Section 11. Toxicological Information for further information. |

## 4.3 Indication of any immediate medical attention and special treatment needed

|                    |                        |
|--------------------|------------------------|
| Notes to physician | Treat symptomatically. |
|--------------------|------------------------|

# 5. Fire-Fighting Measures

## 5.1 Extinguishing media

### Suitable extinguishing media

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

### Extinguishing media which must not be used for safety reasons

None known.

## 5.2. Special hazards arising from the substance or mixture

### Unusual fire and explosion hazards

Dust may form explosive mixture in air.

### Hazardous combustion products

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>).

## 5.3 Advice for firefighters

### Special protective equipment for fire-fighters

As in any fire, wear self-contained breathing apparatus and full protective gear.

### Special Fire-Fighting Procedures

Containers close to fire should be removed immediately or cooled with water.

# 6. Accidental Release Measures

## 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Material becomes slippery when wet. Use caution if wet.

## 6.2 Environmental precautions

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to applicable federal, state and local regulations.

### Environmental exposure controls

Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent further leakage or spillage if safe to do so.

#### **Methods for cleaning up**

Take precautionary measures against static discharges. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Persons susceptible to allergic reactions should not handle this product.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

### **7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation. Take precautionary measures against static discharges. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Suspended dust may present a dust explosion hazard Avoid heat, flames and other sources of ignition. Protect from moisture Avoid contact with: Strong oxidizing agents

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## **8. Exposure Controls/Personal Protection**

### **8.1 Control parameters**

**Exposure limits** No biological limit allocated

#### **Component Information**

| Chemical Name | Arabic         | Australia      | Egypt          |
|---------------|----------------|----------------|----------------|
| Glyoxal       | Not determined | Not determined | Not determined |
| Chemical Name | India          | Indonesian     | Japan          |
| Glyoxal       | Not determined | Not determined | Not determined |
| Chemical Name | Kazakhstan     | Kuwait         | New Zealand    |
| Glyoxal       | Not determined | Not determined | Not determined |
| Chemical Name | Malaysia       | Philippines    | Russia         |
| Glyoxal       | Not determined | Not determined | Not determined |
| Chemical Name | Thailand       | Vietnam        | Turkey         |
| Glyoxal       | Not determined | Not determined | Not determined |

### **8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Local exhaust ventilation

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Butyl Neoprene Nitrile Frequent change is advisable

#### Respiratory protection

No personal respiratory protective equipment normally required In case of insufficient  
ventilation wear suitable respiratory equipment Half mask with a particle filter P2 (European  
Norm EN 143 = former DIN 3181) At work in confined or poorly ventilated spaces,  
respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder Dust    |
| Odor           | Mild           |
| Color          | Cream - Tan    |
| Odor threshold | Not applicable |

| Property                   | Values                   | Remarks   |
|----------------------------|--------------------------|-----------|
| pH                         | Not applicable           |           |
| pH @ dilution              | 7                        | @ 1% sol. |
| Melting / freezing point   | No information available |           |
| Boiling point/range        | No information available |           |
| Flash point                | No information available |           |
| Evaporation rate (BuAc =1) | No information available |           |
| Flammability (solid, gas)  | Not applicable           |           |
| Flammability Limit in Air  |                          |           |
| Upper flammability limit   | Not applicable           |           |
| Lower flammability limit   | Not applicable           |           |
| Vapor pressure             | No information available |           |

|                                     |  |       |
|-------------------------------------|--|-------|
| <b>Vapor density</b>                | No information available                       |       |
| <b>Specific gravity</b>             | 1.5  | 20 °C |
| <b>Bulk density</b>                 | 50 lb/ft <sup>3</sup> (800 kg/m <sup>3</sup> ) |       |
| <b>Relative density</b>             | No information available                       |       |
| <b>Water solubility</b>             | Soluble in water                               |       |
| <b>Solubility in other solvents</b> | No information available                       |       |
| <b>Autoignition temperature</b>     | > 200 °C / > 392 °F                            |       |
| <b>Decomposition temperature</b>    | No information available                       |       |
| <b>Kinematic viscosity</b>          | No information available                       |       |
| <b>Dynamic viscosity</b>            | No information available                       |       |
| <b>log Pow</b>                      | No information available                       |       |

|                             |  |
|-----------------------------|--|
| <b>Explosive properties</b> | Suspended dust may present a dust explosion hazard |
| <b>Oxidizing properties</b> | None known.  |

## **9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

## **Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

# **10. Stability and Reactivity**

## **10.1 Reactivity**

Dust may form explosive mixture in air.

## **10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

## **10.3 Possibility of Hazardous Reactions**

### **Hazardous polymerization**

Hazardous polymerization does not occur.

## **10.4 Conditions to avoid**

Take precautionary measures against static charges. Avoid dust formation. Heat, flames and sparks. Protect from moisture.

## **10.5 Incompatible materials**

Strong oxidizing agents.

## **10.6 Hazardous decomposition products**

See Section 5.2.

# **11. Toxicological Information**

## **11.1 Information on toxicological effects**

### **Acute toxicity**

|                   |  |
|-------------------|--|
| <b>Inhalation</b> | Inhalation of dust in high concentration may cause irritation of respiratory system. |
|-------------------|--|

|                               |   |
|-------------------------------|---|
| <b>Eye contact</b>            | Dust may cause mechanical irritation.               |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation. |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.             |
| <b>Unknown acute toxicity</b> | Not applicable.                                     |

#### Toxicology data for the components

| Chemical Name | LD50 Oral           | LD50 Dermal              | LC50 Inhalation                    |
|---------------|---------------------|--------------------------|------------------------------------|
| Glyoxal       | = 200 mg/kg ( Rat ) | = 12700 mg/kg ( Rabbit ) | = 2410 mg/m <sup>3</sup> , 3-4 hrs |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | EUH208 - Contains ( Glyoxal ). May produce an allergic reaction.                     |
| <b>Mutagenic effects</b>                                  | Contains an known or suspected mutagen.  |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | Skin contact.  |
| <b>Routes of entry</b>                                    | Inhalation.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name | Toxicity to fish           | Toxicity to algae   | Toxicity to daphnia and other aquatic invertebrates |
|---------------|----------------------------|---------------------|---|
| Glyoxal       | = 215 mg/L LC50 Pimephales | <= 348.59 mg/L EC50 | = 404 mg/L EC50 Daphnia magna                       |

|  |  |  |      |
|--|--|--|------|
|  | promelas 96 h 460 - 680 mg/L LC50<br>Leuciscus idus 96 h | Pseudokirchneriella subcapitata 96 h > 500 mg/L EC50<br>Desmodesmus subspicatus 96 h > 500 mg/L EC50<br>Desmodesmus subspicatus 72 h | 48 h |
|--|--|--|------|

## **12.2 Persistence and degradability**

The product contains substances which are not expected to be biodegradable. See component information below.

| <b>Chemical Name</b> | <b>Persistence and degradability</b> |
|----------------------|--------------------------------------|
| Glyoxal              | Readily biodegradable                |

## **12.3 Bioaccumulative potential**

Does not bioaccumulate. See component information below.

| <b>Chemical Name</b> | <b>Bioaccumulation</b>  |
|----------------------|---|
| Glyoxal              | Not likely to bioaccumulate - Bioconcentration factor (BCF) 2.155 |

## **12.4 Mobility**

### **Mobility**

Soluble in water. See component information below.

| <b>Chemical Name</b> | <b>Mobility</b>  |
|----------------------|------------------|
| Glyoxal              | Soluble in water |

### **Mobility in soil**

See component information below.

| <b>Chemical Name</b> | <b>Mobility in soil</b>        |
|----------------------|--------------------------------|
| Glyoxal              | Not expected to adsorb on soil |

## **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

## **12.6 Other adverse effects.**

None known.

## **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

# **13. Disposal considerations**

## **13.1 Waste treatment methods**

### **Waste from residues/unused products**

Dispose of in accordance with local regulations.



**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

**14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required.

**Group number** Not required.

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                            |          |
|----------------------------|----------|
| <b>USA (TSCA)</b>          | Complies |
| <b>Canada (DSL)</b>        | Complies |
| <b>Philippines (PICCS)</b> | Complies |
| <b>Japan (ENCS)</b>        | Complies |
| <b>China (IECSC)</b>       | Complies |
| <b>Australia (AICS)</b>    | Complies |
| <b>Korean (KECL)</b>       | Complies |
| <b>New Zealand (NZIoC)</b> | Complies |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse

**Supersedes Date:** 09-Jul-2018

**Revision date** 16-Nov-2018

**Version** 12

**This SDS has been revised in the following section(s)** 2, 6, No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 0 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | E |

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**Disclaimer**

**The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS**

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information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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## Safety Data Sheet Dye D247

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name Dye D247  
Product code D247

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Used as a cementing additive in oilfield applications

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|  |            |
|--|------------|
| Specific target organ toxicity - Repeated exposure | Category 2 |
|--|------------|

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements



**Signal word**  
WARNING

**Hazard Statements**

H373 - May cause damage to organs through prolonged or repeated exposure if swallowed

**Precautionary statements**

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P314 - Get medical advice/attention if you feel unwell

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Ethylene Glycol

Acetic acid

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

### 3. Composition/information on Ingredients

**3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name   | EC No     | CAS No   | Weight-% |
|-----------------|-----------|----------|----------|
| Ethylene Glycol | 203-473-3 | 107-21-1 | 10 < 25  |
| Acetic acid     | 200-580-7 | 64-19-7  | 1 - 5    |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

Note B: Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations.

### 4. First Aid Measures

**4.1 First aid measures**

**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

|                     |   |
|---------------------|---|
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating and toxic gases and vapors

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

## 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

### Methods for cleaning up

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid heat, flames and other sources of ignition. Avoid contact with: Strong oxidizing agents, Strong acids.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

**Exposure limits** No biological limit allocated

### Component Information

| Chemical Name   | Arabic                                   | Australia  | Egypt   |
|-----------------|--|--|---|
| Ethylene Glycol | Not determined                           | 40ppmSTELvapour<br>104mg/m <sup>3</sup> STELvapour<br>10mg/m <sup>3</sup> TWAparticulate<br>20ppmTWA vapour<br>52mg/m <sup>3</sup> TWAvapour | 39.4 ppm Ceiling<br>100 mg/m <sup>3</sup> Ceiling |
| Acetic acid     | 15 ppm STEL<br>37 mg/m <sup>3</sup> STEL | 15ppmSTEL<br>37mg/m <sup>3</sup> STEL  | 15 ppm STEL<br>37 mg/m <sup>3</sup> STEL          |

|                      |  |  |   |
|----------------------|--|--|---|
|                      | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA   | 10ppmTWA<br>25mg/m <sup>3</sup> TWA  | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA  |
| <b>Chemical Name</b> | <b>India</b>   | <b>Indonesian</b>  | <b>Japan</b>  |
| Ethylene Glycol      | Not determined   | 100 mg/m <sup>3</sup> STEL   | Not determined  |
| Acetic acid          | 15 ppm STEL<br>37 mg/m <sup>3</sup> STEL<br>10 ppm TWA<br>25 mg/m <sup>3</sup> TWA | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA<br>15 ppm STEL<br>37 mg/m <sup>3</sup> STEL   | 10 ppm OEL<br>25 mg/m <sup>3</sup> OEL  |
| <b>Chemical Name</b> | <b>Kazakhstan</b>  | <b>Kuwait</b>  | <b>New Zealand</b>  |
| Ethylene Glycol      | 5 mg/m <sup>3</sup> MAC  | 125 mg/m <sup>3</sup> TWA<br>50.0 ppm TWA<br>100 mg/m <sup>3</sup> STEL  | 50 ppm Ceiling mist and vapour<br>127 mg/m <sup>3</sup> Ceiling mist and vapour             |
| Acetic acid          | 5 mg/m <sup>3</sup> MAC  | 25 mg/m <sup>3</sup> TWA<br>10 ppm TWA<br>20 mg/m <sup>3</sup> TWA<br>5 ppm TWA<br>37 mg/m <sup>3</sup> STEL<br>15 ppm STEL<br>20 mg/m <sup>3</sup> STEL<br>5 ppm STEL | 15 ppm STEL<br>37 mg/m <sup>3</sup> STEL<br>10 ppm TWA<br>25 mg/m <sup>3</sup> TWA          |
| <b>Chemical Name</b> | <b>Malaysia</b>  | <b>Philippines</b>   | <b>Russia</b>   |
| Ethylene Glycol      | 39.4 ppm Ceiling aerosol<br>100 mg/m <sup>3</sup> Ceiling aerosol                  | Not determined   | 10 mg/m <sup>3</sup> STEL<br>5 mg/m <sup>3</sup> TWA  |
| Acetic acid          | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA   | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA   | Skin notation<br>5 mg/m <sup>3</sup> MAC<br>Skin  |
| <b>Chemical Name</b> | <b>Thailand</b>  | <b>Vietnam</b>   | <b>Turkey</b>   |
| Ethylene Glycol      | Not determined   | 10 mg/m <sup>3</sup> TWA<br>60 mg/m <sup>3</sup> TWA<br>20 mg/m <sup>3</sup> STEL<br>125 mg/m <sup>3</sup> STEL  | 40 ppm STEL<br>104 mg/m <sup>3</sup> STEL<br>Skin<br>20 ppm TWA<br>52 mg/m <sup>3</sup> TWA |
| Acetic acid          | 10 ppm TWA   | 25 mg/m <sup>3</sup> TWA<br>35 mg/m <sup>3</sup> STEL  | 10 ppm TWA<br>25 mg/m <sup>3</sup> TWA  |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Keep airborne concentrations below exposure limits

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Impervious gloves made of: Rubber Neoprene Nitrile PVC

Break through time >480 minutes

Glove thickness >0.4 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

#### Respiratory protection

No protective equipment is needed under normal use conditions In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit Respirator with a vapor filter (EN 141) Type A/P2 At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before breaks and immediately after handling the product





### 8.2.3 Environmental exposure controls

**Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | Aqueous solution         |
| Odor           | Pungent                  |
| Color          | Dark Purple              |
| Odor threshold | No information available |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | 3 - 4                    |         |
| pH @ dilution                | No information available |         |
| Melting / freezing point     | -17 °C / 1.4 °F          |         |
| Boiling point/range          | 103 °C / 217.4 °F        |         |
| Flash point                  | > 93 °C / 199.4 °F       |         |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | No information available |         |
| Bulk density                 | No information available |         |
| Relative density             | 1.02 - 1.06              |         |
| Water solubility             | Soluble in water         |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | No information available |         |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |

|                      |                          |
|----------------------|--------------------------|
| Explosive properties | No information available |
| Oxidizing properties | None known.              |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

**10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Avoid heat, flames and other sources of ignition.

**10.5 Incompatible materials**

Strong oxidizing agents. Strong acids.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system.  |
| <b>Eye contact</b>            | May cause slight irritation.  |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation. Components of the product may be absorbed into the body through the skin. |
| <b>Ingestion</b>              | May cause damage to organs through prolonged or repeated exposure.  |
| <b>Unknown acute toxicity</b> | Not applicable.   |

**Toxicology data for the components**

| Chemical Name   | LD50 Oral            | LD50 Dermal                                   | LC50 Inhalation         |
|-----------------|----------------------|---|-------------------------|
| Ethylene Glycol | = 4700 mg/kg ( Rat ) | = 9530 µL/kg ( Rabbit ) = 10600 mg/kg ( Rat ) | No data available       |
| Acetic acid     | = 3310 mg/kg ( Rat ) | = 1060 mg/kg ( Rabbit )                       | = 11.4 mg/L ( Rat ) 4 h |

|                          |   |
|--------------------------|---|
| <b>Sensitization</b>     | This product does not contain any components suspected to be sensitizing. |
| <b>Mutagenic effects</b> | This product does not contain any known or suspected mutagens.            |
| <b>Carcinogenicity</b>   | This product does not contain any known or suspected carcinogens.         |

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | Skin contact. Inhalation. Ingestion. Eye contact.                                    |
| <b>Routes of entry</b>                                    | Ingestion. Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Category 2.  |
| <b>Target organ effects</b>                               | Kidney.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name   | Toxicity to fish   | Toxicity to algae   | Toxicity to daphnia and other aquatic invertebrates                                  |
|-----------------|--|---|--|
| Ethylene Glycol | = 16000 mg/L LC50 <i>Poecilia reticulata</i> 96 h<br>40000 - 60000 mg/L LC50 <i>Pimephales promelas</i> 96 h<br>= 40761 mg/L LC50 <i>Oncorhynchus mykiss</i> 96 h<br>= 27540 mg/L LC50 <i>Lepomis macrochirus</i> 96 h<br>14 - 18 mL/L LC50 <i>Oncorhynchus mykiss</i> 96 h<br>= 41000 mg/L LC50 <i>Oncorhynchus mykiss</i> 96 h | 6500 - 13000 mg/L EC50 <i>Pseudokirchneriella subcapitata</i> 96 h                            | = 46300 mg/L EC50 <i>Daphnia magna</i> 48 h  |
| Acetic acid     | = 75 mg/L LC50 <i>Lepomis macrochirus</i> 96 h<br>= 79 mg/L LC50 <i>Pimephales promelas</i> 96 h   | 300.82 mg/l EC50 (Algae) = 72h<br>73,400 µg/l EC50 (Algae - <i>Navicula seminulum</i> ) = 96h | = 47 mg/L EC50 <i>Daphnia magna</i> 24 h<br>= 65 mg/L EC50 <i>Daphnia magna</i> 48 h |

### 12.2 Persistence and degradability

Biodegradable.

| Chemical Name | Persistence and degradability |
|---------------|-------------------------------|
| Acetic acid   | Readily biodegradable         |

### 12.3 Bioaccumulative potential

Bioaccumulation is unlikely.

| Chemical Name | Bioaccumulation   |
|---------------|---|
| Acetic acid   | Bioconcentration factor (BCF) : 3.16 Does not bioaccumulate |

#### 12.4 Mobility

##### **Mobility**

Soluble in water.

| Chemical Name | Mobility         |
|---------------|------------------|
| Acetic acid   | Soluble in water |

##### **Mobility in soil**

No product level data available. See component information below.

| Chemical Name | Mobility in soil               |
|---------------|--------------------------------|
| Acetic acid   | Not expected to adsorb on soil |

#### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

#### 12.6 Other adverse effects.

None known.

#### 12.7 Other information

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### 13.1 Waste treatment methods

##### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

##### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### 14.1. UN number

Not regulated

#### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

#### 14.3 Hazard class(es)

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

Ethylene Glycol

Schedule 6

Schedule 5

Acetic acid

Schedule 6

Schedule 5

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

**International inventories**

USA (TSCA)

Complies

Canada (DSL)

Complies

Philippines (PICCS)

Complies

Japan (ENCS)

Does not comply

China (IECSC)

Complies

Australia (AICS)

Complies

|                     |          |
|---------------------|----------|
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|                  |   |
|------------------|---|
| Prepared by      | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel |
| Supersedes Date: | 17-Dec-2015   |
| Revision date    | 02-Dec-2019   |
| Version          | 2   |

**This SDS has been revised in the following section(s)** All sections There have been changes with regard to classification.

### Key literature references and sources for data

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

### Disclaimer

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## Safety Data Sheet Expanding Cement Additive D174

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Expanding Cement Additive D174  
**Product code** D174

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|  |            |
|--|------------|
| Skin corrosion/irritation                        | Category 2 |
| Serious eye damage/eye irritation                | Category 1 |
| Specific target organ toxicity - Single exposure | Category 3 |

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements



**Signal word**  
DANGER

### **Hazard Statements**

H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H335 - May cause respiratory irritation

### **Precautionary statements**

P264 - Wash face, hands and any exposed skin thoroughly after handling  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician

### **Supplementary precautionary statements**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P271 - Use only outdoors or in a well-ventilated area  
P332 + P313 - If skin irritation occurs: Get medical advice/attention  
P312 - Call a POISON CENTER or doctor/physician if you feel unwell  
P362 - Take off contaminated clothing and wash before reuse  
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### **Contains**

### **2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

### **Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.  
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on ingredients

### **3.1 Substances**

| Chemical Name           | EC No     | CAS No     | Weight-% |
|-------------------------|-----------|------------|----------|
| Calcium magnesium oxide | 253-425-0 | 37247-91-9 | 90-100   |

### **3.2 Mixtures**

Not applicable

## 4. First Aid Measures

### **4.1 First aid measures**



---

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.                             |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

#### **Unusual fire and explosion hazards**

None known.

#### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Do not get on skin or clothing. Wash thoroughly after handling. Material becomes slippery when wet. Use caution if wet. Use personal protective equipment. See also section 8.

### 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

#### **Methods for cleaning up**

Avoid dust formation. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Material becomes slippery when wet. Use caution if wet.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Reacts violently with water. Avoid contact with: Strong oxidizing agents. Strong acids. Strong bases. |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## 8. Exposure controls/personal protection

### 8.1 Control parameters

**Exposure limits** NUI = Nuisance dust, TWA 4mg/m<sup>3</sup> Respirable Dust, 10mg/m<sup>3</sup> Total Dust.

**Component Information**

## Notes

No biological limit allocated

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against dusts Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Impervious gloves made of: Neoprene Nitrile Frequent change is advisable

#### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Suitable mask with particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder         |
| Odor           | Odorless       |
| Color          | Tan            |
| Odor threshold | Not applicable |

| Property                   | Values                   | Remarks            |
|----------------------------|--------------------------|--------------------|
| pH                         | No information available |                    |
| pH @ dilution              | 12.4                     | 1385.2 mg/l @ 20°C |
| Melting / freezing point   | > 450 °C / 842 °F        |                    |
| Boiling point/range        | No information available |                    |
| Flash point                | Not applicable           |                    |
| Evaporation rate (BuAc =1) | No information available |                    |

|                                     |                          |
|-------------------------------------|--------------------------|
| <b>Flammability (solid, gas)</b>    | Not applicable           |
| <b>Flammability Limit in Air</b>    |                          |
| <b>Upper flammability limit</b>     | Not applicable           |
| <b>Lower flammability limit</b>     | Not applicable           |
| <b>Vapor pressure</b>               | No information available |
| <b>Vapor density</b>                | No information available |
| <b>Specific gravity</b>             | No information available |
| <b>Bulk density</b>                 | No information available |
| <b>Relative density</b>             | 3.41 @ 20°C.             |
| <b>Water solubility</b>             | Soluble in water         |
| <b>Solubility in other solvents</b> | No information available |
| <b>Autoignition temperature</b>     | No information available |
| <b>Decomposition temperature</b>    | No information available |
| <b>Kinematic viscosity</b>          | No information available |
| <b>Dynamic viscosity</b>            | No information available |
| <b>log Pow</b>                      | No information available |

|                             |                          |
|-----------------------------|--------------------------|
| <b>Explosive properties</b> | No information available |
| <b>Oxidizing properties</b> | Not applicable           |

## 9.2 Other information

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

## Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

Exothermic reaction with: Acids. Water.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Avoid dust formation. Protect from moisture.

### 10.5 Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases. Water.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

## 11.1 Information on toxicological effects

### Acute toxicity

|                        |   |
|------------------------|---|
| Inhalation             | May cause irritation of respiratory tract.                                      |
| Eye contact            | Causes serious eye damage.  |
| Skin contact           | Causes skin irritation.   |
| Ingestion              | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |
| Unknown acute toxicity | Not applicable.   |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of exposure** Skin contact. Eye contact. Inhalation.

**Routes of entry** Skin contact. Eye contact. Inhalation.

**Specific target organ toxicity - Single exposure** Category 3

**Specific target organ toxicity - Repeated exposure** Not classified.

**Target organ effects** Respiratory system.

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**12.2 Persistence and degradability**

Not Applicable - Inorganic chemical.

**12.3 Bioaccumulative potential**

Not Applicable - Inorganic chemical.

**12.4 Mobility****Mobility**

Soluble.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

**13.1 Waste treatment methods****Waste from residues / unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

**14.1. UN number**

Not regulated

UN No. (ICAO/ANAC)

UN1910

**14.2. UN proper shipping name**

Calcium Oxide (regulated only if transported by aircraft)

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division 8

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group III

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

No Poison Schedule number allocated

New Zealand hazard classification Classified

HSNO approval no. HSR002544

Group number 6.3A, 8.3A

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes Date:** 19-Jan-2016

**Revision date** 28-Mar-2018

**Version** 7

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

#### Key literature references and sources for data

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

#### Disclaimer

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agreement between the parties.



## Safety Data Sheet EZEFL0\* F103 Surfactant

### 1. Identification of the substance/preparation and of the Company/undertaking

#### 1.1 Product identifier

Product name EZEFL0\* F103 Surfactant  
Product code F103  
Denmark Pr. no: 1088973

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Surfactant in oilfield applications

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

|             |   |
|-------------|---|
| Denmark     | Poison Control Hotline (DK): +45 82 12 12 12  |
| Italy       | Centro Antiveleni Ospedale Niguarda Milan: +39 02 6610 1029   |
| Netherlands | National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals) |

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

##### Health hazards

|  |            |
|--|------------|
| Acute toxicity - Oral                            | Category 4 |
| Skin corrosion/irritation                        | Category 2 |
| Serious eye damage/eye irritation                | Category 1 |
| Specific target organ toxicity - Single exposure | Category 3 |

Environmental hazards Not classified

##### Physical Hazards

Flammable Liquids

Category 3

## 2.2 Label elements



### Signal word

DANGER

### Hazard statements

H302 - Harmful if swallowed  
H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H336 - May cause drowsiness or dizziness  
H226 - Flammable liquid and vapor

### Precautionary Statements - EU (§28, 1272/2008)

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P261 - Avoid breathing dust/ fume/gas/mist/vapors/spray  
P280 - Wear eye protection/ face protection  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/ physician  
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction

### Supplementary precautionary statements

P233 - Keep container tightly closed  
P240 - Ground/bond container and receiving equipment  
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment  
P242 - Use only non-sparking tools  
P243 - Take precautionary measures against static discharge  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P271 - Use only outdoors or in a well-ventilated area  
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P330 - Rinse mouth  
P332 + P313 - If skin irritation occurs: Get medical advice/attention  
P362 - Take off contaminated clothing and wash before reuse  
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
P403 + P235 - Store in a well-ventilated place. Keep cool  
P501 - Dispose of contents/container in accordance with local regulations.

### Contains

Propan-2-ol

2-butoxyethanol

Ethoxylated C11 Alcohol

Ethoxylated Alcohol

Undecanol

### 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

#### Australian statement of hazardous/dangerous nature

Classified as Hazardous according to the criteria of NOHSC.  
HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

## 3. Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name           | EC No     | CAS No     | Weight-% | Classification according to 67/548/EEC | Regulation (EC) No 1272/2008   | REACH registration number |
|-------------------------|-----------|------------|----------|--|--|---------------------------|
| Propan-2-ol             | 200-661-7 | 67-63-0    | 10 - 30  | F;R11<br>R67<br>Xi;R36                 | Flam. Liq. 2, (H225)<br>STOT SE 3 (H336)<br>Eye Irrit. 2 (H319)  | 01-2120063207-61-x<br>xxx |
| 2-butoxyethanol         | 203-905-0 | 111-76-2   | 10 - 30  | Xn; R20/21/22<br>Xi; R36/38            | Acute Tox. 4 (H302)<br>Acute Tox. 4 (H312)<br>Acute Tox. 4 (H332)<br>Skin Irrit. 2 (H315)<br>Eye Irrit. 2 (H319) | 01-2119475108-36-x<br>xxx |
| Ethoxylated C11 Alcohol |           | 34398-01-1 | 10-30    | Xn;R22 Xi;R41<br>Xi;R38                | Acute Tox.4 (H302) Skin<br>Irrit.2 (H315) Eye Dam.1<br>(H3018)   | No data available         |
| Ethoxylated Alcohol     |           | 68131-39-5 | 5-10     | Xn;R22 Xi;R38-41                       | Acute Tox.4 (H302) Skin<br>Irrit.2 (H315) Eye Dam.1<br>(H318)  | No data available         |
| Undecanol               |           | 112-42-5   | 1-5      | Xi;R38 Xi;R41<br>N;R50 N;R51/53        | Skin Irrit.2 (H315) Eye<br>Irrit.2 (H319) Aquatic<br>Acute.1 (H400) Aquatic<br>Chronic.2 (H411)                  | No data available         |

#### Comments

The product contains other ingredients which do not contribute to the overall classification.

## 4. First aid measures

### 4.1 First-Aid Measures

#### Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

#### Ingestion

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

|                     |  |
|---------------------|--|
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.                                |
| <b>Eye contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

#### **4.2 Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Main symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-fighting measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

##### **Extinguishing media which must not be used for safety reasons**

Do not use a solid water stream as it may scatter and spread fire.

#### **5.2 Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

FLAMMABLE. Vapors are heavier than air and may spread along floors. Vapors may travel considerable distance to source of ignition and flash back.

##### **Hazardous combustion products**

When heated strongly or burned, oxides of carbon and harmful organic chemical fumes are released

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

##### **Hazchem code ADG**

•3Y

### **6. Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment identified in Section 8. Evacuate personnel to safe areas. Remove all sources of ignition. Use personal protective equipment.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

#### **Methods for cleaning up**

Take precautionary measures against static discharges. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use clean non-sparking tools to collect absorbed material. Ground and bond containers when transferring material. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### **Hygiene measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### **7.2 Conditions for safe storage, including any incompatibilities**

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Ensure all equipment is electrically grounded before beginning transfer operations.                   |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Keep away from open flames, hot surfaces and sources of ignition. Protect from freezing. Store above 0°C. Store away from incompatibles, Strong oxidizing agents, Strong bases, Aluminum. |
| <b>Storage class</b>                  | Flammable liquid storage.  |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

### **7.3 Specific end uses**

See Section 1.2.

## 8. Exposure controls/personal protection

## 8.1 Control parameters

| Chemical Name           | EU OEL   | Austria  | Australia   | Denmark  |
|-------------------------|--|--|---|--|
| Propan-2-ol             | Not determined   | 800 ppm STEL<br>2000 mg/m <sup>3</sup> STEL<br>200 ppm TWA<br>500 mg/m <sup>3</sup> TWA  | 500ppmSTEL<br>1230mg/m <sup>3</sup> STEL<br>400ppmTWA<br>983mg/m <sup>3</sup> TWA | 200 ppm<br>490 mg/m <sup>3</sup>   |
| 2-butoxyethanol         | 50 ppm STEL<br>246 mg/m <sup>3</sup> STEL<br>20 ppm TWA<br>98 mg/m <sup>3</sup> TWA<br>Possibility of significant uptake through the skin*1) | 40 ppm STEL<br>200 mg/m <sup>3</sup> STEL<br>20 ppm TWA<br>98 mg/m <sup>3</sup> TWA  | 50ppmSTEL<br>242mg/m <sup>3</sup> STEL<br>20ppmTWA<br>96.9mg/m <sup>3</sup> TWA   | 20 ppm<br>98 mg/m <sup>3</sup>   |
| Ethoxylated C11 Alcohol | Not determined   | Not determined   | Not determined  | Not determined   |
| Ethoxylated Alcohol     | Not determined   | Not determined   | Not determined  | Not determined   |
| Undecanol               | Not determined   | Not determined   | Not determined  | Not determined   |
| Chemical Name           | Malaysia   | France   | Germany   | Hungary  |
| Propan-2-ol             | 400 ppm TWA<br>983 mg/m <sup>3</sup> TWA   | 400ppmSTEL<br>980mg/m <sup>3</sup> STEL  | 200 ppm TWA<br>500 mg/m <sup>3</sup> TWA  | 500mg/m <sup>3</sup> TWA<br>2000mg/m <sup>3</sup> STEL                                     |
| 2-butoxyethanol         | 20 ppm TWA<br>96.7 mg/m <sup>3</sup> TWA<br>Skin notation*3)   | 50ppmSTEL<br>246mg/m <sup>3</sup> STEL<br>10 ppmTWA<br>49 mg/m <sup>3</sup> TWA  | 10 ppm TWA<br>49 mg/m <sup>3</sup> TWA  | 98mg/m <sup>3</sup> TWA<br>246mg/m <sup>3</sup> STEL                                       |
| Ethoxylated C11 Alcohol | Not determined   | Not determined   | Not determined  | Not determined   |
| Ethoxylated Alcohol     | Not determined   | Not determined   | Not determined  | Not determined   |
| Undecanol               | Not determined   | Not determined   | Not determined  | Not determined   |
| Chemical Name           | New Zealand  | Italy  | Netherlands   | Norway   |
| Propan-2-ol             | 500 ppm STEL<br>1230 mg/m <sup>3</sup> STEL<br>400 ppm TWA<br>983 mg/m <sup>3</sup> TWA  | Not determined   | Not determined  | 100 ppm TWA<br>245 mg/m <sup>3</sup> TWA<br>125 ppm STEL<br>306.25 mg/m <sup>3</sup> STEL  |
| 2-butoxyethanol         | 25 ppm TWA<br>121 mg/m <sup>3</sup> TWA<br>Possibility of significant uptake through the skin*1)   | Not determined   | 100 mg/m <sup>3</sup> TWA   | 10 ppm TWA<br>50 mg/m <sup>3</sup> TWA<br>15 ppm STEL<br>75 mg/m <sup>3</sup> STEL<br>Skin |
| Ethoxylated C11 Alcohol | Not determined   | Not determined   | Not determined  | Not determined   |
| Ethoxylated Alcohol     | Not determined   | Not determined   | Not determined  | Not determined   |
| Undecanol               | Not determined   | Not determined   | Not determined  | Not determined   |
| Chemical Name           | Poland   | Portugal   | Romania   | Russia   |
| Propan-2-ol             | 1200 mg/m <sup>3</sup> STEL<br>NDSCh<br>900 mg/m <sup>3</sup> TWA NDS  | 400 ppm STEL VLE-CD<br>200 ppm TWA   | 203ppmSTEL<br>500mg/m <sup>3</sup> STEL<br>81ppmTWA<br>200mg/m <sup>3</sup> TWA   | 50 mg/m <sup>3</sup> STEL 1721<br>vapor<br>10 mg/m <sup>3</sup> TWA 1721                   |
| 2-butoxyethanol         | 200 mg/m <sup>3</sup> STEL NDSCh<br>98 mg/m <sup>3</sup> TWA NDS   | Skin<br>50 ppm STEL VLE-CD<br>246 mg/m <sup>3</sup> STEL<br>VLE-CD<br>20 ppm TWA indicative limit value<br>98 mg/m <sup>3</sup> TWA indicative limit value | 50ppmSTEL<br>246mg/m <sup>3</sup> STEL<br>20ppmTWA<br>98mg/m <sup>3</sup> TWA     | 5 mg/m <sup>3</sup> MAC  |
| Ethoxylated C11 Alcohol | Not determined   | Not determined   | Not determined  | Not determined   |
| Ethoxylated Alcohol     | Not determined   | Not determined   | Not determined  | Not determined   |
| Undecanol               | Not determined   | Not determined   | Not determined  | Not determined   |
| Chemical Name           | Spain  | Switzerland  | Turkey  | UK   |
| Propan-2-ol             | 400 ppm STEL<br>1000 mg/m <sup>3</sup> STEL<br>200 ppm TWA VLA-ED<br>500 mg/m <sup>3</sup> TWA VLA-ED  | 400 ppm STEL<br>1000 mg/m <sup>3</sup> STEL<br>200 ppm TWA MAK<br>500 mg/m <sup>3</sup> TWA MAK  | Not determined  | 500 ppm STEL<br>1250 mg/m <sup>3</sup> STEL<br>400 ppm TWA<br>999 mg/m <sup>3</sup> TWA    |
| 2-butoxyethanol         | 50 ppm STEL<br>245 mg/m <sup>3</sup> STEL  | 20 ppm STEL<br>98 mg/m <sup>3</sup> STEL   | 50 ppm STEL<br>246 mg/m <sup>3</sup> STEL   | 50 ppm STEL<br>246 mg/m <sup>3</sup> STEL  |

|                         | Skin*2)<br>20 ppm TWA VLA-ED<br>98 mg/m <sup>3</sup> TWA VLA-ED | Skin*2)<br>10 ppm TWA MAK<br>49 mg/m <sup>3</sup> TWA MAK | Skin*2)<br>20 ppm TWA<br>98 mg/m <sup>3</sup> TWA | Skin*2)<br>25 ppm TWA<br>123 mg/m <sup>3</sup> TWA |
|-------------------------|---|---|---|--|
| Ethoxylated C11 Alcohol | Not determined  | Not determined  | Not determined                                    | Not determined                                     |
| Ethoxylated Alcohol     | Not determined  | Not determined  | Not determined                                    | Not determined                                     |
| Undecanol               | Not determined  | Not determined  | Not determined                                    | Not determined                                     |

**Notes**

No biological limit allocated

**Derived No Effect Level (DNEL)****Short term exposure local effects****2-butoxyethanol**

Inhalation 246 mg/m<sup>3</sup>

**Short term exposure systemic effects****2-butoxyethanol**

Dermal 89 mg/kg  
Inhalation 1091 mg/m<sup>3</sup>

**Long term exposure systemic effects****2-butoxyethanol**

Dermal 125 mg/kg  
Inhalation 98 mg/m<sup>3</sup>

**Predicted No Effect Concentration (PNEC)****2-butoxyethanol**

Fresh water 8.8 mg/l  
Sea water 0.88 mg/l  
Fresh water sediment 34.6 mg/kg  
Sea sediment 3.46 mg/kg  
Soil 2.33 mg/kg  
Impact on sewage treatment 463 mg/l  
Intermittent release 9.1 mg/l

**8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**Engineering measures to reduce exposure**

Ensure adequate ventilation. Mechanical ventilation or local exhaust ventilation is required.

**Personal protective equipment****Eye protection**

Use eye protection according to EN 166, designed to protect against liquid splashes. Tightly fitting safety goggles. Safety glasses with side-shields. Face-shield.

**Hand protection**

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use protective gloves made of: PVC polyvinyl alcohol or nitrile-butyl rubber gloves  
Break through time >480 minutes  
Glove thickness 0.4 mm

**Respiratory protection**

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
In case of insufficient ventilation wear suitable respiratory equipment, Use respirator with organic vapor/acid gas protection (E, yellow), At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection**

Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.

**Hygiene measures**

Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing



before re-use.



## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|                |                  |
|----------------|------------------|
| Physical state | Liquid           |
| Appearance     | Aqueous solution |
| Odor           | Alcohol          |
| Color          | Clear            |
| Odor threshold | Not applicable   |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | 5                        |         |
| pH @ dilution                |                          |         |
| Melting / freezing point     | - 40 °C / - 40 °F        |         |
| Boiling point/range          | 88 °C / 190 °F           |         |
| Flash point                  | 32 °C / 90 °F            | PMCC    |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | No data available        |         |
| Lower flammability limit     | No data available        |         |
| Vapor pressure               | 3.4 kPa                  | @ 25 °C |
| Vapor density                | >1 (air = 1)             |         |
| Specific gravity             | No information available |         |
| Bulk density                 | No information available |         |
| Relative density             | 0.937                    | @ 25°C. |
| Water solubility             | Soluble in water         |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | 5.63 mm <sup>2</sup> /s  | @ 40 °C |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |
| Explosive properties         | Not applicable           |         |
| Oxidizing properties         | None known.              |         |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

## 10. Stability and reactivity

### 10.1 Reactivity

FLAMMABLE LIQUID AND VAPOR.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### **10.3 Possibility of Hazardous Reactions**

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### **10.4 Conditions to avoid**

Avoid heat, flames and other sources of ignition. Keep away from direct sunlight. Protect from freezing. Store above 0°C.

### **10.5 Incompatible materials**

Strong oxidizing agents. Strong bases. Aluminum.

### **10.6 Hazardous decomposition products**

See Section 5.2.

## **11. Toxicological information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. May cause drowsiness or dizziness. |
| <b>Eye contact</b>            | Causes serious eye damage.  |
| <b>Skin contact</b>           | Causes skin irritation. Components of the product may be absorbed into the body through the skin.                         |
| <b>Ingestion</b>              | Harmful if swallowed.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

| <b>Chemical Name</b>    | <b>LD50 Oral</b>         | <b>LD50 Dermal</b>      | <b>LC50 Inhalation</b>                |
|-------------------------|--------------------------|-------------------------|---------------------------------------|
| Propan-2-ol             | = 1870 mg/kg ( Rat )     | = 4059 mg/kg ( Rabbit ) | = 72600 mg/m <sup>3</sup> ( Rat ) 4 h |
| 2-butoxyethanol         | 1200 mg/kg (Guinea pigs) | > 2000 mg/kg (Rat)      | 400 ppm ( Rabbit)                     |
| Ethoxylated C11 Alcohol | No data available        | No data available       | No data available                     |
| Ethoxylated Alcohol     | No data available        | No data available       | No data available                     |
| Undecanol               | No data available        | No data available       | No data available                     |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

|  |   |
|--|---|
| Routes of exposure                                 | Inhalation. Skin contact. Eye contact. Ingestion. |
| Routes of entry                                    | Inhalation. Skin absorption.                      |
| Specific target organ toxicity - Single exposure   | Category 3  |
| Specific target organ toxicity - Repeated exposure | Not classified.                                   |
| Neurological effects                               | Central nervous system depressant.                |
| Aspiration hazard                                  | Not applicable.                                   |

## 12. Ecological information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

| Chemical Name           | Toxicity to fish  | Toxicity to algae  | Toxicity to daphnia and other aquatic invertebrates                                |
|-------------------------|---|--|--|
| Propan-2-ol             | > 1400000 µg/L LC50 <i>Lepomis macrochirus</i> 96 h = 11130 mg/L<br>LC50 <i>Pimephales promelas</i> 96 h = 9640 mg/L LC50 <i>Pimephales promelas</i> 96 h | > 1000 mg/L EC50 <i>Desmodesmus subspicatus</i> 96 h > 1000 mg/L<br>EC50 <i>Desmodesmus subspicatus</i> 72 h | = 13299 mg/L EC50 <i>Daphnia magna</i> 48 h  |
| 2-butoxyethanol         | = 2950 mg/L LC50 <i>Lepomis macrochirus</i> 96 h = 1490 mg/L<br>LC50 <i>Lepomis macrochirus</i> 96 h  | No information available   | = 1698 - 1940 mg/L (LC50; <i>Daphnia magna</i> )<br>= 1720 mg/L (EC50; water flea) |
| Ethoxylated C11 Alcohol | No information available  | No information available   | No information available   |
| Ethoxylated Alcohol     | No information available  | No information available   | No information available   |
| Undecanol               | No information available  | No information available   | No information available   |

### 12.2 Persistence and degradability

This product is expected to be readily biodegradable.

### 12.3 Bioaccumulative potential

The product contains potentially bioaccumulating substances.

**12.4 Mobility in soil****Mobility**

The product is water soluble, and may spread in water systems.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**13. Disposal considerations****13.1 Waste treatment methods**

|  |   |
|--|---|
| <b>Waste from residues / unused products</b> | Dispose of as special waste in compliance with local and national regulations.  |
| <b>Contaminated packaging</b>                | Do not burn, or use a cutting torch on, the empty drum. Empty containers may contain flammable or explosive vapors. Dispose of contents/container to an approved waste disposal plant.  |
| <b>EWC Waste Disposal No</b>                 | According to the European Waste Catalog, Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: EWC waste disposal No: 16 03 05 - organic wastes containing dangerous substances 16 10 01 - aqueous liquid wastes containing dangerous substances |

**14. Transport information****14.1. UN number**

|                                    |        |
|------------------------------------|--------|
| <b>UN/ID No. (ADR/RID/ADN/ADG)</b> | UN1993 |
| <b>UN No. (IMDG)</b>               | UN1993 |
| <b>UN No. (ICAO)</b>               | UN1993 |

**14.2. UN proper shipping name**

FLAMMABLE LIQUID, N.O.S. (contains Isopropanol)

**14.3 Hazard class(es)**

|                                     |   |
|-------------------------------------|---|
| <b>ADR/RID/ADN/ADG Hazard class</b> | 3 |
| <b>IMDG Hazard class</b>            | 3 |
| <b>ICAO Hazard class/division</b>   | 3 |

**14.4 Packing group**

|                                      |     |
|--------------------------------------|-----|
| <b>ADR/RID/ADN/ADG Packing group</b> | III |
| <b>IMDG Packing group</b>            | III |
| <b>ICAO Packing group</b>            | III |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

|                                |          |
|--------------------------------|----------|
| Hazard identification no (ADR) | 30       |
| EmS (IMDG)                     | F-E, S-E |
| Emergency Action Code (EAC)    | •3Y      |
| Tunnel restriction code        | D/E      |
| Hazchem code ADG               | •3Y      |

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

|   |                            |
|---|----------------------------|
| Germany, Water Endangering<br>Classes (VwVwS) | Hazardous to water/Class 2 |
|---|----------------------------|

Australian Standard for the Uniform Scheduling of Drugs and Poisons

2-butoxyethanol  
Schedule 6

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

This safety data sheet complies with the requirements of Regulation (EC) No. 1272/2008.

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].  
National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].  
National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

ADG Code – Australian Dangerous Goods Code.

Dutch Mining Regulations: In accordance with Mining Regulations 9.2 and Chapter 4 of the Working Conditions Decree.

International inventories

|                                    |          |
|------------------------------------|----------|
| USA (TSCA)                         | Complies |
| European Union (EINECS and ELINCS) | Complies |
| Canada (DSL)                       | Complies |
| Philippines (PICCS)                | Complies |
| Japan (ENCS)                       | Complies |
| China (IECSC)                      | Complies |
| Australia (AICS)                   | Complies |
| Korean (KECL)                      | Complies |
| New Zealand (NZIoC)                | Complies |

**15.2 Chemical Safety Report**

No information available

## 16. Other information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes date** 24-Jun-2014

**Revision date** 13-Apr-2017

**Version** 3

**This SDS has been revised in the following section(s)** All sections There have been changes with regard to classification.

**Text of R phrases mentioned in Section 3**

R11 - Highly flammable  
R22 - Harmful if swallowed  
R36 - Irritating to eyes  
R38 - Irritating to skin  
R41 - Risk of serious damage to eyes  
R50 - Very toxic to aquatic organisms  
R67 - Vapors may cause drowsiness and dizziness

R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed  
R36/38 - Irritating to eyes and skin  
R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Full text of H-Statements referred to under sections 2 and 3**

H302 - Harmful if swallowed  
H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H336 - May cause drowsiness or dizziness  
H226 - Flammable liquid and vapor  
H225 - Highly flammable liquid and vapor  
H312 - Harmful in contact with skin  
H319 - Causes serious eye irritation  
H332 - Harmful if inhaled  
H400 - Very toxic to aquatic life

H411 - Toxic to aquatic life with long lasting effects

**Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

**Flowzan® Biopolymer**

Version 1.9

Revision Date 2021-05-25

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product information**

Product Name : Flowzan® Biopolymer  
Material : 1123442, 1016765, 1016826, 1016827

Use : Drilling Fluid Additive

**Company** : Chevron Phillips Chemical Company LP  
Drilling Specialties Company LLC  
10001 Six Pines Drive  
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals Australia Pte Ltd  
Suite 409  
685 Burke Road  
Camberwell, Victoria  
Australia 3124  
Hours of Operation: 9:00 a.m. - 5:00 p.m.

SDS Requests: 61 3 8080 5700  
Technical Information: 61 3 8080 5700  
Responsible Party: Product Safety Group  
Email:sds@cpchem.com

**Emergency telephone:****Health:**

866.442.9628 (North America)  
1.832.813.4984 (International)  
61 3 8080 5700 (Australia)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)  
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090  
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
Mexico CHEMTREC 01-800-681-9531 (24 hours)  
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600  
Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group  
E-mail address : SDS@CPChem.com  
Website : www.CPChem.com



**Flowzan® Biopolymer**

Version 1.9

Revision Date 2021-05-25

**SECTION 2: Hazards identification****Classification of the substance or mixture**

**Model Work Health and Safety Regulations 2011, Model Code of Practice for the Labelling of Workplace Hazardous Chemicals (2011), Guidance on the Classification of Hazardous Chemicals under the WHS Regulations (2012) (GHS 2009)**

**Classification**

Not a hazardous substance or mixture.

**Labeling**

Not a hazardous substance or mixture.

**SECTION 3: Composition/information on ingredients**

Synonyms : None Established

Molecular formula : Mixture

Contains no hazardous ingredients according to GHS.

**SECTION 4: First aid measures**

General advice : No hazards which require special first aid measures.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.

In case of eye contact : Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

**SECTION 5: Firefighting measures**

Flash point : Not applicable

Autoignition temperature : No data available

Unsuitable extinguishing media : High volume water jet.

Specific hazards during fire fighting : Risks of ignition followed by flame propagation or secondary explosions can be caused by the accumulation of dust, e.g. on floors and ledges.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Standard procedure for chemical fires. Use extinguishing

**Flowzan® Biopolymer**

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- measures that are appropriate to local circumstances and the surrounding environment.
- Fire and explosion protection : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.
- Hazardous decomposition products : No data available.

**SECTION 6: Accidental release measures**

- Personal precautions : Avoid dust formation.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up : Pick up and arrange disposal without creating dust. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.
- Additional advice : Contaminated surfaces will be extremely slippery. Avoid spillage on floor as the product can become very slippery when wet. Sweep up to prevent slipping hazard. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Special exposure hazards arising from the substance or mixture itself, combustion products, resulting gases

**SECTION 7: Handling and storage****Handling**

- Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient.
- Advice on protection against fire and explosion : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.

**Storage**

- Requirements for storage areas and containers : Electrical installations / working materials must comply with the technological safety standards.
- Advice on common storage : No materials to be especially mentioned.
- Use : Drilling Fluid Additive

**Flowzan® Biopolymer**

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**SECTION 8: Exposure controls/personal protection****Ingredients with workplace control parameters****AU**

| Components                                  | Basis  | Value | Control parameters | Note |
|---|--------|-------|--------------------|------|
| Saturated monocarboxylic acid, calcium salt | AU OEL | TWA   | 10 mg/m3           |      |

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Safety glasses.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Protective suit. Safety shoes.
- Hygiene measures : General industrial hygiene practice.

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****Appearance**

- Form : Powder
- Physical state : solid
- Color : Cream to light yellow

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Odor : Slight  
Odor Threshold : No data available

**Safety data**

Flash point : Not applicable

Lower explosion limit : No data available

Upper explosion limit : No data available

Oxidizing properties : No

Autoignition temperature : No data available

Molecular formula : Mixture

Molecular weight : Not applicable

pH : 5.5 - 8.5

Pour point : No data available

Boiling point/boiling range : Not applicable

Vapor pressure : Not applicable

Relative density : 1.4 - 1.6

Water solubility : Completely Soluble

Partition coefficient: n-octanol/water : No data available

Viscosity, kinematic : No data available

Relative vapor density : Not applicable

Evaporation rate : No data available

**SECTION 10: Stability and reactivity**

**Reactivity** : Stable at normal ambient temperature and pressure.

**Chemical stability** : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Possibility of hazardous reactions**

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- Hazardous reactions** : Hazardous reactions: Hazardous polymerization does not occur.
- Further information: Stable under recommended storage conditions., No hazards to be specially mentioned.
- Conditions to avoid** : Generation of Dusts.
- Materials to avoid** : No data available.
- Hazardous decomposition products** : No data available
- Other data** : No decomposition if stored and applied as directed.

**SECTION 11: Toxicological information**

- Flowzan® Biopolymer**
- Further information** : The product contains no substances classified as hazardous to health in concentrations which should be taken into account.

**SECTION 12: Ecological information****Ecotoxicity effects**

- Toxicity to fish** : This material is not expected to be harmful to aquatic organisms.
- Toxicity to daphnia and other aquatic invertebrates** : This material is not expected to be harmful to aquatic organisms.
- Toxicity to algae** : This material is not expected to be harmful to aquatic organisms.
- Biodegradability : Taking into consideration the properties of several ingredients, the product is estimated to be biodegradable according to OECD classification.
- Elimination information (persistence and degradability)
- Bioaccumulation : This material is not expected to bioaccumulate.
- Mobility : immobile
- Additional ecological information : This material is not expected to be harmful to aquatic organisms.
- Ecotoxicology Assessment**
- Short-term (acute) aquatic hazard : This product has no known ecotoxicological effects.

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Long-term (chronic) aquatic hazard : This product has no known ecotoxicological effects.

**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

**SECTION 14: Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code****SECTION 15: Regulatory information****National legislation**

Standard for the Uniform : No poison schedule number allocated  
Scheduling of Medicines and  
Poisons

**Notification status**

|                                     |   |  |
|-------------------------------------|---|--|
| Europe REACH                        | : | On the inventory, or in compliance with the inventory  |
| Switzerland CH INV                  | : | On the inventory, or in compliance with the inventory  |
| United States of America (USA) TSCA | : | On or in compliance with the active portion of the TSCA inventory  |
| Canada DSL                          | : | All components of this product are on the Canadian DSL   |
| Australia AICS                      | : | On the inventory, or in compliance with the inventory  |
| New Zealand NZIoC                   | : | On the inventory, or in compliance with the inventory  |
| Japan ENCS                          | : | On the inventory, or in compliance with the inventory  |
| Korea KECI                          | : | A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s). |
| Philippines PICCS                   | : | On the inventory, or in compliance with the inventory  |
| China IECSC                         | : | On the inventory, or in compliance with the inventory  |
| Taiwan TCSI                         | : | On the inventory, or in compliance with the inventory  |

**SECTION 16: Other information****Further information**

Legacy SDS Number : 463650

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet

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|        |  |       |  |
|--------|--|-------|--|
| ACGIH  | American Conference of Government Industrial Hygienists  | LD50  | Lethal Dose 50%  |
| AICS   | Australia, Inventory of Chemical Substances              | LOAEL | Lowest Observed Adverse Effect Level   |
| DSL    | Canada, Domestic Substances List                         | NFPA  | National Fire Protection Agency  |
| NDSL   | Canada, Non-Domestic Substances List                     | NIOSH | National Institute for Occupational Safety & Health                                  |
| CNS    | Central Nervous System                                   | NTP   | National Toxicology Program  |
| CAS    | Chemical Abstract Service                                | NZIoC | New Zealand Inventory of Chemicals   |
| EC50   | Effective Concentration                                  | NOAEL | No Observable Adverse Effect Level   |
| EC50   | Effective Concentration 50%                              | NOEC  | No Observed Effect Concentration   |
| EGEST  | EOSCA Generic Exposure Scenario Tool                     | OSHA  | Occupational Safety & Health Administration  |
| EOSCA  | European Oilfield Specialty Chemicals Association        | PEL   | Permissible Exposure Limit   |
| EINECS | European Inventory of Existing Chemical Substances       | PICCS | Philippines Inventory of Commercial Chemical Substances                              |
| MAK    | Germany Maximum Concentration Values                     | PRNT  | Presumed Not Toxic   |
| GHS    | Globally Harmonized System                               | RCRA  | Resource Conservation Recovery Act   |
| >=     | Greater Than or Equal To                                 | STEL  | Short-term Exposure Limit  |
| IC50   | Inhibition Concentration 50%                             | SARA  | Superfund Amendments and Reauthorization Act.  |
| IARC   | International Agency for Research on Cancer              | TLV   | Threshold Limit Value  |
| IECSC  | Inventory of Existing Chemical Substances in China       | TWA   | Time Weighted Average  |
| ENCS   | Japan, Inventory of Existing and New Chemical Substances | TSCA  | Toxic Substance Control Act  |
| KECI   | Korea, Existing Chemical Inventory                       | UVCB  | Unknown or Variable Composition, Complex Reaction Products, and Biological Materials |
| <=     | Less Than or Equal To                                    | WHMIS | Workplace Hazardous Materials Information System                                     |
| LC50   | Lethal Concentration 50%                                 |       |  |





## Safety Data Sheet FORM-A-BLOK\*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** FORM-A-BLOK\*  
**Product code** PID16796

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Lost circulation material.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd / ALPINE  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified**2.2 Label elements****Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains**Wollastonite (Ca(SiO<sub>3</sub>))

Cellulose

Kaolin

Polyvinyl alcohol

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Suspended dust may present a dust explosion hazard

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name                        | EC No     | CAS No     | Weight-% |
|--------------------------------------|-----------|------------|----------|
| Wollastonite (Ca(SiO <sub>3</sub> )) | 237-772-5 | 13983-17-0 | 30-60    |
| Cellulose                            | 232-674-9 | 9004-34-6  | 10-30    |
| Kaolin                               | 310-194-1 | 1332-58-7  | 5-10     |
| Polyvinyl alcohol                    | polymer   | 9002-89-5  | 5-10     |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

---

|                     |  |
|---------------------|--|
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                   |   |
|-------------------|---|
| <b>Inhalation</b> | Please see Section 11. Toxicological Information for further information. |
|-------------------|---|

|                  |   |
|------------------|---|
| <b>Ingestion</b> | Please see Section 11. Toxicological Information for further information. |
|------------------|---|

|                     |   |
|---------------------|---|
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
|---------------------|---|

|                    |   |
|--------------------|---|
| <b>Eye contact</b> | Please see Section 11. Toxicological Information for further information. |
|--------------------|---|

**4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## 5. Fire-Fighting Measures

**5.1 Extinguishing media**

**Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

Dust may form explosive mixture in air.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors Carbon oxides (COx).

**5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### **6.1. Personal precautions, protective equipment and emergency procedures**

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Use personal protective equipment. See also section 8. Material becomes slippery when wet. Use caution if wet.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

#### **Methods for cleaning up**

Sweep up and shovel into suitable containers for disposal. Take precautionary measures against static discharges. Avoid dust formation. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Material becomes slippery when wet. Use caution if wet.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not eat, drink, smoke, sniff Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

### **7.2 Conditions for safe storage, including any incompatibilities**

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Take precautionary measures against static discharges. Keep airborne concentrations below exposure limits.   |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place Keep away from open flames, hot surfaces and sources of ignition Suspended dust may present a dust explosion hazard Protect from moisture Avoid contact with: Strong oxidizing agents |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## **8. Exposure Controls/Personal Protection**

### **8.1 Control parameters**

|                        |                               |
|------------------------|-------------------------------|
| <b>Exposure limits</b> | No biological limit allocated |
|------------------------|-------------------------------|

## Component Information

| Chemical Name                        | Arabic   | Australia  | Egypt   |
|--------------------------------------|--|--|---|
| Wollastonite (Ca(SiO <sub>3</sub> )) | Not determined   | 10mg/m <sup>3</sup> TW A inhalable dust  | Not determined                                      |
| Cellulose                            | 10 mg/m <sup>3</sup> TWA   | 10mg/m <sup>3</sup> TW A inhalable dust  | Not determined                                      |
| Kaolin                               | 75 ppm STEL<br>356 mg/m <sup>3</sup> STEL<br>50 ppm TWA<br>238 mg/m <sup>3</sup> TWA | 10mg/m <sup>3</sup> TW A inhalable dust  | Not determined                                      |
| Polyvinyl alcohol                    | Not determined   | Not determined   | Not determined                                      |
| Chemical Name                        | India  | Indonesian   | Japan   |
| Wollastonite (Ca(SiO <sub>3</sub> )) | Not determined   | Not determined   | Not determined                                      |
| Cellulose                            | Not determined   | 10 mg/m <sup>3</sup> TWA   | Not determined                                      |
| Kaolin                               | Not determined   | 2 mg/m <sup>3</sup> TWA  | Not determined                                      |
| Polyvinyl alcohol                    | Not determined   | Not determined   | Not determined                                      |
| Chemical Name                        | Kazakhstan   | Kuwait   | New Zealand   |
| Wollastonite (Ca(SiO <sub>3</sub> )) | Not determined   | Not determined   | Not determined                                      |
| Cellulose                            | 2 mg/m <sup>3</sup> MAC  | Not determined   | 10 mg/m <sup>3</sup> TWA                            |
| Kaolin                               | Not determined   | Not determined   | 10 mg/m <sup>3</sup> TWA<br>2 mg/m <sup>3</sup> TWA |
| Polyvinyl alcohol                    | Not determined   | Not determined   | Not determined                                      |
| Chemical Name                        | Malaysia   | Philippines  | Russia  |
| Wollastonite (Ca(SiO <sub>3</sub> )) | Not determined   | Not determined   | Not determined                                      |
| Cellulose                            | 10 mg/m <sup>3</sup> TWA   | Not determined   | 10 mg/m <sup>3</sup> MAC                            |
| Kaolin                               | 2 mg/m <sup>3</sup> TWA  | Not determined   | Not determined                                      |
| Polyvinyl alcohol                    | Not determined   | Not determined   | 10 mg/m <sup>3</sup> MAC                            |
| Chemical Name                        | Thailand   | Vietnam  | Turkey  |
| Wollastonite (Ca(SiO <sub>3</sub> )) | Not determined   | Not determined   | Not determined                                      |
| Cellulose                            | Not determined   | 10 mg/m <sup>3</sup> TWA<br>5 mg/m <sup>3</sup> TWA<br>20 mg/m <sup>3</sup> STEL | Not determined                                      |
| Kaolin                               | Not determined   | Not determined   | Not determined                                      |
| Polyvinyl alcohol                    | Not determined   | Not determined   | Not determined                                      |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Nitrile Neoprene Frequent change is advisable

#### Respiratory protection

No personal respiratory protective equipment normally required In case of insufficient  
ventilation wear suitable respiratory equipment Half mask with a particle filter P2 (European  
Norm EN 143 = former DIN 3181) At work in confined or poorly ventilated spaces,  
respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

## Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



## 8.2.3 Environmental exposure controls

### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

# 9. Physical and Chemical Properties

## 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder Dust    |
| Odor           | Odorless       |
| Color          | Gray           |
| Odor threshold | Not applicable |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | No information available |         |
| pH @ dilution                | No information available |         |
| Melting / freezing point     | No information available |         |
| Boiling point/range          | No information available |         |
| Flash point                  | No information available |         |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | 1.98                     |         |
| Bulk density                 | No information available |         |
| Relative density             | No information available |         |
| Water solubility             | Insoluble in water       |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | No information available |         |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |

|                      |  |
|----------------------|--|
| Explosive properties | Suspended dust may present a dust explosion hazard |
| Oxidizing properties | No information available                           |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |

VOC content(%) No information available  
Density No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

Dust may form explosive mixture in air.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

**Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static charges. Protect from moisture. Avoid dust formation.

### 10.5 Incompatible materials

Strong oxidizing agents.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

**Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of dust in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | Dust may cause mechanical irritation.  |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                  |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| Chemical Name                        | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--------------------------------------|-------------------|-------------------|-------------------|
| Wollastonite (Ca(SiO <sub>3</sub> )) | No data available | No data available | No data available |

|                   |   |                     |                                      |
|-------------------|---|---------------------|--------------------------------------|
| Cellulose         | > 5 g/kg ( Rat )                        | > 2 g/kg ( Rabbit ) | > 5800 mg/m <sup>3</sup> ( Rat ) 4 h |
| Kaolin            | No data available                       | No data available   | No data available                    |
| Polyvinyl alcohol | = 23854 mg/kg ( Rat ) > 20 g/kg ( Rat ) | No data available   | No data available                    |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.            |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.                       |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | Inhalation.  |
| <b>Routes of entry</b>                                    | Inhalation.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

#### Toxicology data for the components

| Chemical Name                        | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|--------------------------------------|--------------------------|--------------------------|---|
| Wollastonite (Ca(SiO <sub>3</sub> )) | No information available | No information available | No information available                            |
| Cellulose                            | No information available | No information available | No information available                            |
| Kaolin                               | No information available | No information available | No information available                            |
| Polyvinyl alcohol                    | No information available | No information available | No information available                            |

### 12.2 Persistence and degradability

Not readily biodegradable.



---

**12.3 Bioaccumulative potential**

Does not bioaccumulate.

**12.4 Mobility**

**Mobility**

Insoluble in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

**13.1 Waste treatment methods**

**Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

**14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|  |               |
|--|---------------|
| <b>ADR/RID/ADN/ADG Hazard class</b>    | Not regulated |
| <b>IMDG/ANTAQ Hazard class</b>         | Not regulated |
| <b>ICAO/ANAC Hazard class/division</b> | Not regulated |

**14.4 Packing group**

|                                      |               |
|--------------------------------------|---------------|
| <b>ADR/RID/ADN/ADG Packing group</b> | Not regulated |
| <b>IMDG/ANTAQ Packing group</b>      | Not regulated |
| <b>ICAO/ANAC Packing group</b>       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Complies        |
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Complies        |
| Japan (ENCS)        | Does not comply |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Does not comply |
| New Zealand (NZIoC) | Complies        |

**16. Other Information**

|   |   |
|---|---|
| Prepared by   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse      |
| Supersedes Date:                                      | 02-Feb-2015   |
| Revision date   | 08-Jan-2019   |
| Version   | 3   |
| This SDS has been revised in the following section(s) | All sections Product Code change No changes with regard to classification have been made. |

**Key literature references and sources for data**

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | E |

\*A mark of M-I L.L.C., a Schlumberger Company

**Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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Preparation Date: --

Revision Date: May 21, 2019

Version: 3

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** FORTA SUPER-SWEEP

**Recommended Use** Hole cleaning agent

**Producer** FORTA Corporation  
100 Forta Drive  
Grove City, PA 16127  
Phone: 1-800-245-0306

**Emergency Number** Phone: 1-800-245-0306  
Fax: 724-458-5221

## 2. HAZARDS IDENTIFICATION

**Emergency Overview** White fiber. May cause slight irritation to the respiratory system. Leave area to breathe fresh air. If symptoms persist, get medical attention.

**Inhalation** May cause slight irritation to the respiratory system.

**Skin Contact** Not applicable under normal conditions of use.

**Eye Contact** May cause mechanical irritation or abrasion.

**Ingestion** Not an expected route of entry.

**Aggravated Medical Conditions** Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

**Chronic Health Effects** No known effects anticipated.

| HMIS (United States) |   |
|----------------------|---|
| Health               | 1 |
| Flammability         | 0 |
| Reactivity           | 0 |
| PPE                  |   |

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Name          | CAS#      | % by Weight |
|---------------|-----------|-------------|
| Polypropylene | 9003-07-0 | >60%        |

#### 4. FIRST AID MEASURES

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | <ul style="list-style-type: none"><li>• Leave area to breathe fresh air.</li><li>• Avoid further overexposure.</li><li>• If symptoms persist, get medical attention.</li></ul> |
| <b>Skin Contact</b> | <ul style="list-style-type: none"><li>• No known applicable information.</li></ul>   |
| <b>Eye Contact</b>  | <ul style="list-style-type: none"><li>• Flush with water for 15 minutes.</li><li>• If irritation persists, get medical attention.</li></ul>                                    |
| <b>Ingestion</b>    | <ul style="list-style-type: none"><li>• Not applicable under normal conditions of use.</li></ul>   |

#### 5. FIRE-FIGHTING MEASURES

|   |  |
|---|--|
| <b>Flash Point</b>                      | 600°F (316°C)  |
| <b>Flash Point Method</b>               | N/A  |
| <b>Autoignition Temperature</b>         | N/A  |
| <b>Burning Rate</b>                     | N/A  |
| <b>Fire and Explosion Hazard</b>        | N/A  |
| <b>Firefighting Equipment</b>           | Use dry chemicals, carbon dioxide (CO <sub>2</sub> ), or foam. |
| <b>Hazardous Products of Combustion</b> | Carbon monoxide and other organics when burning.               |

#### 6. ACCIDENTAL RELEASE MEASURES

|                            |     |
|----------------------------|-----|
| <b>Small Spill or Leak</b> | N/A |
| <b>Large Spill or Leak</b> | N/A |

#### 7. HANDLING AND STORAGE

|                             |   |
|-----------------------------|---|
| <b>Handling Precautions</b> | N/A   |
| <b>Storage Requirements</b> | No specific storage is required, use any dry container. |

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

|                             |  |
|-----------------------------|--|
| <b>Engineering Measures</b> | Not required under normal conditions of use.   |
| <b>Protective Equipment</b> | Respirators – Wear NIOSH/MSHA approved dust respirator when the fiber concentration exceeds the exposure limits indicated on the MSDS. Wear a type C full face supplied air respirator when the fiber concentration exceeds 50 fibers/cc.<br>Protective Gloves – Impervious gloves.<br>Eye Protection – Glasses or goggles.<br>Protective Clothing – N/A |

### Exposure Guidelines/Other

| Chemical Name | CAS Number | Regulation | Limit   | Form                 |
|---------------|------------|------------|---------|----------------------|
| Polypropylene | 9003-07-0  | ACGIH TWA  | 3mg/m3  | Respirable particles |
|               |            | ACGIH TWA  | 10mg/m3 | Inhalable particles  |
|               |            | OSHA PEL   | 15mg/m3 | Total dust           |
|               |            | OSHA PEL   | 5mg/m3  | Respirable fraction  |
|               |            | OSHA TWA   | 15mg/m3 | Total dust           |
|               |            | OSHA TWA   | 5mg/m3  | Respirable fraction  |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                               |              |
|-------------------------------|--------------|
| <b>Appearance</b>             | White fibers |
| <b>Physical State</b>         | Solid        |
| <b>Boiling Point</b>          | N/A          |
| <b>Odor</b>                   | Odorless     |
| <b>Freezing/Melting Point</b> | N/A          |
| <b>pH</b>                     | N/A          |
| <b>Solubility</b>             | N/A          |
| <b>Specific Gravity</b>       | 1.3          |

## 10. STABILITY AND REACTIVITY

|   |                                 |
|---|---------------------------------|
| <b>Stability</b>                            | This product is stable.         |
| <b>Conditions to Avoid</b>                  | None                            |
| <b>Materials to Avoid (incompatibility)</b> | Strong acids. Oxidizing agents. |

## 11. TOXICOLOGICAL INFORMATION

|                            |   |
|----------------------------|---|
| <b>Toxicity to Animals</b> | This product has not been tested for animal effects. This product is not expected to be toxic to animals. |
| <b>Toxicity to Humans</b>  | This product has not been tested for human effects. This product is not expected to be toxic to humans.   |

## 12. ECOTOXICOLOGICAL INFORMATION

|  |                              |
|--|------------------------------|
| <b>Ecotoxicity</b>                                       | Not expected to be ecotoxic. |
| <b>BOD5 and COD</b>                                      | N/A                          |
| <b>Biodegradable/OECD</b>                                | N/A                          |
| <b>Mobility</b>  | N/A                          |
| <b>Toxicity of the Products of Biodegradation</b>        | N/A                          |
| <b>Special Remarks on the Products of Biodegradation</b> | N/A                          |

## 13. DISPOSAL CONSIDERATIONS

Not classified as hazardous waste. Dispose of in accordance with Federal, State and Local regulations.

## 14. TRANSPORT INFORMATION

|                          |  |
|--------------------------|--|
| <b>Restrictions</b>      | N/A                                      |
| <b>DOT Requirements</b>  | Not a DOT controlled material (USA).     |
| <b>ADR Requirements</b>  | Not an ADR controlled material (Europe). |
| <b>IMDG Requirements</b> | Not an IMDG controlled material.         |
| <b>IATA Requirements</b> | Not an IATA controlled material.         |
| <b>Marine Pollutant</b>  | Not a marine pollutant.                  |

## 15. REGULATORY INFORMATION

### U.S. Federal Regulations

| Chemical<br>( & CAS Number) | SARA 302<br>(EHS) Rq | SARA 304<br>(EHS) Rq | SARA 313<br>de minimis | CERCLA Rq | CAA 112(r) TQ | RCRA<br>Code |
|-----------------------------|----------------------|----------------------|------------------------|-----------|---------------|--------------|
| NONE                        |                      |                      |                        |           |               |              |

All quantities in pounds

### State Regulations

| Chemical<br>( & CAS Number) | CA Prop 65 | MA RTK | MN RTK | NJ RTK | PA RTK RI RTK |
|-----------------------------|------------|--------|--------|--------|---------------|
| 9003-07-0                   |            |        |        | x      |               |
| 9003-07-0                   |            |        |        |        | x             |

### International Regulations

|                              |                              |
|------------------------------|------------------------------|
| <b>DSL (Canada)</b>          | None                         |
| <b>EINECS</b>                | None                         |
| <b>WHMIS</b>                 | Not classified as hazardous. |
| <b>HS / HTS / Schedule B</b> | 5503.40.0000                 |

## 16. OTHER INFORMATION

|                    |  |
|--------------------|--|
| <b>Prepared By</b> | FORTA Corporation  |
| <b>Telephone</b>   | 1-800-245-0306   |
| <b>Website</b>     | <a href="http://www.Super-Sweep.com">www.Super-Sweep.com</a> |

The information and recommendations contained in this Material Safety Data sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guarantee or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.





## Safety Data Sheet

### GASBLOK\* Gas Migration Control Additive D620

#### 1. Identification of the substance/mixture and of the company/undertaking

##### 1.1 Product identifier

Product name GASBLOK\* Gas Migration Control Additive D620  
Product code D620

##### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Used as a cementing additive in oilfield applications

Uses advised against Consumer use

##### 1.3 Details of the supplier of the safety data sheet

###### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

##### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

#### 2. Hazards Identification

##### 2.1 Classification of the substance or mixture

###### GHS Classification

###### Health hazards

|                    |             |
|--------------------|-------------|
| Skin sensitization | Category 1A |
|--------------------|-------------|

Environmental hazards Not classified

Physical Hazards Not classified

##### 2.2 Label elements

**Signal word**

WARNING

**Hazard Statements**

H317 - May cause an allergic skin reaction

**Precautionary statements**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P272 - Contaminated work clothing should not be allowed out of the workplace

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Supplementary precautionary statements**

P362 + P364 - Take off contaminated clothing and wash it before reuse

**Contains**

Propane-1,2-diol

2-methyl-2h-isothiazol-3-one

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name                | EC No     | CAS No    | Weight-%        |
|------------------------------|-----------|-----------|-----------------|
| Propane-1,2-diol             | 200-338-0 | 57-55-6   | 1-5             |
| 2-methyl-2h-isothiazol-3-one | 220-239-6 | 2682-20-4 | >0.0015 - <0.01 |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

|                     |   |
|---------------------|---|
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if symptoms occur.              |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Use water spray, fog, Carbon dioxide (CO<sub>2</sub>), foam or dry chemical.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

#### **Unusual fire and explosion hazards**

None known.

#### **Hazardous combustion products**

When heated strongly or burned, oxides of carbon and harmful organic chemical fumes are released

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Take precautionary measures against static discharges. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

**7. Handling and Storage****7.1 Precautions for safe handling****Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use. Persons susceptible to allergic reactions should not handle this product.

**Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

**7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits. Take precautionary measures against static discharges.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep at (23°F - 122°F) -5°C - 50°C. Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with: Strong oxidizing agents, Strong acids, Strong bases.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

**8. Exposure Controls/Personal Protection****8.1 Control parameters**

**Exposure limits** No biological limit allocated

**Component Information**

| Chemical Name    | Arabic         | Australia                  | Egypt          |
|------------------|----------------|----------------------------|----------------|
| Propane-1,2-diol | Not determined | 150ppmTWA total vapour and | Not determined |

|                              |                         |  |  |
|------------------------------|-------------------------|--|--|
|                              |                         | particulates<br>474mg/m <sup>3</sup> TWA total vapour and<br>particulates<br>10mg/m <sup>3</sup> TWA particulates only |  |
| 2-methyl-2h-isothiazol-3-one | Not determined          | Not determined   | Not determined   |
| <b>Chemical Name</b>         | <b>India</b>            | <b>Indonesian</b>  | <b>Japan</b>   |
| Propane-1,2-diol             | Not determined          | Not determined   | Not determined   |
| 2-methyl-2h-isothiazol-3-one | Not determined          | Not determined   | Not determined   |
| <b>Chemical Name</b>         | <b>Kazakhstan</b>       | <b>Kuwait</b>  | <b>New Zealand</b>   |
| Propane-1,2-diol             | 7 mg/m <sup>3</sup> MAC | Not determined   | 150 ppm TWA<br>474 mg/m <sup>3</sup> TWA<br>10 mg/m <sup>3</sup> TWA |
| 2-methyl-2h-isothiazol-3-one | Not determined          | Not determined   | Not determined   |
| <b>Chemical Name</b>         | <b>Malaysia</b>         | <b>Philippines</b>   | <b>Russia</b>  |
| Propane-1,2-diol             | Not determined          | Not determined   | 7 mg/m <sup>3</sup> MAC  |
| 2-methyl-2h-isothiazol-3-one | Not determined          | Not determined   | Not determined   |
| <b>Chemical Name</b>         | <b>Thailand</b>         | <b>Vietnam</b>   | <b>Turkey</b>  |
| Propane-1,2-diol             | Not determined          | Not determined   | Not determined   |
| 2-methyl-2h-isothiazol-3-one | Not determined          | Not determined   | Not determined   |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Keep airborne concentrations below exposure limits

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Use protective gloves made of: Neoprene Rubber Nitrile

Break through time >480 minutes

Glove thickness >0.4 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

#### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

**9. Physical and Chemical Properties****9.1 Information on basic physical and chemical properties**

|                |                |
|----------------|----------------|
| Physical state | Liquid         |
| Appearance     | Opaque         |
| Odor           | Characteristic |
| Color          | Milky white    |
| Odor threshold | Not applicable |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | 8.2                      |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | No information available |                |
| Boiling point/range          | 98 °C / 208 °F           |                |
| Flash point                  | > 98 °C / > 208 °F       |                |
| Evaporation rate (BuAc =1)   | No information available |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | 23.28 hPa                | @ 20 °C        |
| Vapor density                | No information available |                |
| Specific gravity             | No information available |                |
| Bulk density                 | No information available |                |
| Relative density             | 1.03                     |                |
| Water solubility             | Soluble in water         |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | 15.7 mPa s               | @ 23 °C        |
| log Pow                      | No information available |                |
| Explosive properties         | No information available |                |
| Oxidizing properties         | No information available |                |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions**

**Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Keep at (23°F - 122°F) -5°C - 50°C. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static charges.

**10.5 Incompatible materials**

Strong oxidizing agents. Strong acids. Strong bases.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | May cause an allergic skin reaction.   |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Toxicology data for the components**

| Chemical Name                | LD50 Oral                                   | LD50 Dermal              | LC50 Inhalation         |
|------------------------------|---|--------------------------|-------------------------|
| Propane-1,2-diol             | = 20 g/kg ( Rat )                           | = 20800 mg/kg ( Rabbit ) | No data available       |
| 2-methyl-2h-isothiazol-3-one | 232 - 249 mg/kg ( Rat ) = 120 mg/kg ( Rat ) | = 200 mg/kg ( Rabbit )   | = 0.11 mg/L ( Rat ) 4 h |

|                          |   |
|--------------------------|---|
| <b>Sensitization</b>     | May cause allergic skin reaction.                                 |
| <b>Mutagenic effects</b> | This product does not contain any known or suspected mutagens.    |
| <b>Carcinogenicity</b>   | This product does not contain any known or suspected carcinogens. |

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards. |
| <b>Routes of Exposure</b>                                 | Skin contact. Inhalation.  |
| <b>Routes of entry</b>                                    | Skin contact. Inhalation.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name                | Toxicity to fish  | Toxicity to algae                                      | Toxicity to daphnia and other aquatic invertebrates                      |
|------------------------------|---|--|--|
| Propane-1,2-diol             | = 710 mg/L LC50 Pimephales promelas 96 h = 51400 mg/L LC50 Pimephales promelas 96 h 41 - 47 mL/L LC50 Oncorhynchus mykiss 96 h = 51600 mg/L LC50 Oncorhynchus mykiss 96 h | = 19000 mg/L EC50 Pseudokirchneriella subcapitata 96 h | > 10000 mg/L EC50 Daphnia magna 24 h > 1000 mg/L EC50 Daphnia magna 48 h |
| 2-methyl-2h-isothiazol-3-one | No information available  | No information available                               | No information available   |

### 12.2 Persistence and degradability

See component information below.

| Chemical Name    | Persistence and degradability |
|------------------|-------------------------------|
| Propane-1,2-diol | Readily biodegradable         |

### 12.3 Bioaccumulative potential

See component information below.

| Chemical Name    | Bioaccumulation                            |
|------------------|--|
| Propane-1,2-diol | Not likely to bioaccumulate log Kow =-1.07 |

### 12.4 Mobility

#### Mobility

Soluble in water.

#### Mobility in soil

No information available.



**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number****14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

2-methyl-2h-isothiazol-3-one  
Schedule 6

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)  
The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

**International inventories**

|                     |   |
|---------------------|---|
| USA (TSCA)          | Complies  |
| Canada (DSL)        | This product contains chemical(s) which is/are not listed on DSL but is/are listed on the NDSL. |
| Philippines (PICCS) | Complies  |
| Japan (ENCS)        | Complies  |
| China (IECSC)       | Complies  |
| Australia (AICS)    | Complies  |
| Korean (KECL)       | Complies  |
| New Zealand (NZIoC) | Complies  |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam

**Supersedes Date:** 26-Nov-2019

**Revision date** 29-Sep-2020

**Version** 3

**This SDS has been revised in the following section(s)** All sections There have been changes with regard to classification.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

---

|                 |   |
|-----------------|---|
| Health          | 2 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | X |

**Disclaimer**

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## Safety Data Sheet GASBLOK\* LT D500

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name GASBLOK\* LT D500  
Product code D500

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Gas control agent

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

Supplier  
Schlumberger Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
Level 5, 10 Telethon Avenue  
Perth WA 6000

SDS@slb.com

#### 1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518, Canada 001 613 996 6666

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                    |            |
|--------------------|------------|
| Skin sensitization | Category 1 |
|--------------------|------------|

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

**Signal word**

WARNING

**Hazard Statements**

H317 - May cause an allergic skin reaction

**Precautionary statements**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Supplementary precautionary statements**

P272 - Contaminated work clothing should not be allowed out of the workplace

P362 + P364 - Take off contaminated clothing and wash it before reuse

**Contains**

2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol

Methanol (impurity)

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Prevent the formation of aerosols.

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name  | EC No     | CAS No    | Weight-% |
|--|-----------|-----------|----------|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | 225-208-0 | 4719-04-4 | 0.1-<1   |
| Methanol (impurity)                                      | 200-659-6 | 67-56-1   | 0.1-<1   |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                                 |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Seek medical attention.   |
| <b>Eye Contact</b>  | Remove contact lenses, if worn. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Water spray, dry chemical, carbon dioxide (CO<sub>2</sub>), or foam.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

#### **Unusual fire and explosion hazards**

None known.

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

### 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

#### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

#### Methods for containment

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

#### Methods for cleaning up

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use. If spilled, take caution, as material can cause surfaces to become very slippery. Persons susceptible to allergic reactions should not handle this product. Prevent the formation of vapors, mists and aerosols.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep away from direct sunlight. Protect from freezing. Keep at 41 - 131°F / 5 - 55°C.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

#### Component Information

| Chemical Name | Arabic | Australia | Egypt |
|---------------|--------|-----------|-------|
|---------------|--------|-----------|-------|

|  |  |   |  |
|--|--|---|--|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not determined   | Not determined  | Not determined   |
| Methanol (impurity)                                      | 250 ppm STEL<br>328 mg/m <sup>3</sup> STEL<br>200 ppm TWA<br>262 mg/m <sup>3</sup> TWA | 250ppmSTEL<br>328mg/m <sup>3</sup> STEL<br>200ppmTWA<br>262mg/m <sup>3</sup> TWA                        | 250 ppm STEL<br>325 mg/m <sup>3</sup> STEL<br>Skin designation<br>200 ppm TWA<br>260 mg/m <sup>3</sup> TWA                                   |
| <b>Chemical Name</b>                                     | <b>India</b>   | <b>Indonesian</b>   | <b>Japan</b>   |
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not determined   | Not determined  | Group 1 skin sensitizer  |
| Methanol (impurity)                                      | 250 ppm STEL<br>310 mg/m <sup>3</sup> STEL<br>200 ppm TWA<br>260 mg/m <sup>3</sup> TWA | 200 ppm TWA<br>250 ppm STEL   | May cause substantial skin absorption<br>200 ppm ACL<br>200 ppm OEL<br>260 mg/m <sup>3</sup> OEL   |
| <b>Chemical Name</b>                                     | <b>Kazakhstan</b>  | <b>Kuwait</b>   | <b>New Zealand</b>   |
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not determined   | Not determined  | Not determined   |
| Methanol (impurity)                                      | 5 mg/m <sup>3</sup> MAC  | 260 mg/m <sup>3</sup> TWA<br>200 ppm TWA<br>Skin notation<br>325 mg/m <sup>3</sup> STEL<br>250 ppm STEL | 250 ppm STEL<br>328 mg/m <sup>3</sup> STEL<br>200 ppm TWA<br>262 mg/m <sup>3</sup> TWA<br>Possibility of significant uptake through the skin |
| <b>Chemical Name</b>                                     | <b>Malaysia</b>  | <b>Philippines</b>  | <b>Russia</b>  |
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not determined   | Not determined  | Not determined   |
| Methanol (impurity)                                      | 200 ppm TWA<br>262 mg/m <sup>3</sup> TWA<br>Skin notation                              | 200 ppm TWA<br>260 mg/m <sup>3</sup> TWA  | 15 mg/m <sup>3</sup> STEL<br>Skin notation<br>5 mg/m <sup>3</sup> TWA<br>Skin  |
| <b>Chemical Name</b>                                     | <b>Thailand</b>  | <b>Vietnam</b>  | <b>Turkey</b>  |
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not determined   | Not determined  | Not determined   |
| Methanol (impurity)                                      | Not determined   | 50 mg/m <sup>3</sup> TWA<br>100 mg/m <sup>3</sup> STEL  | Skin<br>200 ppm TWA<br>260 mg/m <sup>3</sup> TWA   |

**Notes**

No biological limit allocated

**8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**Engineering Controls**

Ensure adequate ventilation Local exhaust ventilation When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment

**Personal protective equipment****Eye protection**

Tightly fitting safety goggles Safety glasses with side-shields

**Hand protection**

Impervious gloves made of: Nitrile Neoprene Butyl rubber

Break through time >480 minutes

Glove thickness >=0.4 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

**Respiratory protection**

In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used. If there are conditions in which this triazine containing product produces a vapor, a chemical



**Skin and body protection**

respirator with A1 + Formaldehyde and P3 particulate pre-filter combination would be required.  
Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

|                |                  |
|----------------|------------------|
| Physical state | Liquid           |
| Appearance     | Aqueous solution |
| Odor           | Odorless         |
| Color          | Yellow           |

| <u>Property</u>                         | <u>Values</u>            | <u>Remarks</u> |
|---|--------------------------|----------------|
| pH                                      | 7 - 9.5                  |                |
| pH @ dilution                           | No information available |                |
| Melting / freezing point                | -5 °C / 23 °F            |                |
| Boiling point/range                     | > 100 °C / 212 °F        |                |
| Flash point                             | No information available |                |
| Evaporation rate (BuAc =1)              | No information available |                |
| Flammability                            | Not applicable           |                |
| Explosion limits:                       |                          |                |
| Upper explosion limit                   | No information available |                |
| Lower explosion limit                   | No information available |                |
| Vapor pressure                          | 2.3 kPa                  |                |
| Relative Vapor Density                  | >1 (air = 1)             |                |
| Specific gravity                        | 1                        | @ 20 °C        |
| Bulk density                            | No information available |                |
| Water solubility                        | Soluble in water         |                |
| Solubility in other solvents            | No information available |                |
| Autoignition temperature                | No information available |                |
| Decomposition temperature               | No information available |                |
| Kinematic viscosity                     | No information available |                |
| Dynamic viscosity                       | <= 2000 mPa s            | @ 23 °C        |
| Partition Coefficient (n-octanol/water) | No information available |                |
| Density and/or Relative Density         | No information available |                |
| Explosive properties                    | Not applicable           |                |
| Oxidizing properties                    | None known.              |                |

**9.2 Other information**

|            |                          |
|------------|--------------------------|
| Pour point | No information available |
|------------|--------------------------|

Molecular weight No information available  
VOC content(%) No information available

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Keep away from open flames, hot surfaces and sources of ignition. Keep away from direct sunlight. Protect from freezing. Keep at 41 - 131°F / 5 - 55°C.

**10.5 Incompatible materials**

No materials to be especially mentioned.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological information****11.1 Information on toxicological effects****Acute toxicity****Product information**

Methanol is more toxic to humans and primates than to most experimental animals, due to differences in how it is metabolized. Non-primates do not appear to experience the acidosis or vision effects observed in humans and primates.

**Inhalation**

Inhalation of vapors in high concentration may cause irritation of respiratory system.

**Eye contact**

May cause slight irritation.

**Skin contact**

May cause an allergic skin reaction.

**Ingestion**

Ingestion may cause stomach discomfort.

**Unknown acute toxicity**

Not applicable.

**Toxicology data for the components**

| Chemical Name  | LD50 Oral                           | LD50 Dermal  | LC50 Inhalation  |
|--|-------------------------------------|--|--|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethano<br>l | 1000 mg/kg (Rat)<br>(BASF AG, 1997) | > 4000 mg/kg (Rat)<br>(BASF AG, 1997)                | 0.371 mg/L (Aerosol) (Rat)<br>(Triazine Taskforce, 2011) |
| Methanol (impurity)  | = 6200 mg/kg ( Rat )                | = 15840 mg/kg ( Rabbit ) =<br>15800 mg/kg ( Rabbit ) | = 22500 ppm ( Rat ) 8 h =<br>64000 ppm ( Rat ) 4 h       |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | May cause allergic skin reaction.  |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.             |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.          |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards. |
| <b>Routes of Exposure</b>                                 | Skin contact. Inhalation. Ingestion.                                       |
| <b>Routes of entry</b>                                    | Skin absorption. Inhalation. Ingestion.                                    |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |

### 11.2 Information on other hazards

|                          |  |
|--------------------------|--|
| <b>Other information</b> | Key literature references and sources for data. See Section 16 for more information. |
|--------------------------|--|

## 12. Ecological information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name  | Toxicity to fish   | Toxicity to algae                                | Toxicity to daphnia and other aquatic invertebrates |
|--|--|--|---|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | > 168 mg/l LC50 96h<br>Sheepshead Minnow<br>(SLB data)   | 1.624 mg/l EC50 72h<br>Skeletonema<br>(SLB data) | 99.68 mg/l KC50 48h<br>Acartia<br>(SLB data)        |
| Methanol (impurity)                                      | 13500 - 17600 mg/L LC50 Lepomis macrochirus 96 h<br>18 - 20 mL/L LC50 Oncorhynchus mykiss 96 h<br>19500 - 20700 mg/L LC50 Oncorhynchus mykiss 96 h<br>> 100 mg/L LC50 Pimephales promelas 96 h<br>= 28200 mg/L LC50 Pimephales promelas 96 h | No information available                         | No information available                            |

### 12.2 Persistence and degradability

No product level data available.

| Chemical Name | Persistence and degradability |
|---------------|-------------------------------|
|---------------|-------------------------------|

|  |                       |
|--|-----------------------|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Readily biodegradable |
| Methanol (impurity)                                      | Readily biodegradable |

### 12.3 Bioaccumulative potential

No product level data available.

| Chemical Name  | Bioaccumulation   |
|--|---|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Not likely to bioaccumulate log Kow <=3                         |
| Methanol (impurity)                                      | Not likely to bioaccumulate Bioconcentration factor (BCF) 1-4.5 |

### 12.4 Mobility

#### Mobility

Soluble in water.

| Chemical Name  | Mobility         |
|--|------------------|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Soluble in water |
| Methanol (impurity)                                      | Soluble in water |

#### Mobility in soil

No information available.

| Chemical Name  | Mobility in soil   |
|--|--|
| 2,2',2''-(Hexahydro-1,3,5-triazin-1,3,5-triyl)triethanol | Study does not need to be conducted because the substance is readily biodegradable |
| Methanol (impurity)                                      | Not expected to adsorb on soil   |

### 12.5 Other adverse effects

None known.

### 12.6 Other information.

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

### 13.1 Waste treatment methods

#### Waste from residues/unused products

Dispose of in accordance with local regulations.

#### Contaminated packaging

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

### 14.1. UN number

Not regulated

### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

### 14.3 Hazard class(es)

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated  
ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated  
IMDG/ANTAQ Packing group Not regulated  
ICAO/ANAC Packing group Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

None

**14.7 Maritime transport in bulk according to IMO instruments**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

Methanol (impurity)  
Schedule 6  
Schedule 5

**Safe Work Australia.****Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

**International inventories**

|  |                              |
|--|------------------------------|
| USA (TSCA)                                 | Complies                     |
| Canada (DSL)                               | Complies Volume restriction. |
| Philippines (PICCS)                        | Does not comply              |
| Japan (ENCS)                               | Complies                     |
| China (IECSC)                              | Complies                     |
| Australia (AICS)                           | Complies                     |
| Korean (KECL)                              | Does not comply              |
| New Zealand (NZIoC)                        | Complies                     |
| Eurasian Economic Union: Russian Inventory | Complies                     |

**16. Other Information**

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam

**Supersedes Date:** 26-Jul-2017

**Revision date** 18-Jun-2021

**Version** 3

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 2 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | X |

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## Safety Data Sheet G-SEAL\* (All Grades)

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** G-SEAL\* (All Grades)  
**Product code** PID686  
**Synonyms** G-SEAL\* FINE

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Plugging agent.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified  
**Environmental hazards** Not classified  
**Physical Hazards** Not classified

## 2.2 Label elements

### Signal word

None

### Hazard Statements

This product is not classified as hazardous therefore no (H) hazard statements assigned.

### Precautionary statements

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

### Contains

Graphite

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria  
Suspended dust may present a dust explosion hazard

### Australian statement of hazardous/dangerous nature

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

| Chemical Name | EC No     | CAS No    | Weight-% |
|---------------|-----------|-----------|----------|
| Graphite      | 231-955-3 | 7782-42-5 | 60-100   |

### 3.2 Mixtures

Not applicable

## 4. First Aid Measures

### 4.1 First aid measures

#### Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

#### Ingestion

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

#### Skin contact

Wash skin thoroughly with soap and water. Get medical attention if irritation persists.

#### Eye Contact

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if any discomfort continues.

### 4.2. Most important symptoms and effects, both acute and delayed

#### General advice

The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### Symptoms



|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

**Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

Dust may form explosive mixture in air.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>).

#### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Use personal protective equipment. See also section 8.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

#### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

### Methods for cleaning up

Avoid dust formation. Take precautionary measures against static discharges. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not eat, drink, smoke, sniff Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits. Take precautionary measures against static discharges.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Keep away from open flames, hot surfaces and sources of ignition Suspended dust may present a dust explosion hazard Protect from moisture Avoid contact with: Oxidizing agents

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** No biological limit allocated

#### Component Information

| Chemical Name | Arabic                  | Australia                             | Egypt  |
|---------------|-------------------------|---------------------------------------|--|
| Graphite      | 2 mg/m <sup>3</sup> TWA | 3mg/m <sup>3</sup> TWArespirable dust | Not determined                                       |
| Chemical Name | India                   | Indonesian                            | Japan  |
| Graphite      | Not determined          | 2 mg/m <sup>3</sup> TWA               | 2 mg/m <sup>3</sup> OEL<br>0.5 mg/m <sup>3</sup> OEL |
| Chemical Name | Kazakhstan              | Kuwait                                | New Zealand  |
| Graphite      | Not determined          | Not determined                        | 3 mg/m <sup>3</sup> TWA                              |
| Chemical Name | Malaysia                | Philippines                           | Russia   |
| Graphite      | 2 mg/m <sup>3</sup> TWA | Not determined                        | Not determined                                       |
| Chemical Name | Thailand                | Vietnam                               | Turkey   |
| Graphite      | Not determined          | Not determined                        | Not determined                                       |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may

be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Tightly fitting safety goggles Safety glasses with side-shields

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Neoprene Nitrile Frequent change is advisable

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Suitable mask with  
particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces,  
respiratory protection with air supply must be used. No personal respiratory protective  
equipment normally required

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



#### 8.2.3 Environmental exposure controls

##### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Solid          |
| <b>Appearance</b>     | Powder Dust    |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | Gray - Black   |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>            | <u>Values</u>            | <u>Remarks</u> |
|----------------------------|--------------------------|----------------|
| pH                         | No information available |                |
| pH @ dilution              | No information available |                |
| Melting / freezing point   | 3652 °C / 6605.6 °F      |                |
| Boiling point/range        | 4827 °C / 8720.6 °F      |                |
| Flash point                | No information available |                |
| Evaporation rate (BuAc =1) | No information available |                |
| Flammability (solid, gas)  | Not applicable           |                |
| Flammability Limit in Air  |                          |                |
| Upper flammability limit   | Not applicable           |                |
| Lower flammability limit   | Not applicable           |                |
| Vapor pressure             | No information available |                |
| Vapor density              | No information available |                |
| Specific gravity           | 2.19 - 2.26              | 20 °C          |
| Bulk density               | No information available |                |
| Relative density           | No information available |                |
| Water solubility           | Insoluble in water       |                |

|                                     |                          |
|-------------------------------------|--------------------------|
| <b>Solubility in other solvents</b> | No information available |
| <b>Autoignition temperature</b>     | > 500 °C / 932 °F        |
| <b>Decomposition temperature</b>    | > 400 °C / 752°F         |
| <b>Kinematic viscosity</b>          | No information available |
| <b>Dynamic viscosity</b>            | No information available |
| <b>log Pow</b>                      | No information available |

|                             |  |
|-----------------------------|--|
| <b>Explosive properties</b> | Suspended dust may present a dust explosion hazard |
| <b>Oxidizing properties</b> | None known.  |

## **9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

### **Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## **10. Stability and Reactivity**

### **10.1 Reactivity**

Dust may form explosive mixture in air.

### **10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

### **10.3 Possibility of Hazardous Reactions**

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### **10.4 Conditions to avoid**

Take precautionary measures against static charges. Keep away from open flames, hot surfaces and sources of ignition. Avoid dust formation. Protect from moisture.

### **10.5 Incompatible materials**

Oxidizing agents.

### **10.6 Hazardous decomposition products**

See Section 5.2.

## **11. Toxicological Information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

**Inhalation** Inhalation of dust in high concentration may cause irritation of respiratory system.

**Eye contact** Dust may cause mechanical irritation.

**Skin contact** Prolonged contact may cause redness and irritation.

**Ingestion** Ingestion may cause stomach discomfort.

**Unknown acute toxicity** Not applicable.

**Toxicology data for the components**

| Chemical Name | LD50 Oral                    | LD50 Dermal       | LC50 Inhalation                          |
|---------------|------------------------------|-------------------|--|
| Graphite      | > 2000 mg/kg Rat<br>OECD 423 | No data available | > 2000 mg/m <sup>3</sup> Rat<br>OECD 403 |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of Exposure** Inhalation.

**Routes of entry** Inhalation.

**Specific target organ toxicity - Single exposure** Not classified

**Specific target organ toxicity - Repeated exposure** Not classified.

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.  
Listed on PLONOR list of OSPAR

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name | Toxicity to fish                 | Toxicity to algae               | Toxicity to daphnia and other aquatic invertebrates |
|---------------|----------------------------------|---------------------------------|---|
| Graphite      | LC50 > 100 mg/l, 96h<br>OECD 203 | EC50 > 100 mg/l 72h<br>OECD 201 | EC50 > 100 mg/l 48h202                              |

#### **12.2 Persistence and degradability**

No product level data available.

#### **12.3 Bioaccumulative potential**

Does not bioaccumulate.

#### **12.4 Mobility**

##### **Mobility**

Insoluble in water.

##### **Mobility in soil**

No information available.

#### **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

#### **12.6 Other adverse effects.**

None known.

#### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### **13.1 Waste treatment methods**

##### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

##### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### **14.1. UN number**

Not regulated

#### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

#### **14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated  
**IMDG/ANTAQ Hazard class** Not regulated  
**ICAO/ANAC Hazard class/division** Not regulated

**14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated  
**IMDG/ANTAQ Packing group** Not regulated  
**ICAO/ANAC Packing group** Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**  
No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required.

**Group number** Not required.

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**  
**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                            |                 |
|----------------------------|-----------------|
| <b>USA (TSCA)</b>          | Complies        |
| <b>Canada (DSL)</b>        | Complies        |
| <b>Philippines (PICCS)</b> | Complies        |
| <b>Japan (ENCS)</b>        | Does not comply |
| <b>China (IECSC)</b>       | Complies        |
| <b>Australia (AICS)</b>    | Complies        |
| <b>Korean (KECL)</b>       | Complies        |
| <b>New Zealand (NZIoC)</b> | Complies        |

**16. Other Information**

|  |  |
|--|--|
| <b>Prepared by</b>   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse             |
| <b>Supersedes Date:</b>                                      | 11-Dec-2018  |
| <b>Revision date</b>   | 24-Sep-2019  |
| <b>Version</b>   | 10   |
| <b>This SDS has been revised in the following section(s)</b> | 1, 15, 16 No changes with regard to classification have been made. Updated according to GHS/CLP. |

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

\*A mark of M-I L.L.C., a Schlumberger Company

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## Safety Data Sheet

### High Temperature Expanding Additive D176

#### 1. Identification of the substance/mixture and of the company/undertaking

##### 1.1 Product identifier

**Product name** High Temperature Expanding Additive D176  
**Product code** D176

##### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

##### 1.3 Details of the supplier of the safety data sheet

###### **Supplier**

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

##### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

#### 2. Hazards Identification

##### 2.1 Classification of the substance or mixture

###### **GHS Classification**

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

##### 2.2 Label elements

###### **Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains**

Magnesium oxide

Crystalline silica (impurity)

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

| Chemical Name                 | EC No     | CAS No     | Weight-% |
|-------------------------------|-----------|------------|----------|
| Magnesium oxide               | 215-171-9 | 1309-48-4  | 60-100   |
| Crystalline silica (impurity) | 238-878-4 | 14808-60-7 | <1       |

**3.2 Mixtures**

Not applicable

**Comments**

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid dust formation. Do not breathe dust. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up**

Avoid dust formation. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

**7.1 Precautions for safe handling****Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

**Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product

**7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid dust formation. Avoid contact with: Strong acids

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

**8.1 Control parameters**

**Exposure limits** NUI = Nuisance dust, TWA 4mg/m<sup>3</sup> Respirable Dust, 10mg/m<sup>3</sup> Total Dust.

**Component Information**

| Chemical Name                 | Arabic                      | Australia  | Egypt   |
|-------------------------------|-----------------------------|--|---|
| Magnesium oxide               | 10 mg/m <sup>3</sup> TWA    | 10mg/m <sup>3</sup> TWAFume                          | 10 mg/m <sup>3</sup> TWA  |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | 0.1mg/m <sup>3</sup> TWarespirable dust              | Not determined  |
| Chemical Name                 | India                       | Indonesian   | Japan   |
| Magnesium oxide               | Not determined              | 10 mg/m <sup>3</sup> TWA                             | Not determined  |
| Crystalline silica (impurity) | Not determined              | 0.1 mg/m <sup>3</sup> TWA                            | Not determined  |
| Chemical Name                 | Kazakhstan                  | Kuwait   | New Zealand   |
| Magnesium oxide               | Not determined              | Not determined                                       | 10 mg/m <sup>3</sup> TWA  |
| Crystalline silica (impurity) | 1 mg/m <sup>3</sup> MAC     | Not determined                                       | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen   |
| Chemical Name                 | Malaysia                    | Philippines  | Russia  |
| Magnesium oxide               | 10 mg/m <sup>3</sup> TWA    | 15 mg/m <sup>3</sup> TWA                             | 4 mg/m <sup>3</sup> MAC   |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | Not determined                                       | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance<br>glass;regulated under Quartz 1123,<br>1124 |
| Chemical Name                 | Thailand                    | Vietnam  | Turkey  |
| Magnesium oxide               | Not determined              | 5 mg/m <sup>3</sup> TWA<br>10 mg/m <sup>3</sup> STEL | Not determined  |
| Crystalline silica (impurity) | 0.025 mg/m <sup>3</sup> TWA | Not determined                                       | Not determined  |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Keep airborne concentrations below exposure limits

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against dusts Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Impervious gloves made of: Neoprene Nitrile Butyl Rubber Frequent change is advisable

#### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Suitable mask with particle filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                    |
|----------------|--------------------|
| Physical state | Solid              |
| Appearance     | Granules           |
| Odor           | Odorless           |
| Color          | Light yellow Brown |
| Odor threshold | Not applicable     |

| Property                   | Values                   | Remarks                  |
|----------------------------|--------------------------|--------------------------|
| pH                         | Not applicable           |                          |
| pH @ dilution              | 10.5                     | @ 10% (H <sub>2</sub> O) |
| Melting / freezing point   | >2093 °C/ 3799 °F        |                          |
| Boiling point/range        | No information available |                          |
| Flash point                | No information available |                          |
| Evaporation rate (BuAc =1) | No information available |                          |
| Flammability (solid, gas)  | Not applicable           |                          |
| Flammability Limit in Air  |                          |                          |
| Upper flammability limit   | Not applicable           |                          |
| Lower flammability limit   | Not applicable           |                          |
| Vapor pressure             | No information available |                          |
| Vapor density              | No information available |                          |

|                              |                          |
|------------------------------|--------------------------|
| Specific gravity             | 3.19 g/cm <sup>3</sup>   |
| Bulk density                 | No information available |
| Relative density             | No information available |
| Water solubility             | Insoluble in water       |
| Solubility in other solvents | No information available |
| Autoignition temperature     | No information available |
| Decomposition temperature    | No information available |
| Kinematic viscosity          | No information available |
| Dynamic viscosity            | No information available |
| log Pow                      | No information available |

|                      |                |
|----------------------|----------------|
| Explosive properties | Not applicable |
| Oxidizing properties | None known.    |

## **9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

### **Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## **10. Stability and Reactivity**

### **10.1 Reactivity**

No specific reactivity hazards associated with this product.

### **10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

### **10.3 Possibility of Hazardous Reactions**

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### **10.4 Conditions to avoid**

Avoid dust formation.

### **10.5 Incompatible materials**

Strong acids.

### **10.6 Hazardous decomposition products**

See Section 5.2.

## **11. Toxicological Information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

##### **Inhalation**

Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

|                               |   |
|-------------------------------|---|
| <b>Eye contact</b>            | Dust may cause mechanical irritation.                 |
| <b>Skin contact</b>           | Repeated exposure may cause skin dryness or cracking. |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.               |
| <b>Unknown acute toxicity</b> | Not applicable.                                       |

**Toxicology data for the components**

| Chemical Name                 | LD50 Oral           | LD50 Dermal       | LC50 Inhalation   |
|-------------------------------|---------------------|-------------------|-------------------|
| Magnesium oxide               | No data available   | No data available | No data available |
| Crystalline silica (impurity) | = 500 mg/kg ( Rat ) | No data available | No data available |

|   |   |
|---|---|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.   |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.  |
| <b>Carcinogenicity</b>                                    | Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.  |
| <b>Routes of exposure</b>                                 | Inhalation. Skin contact. Eye contact.  |
| <b>Routes of entry</b>                                    | Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified  |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.   |
| <b>Aspiration hazard</b>                                  | Not applicable.   |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.  |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name | Toxicity to fish | Toxicity to algae | Toxicity to daphnia and other aquatic invertebrates |
|---------------|------------------|-------------------|---|
|---------------|------------------|-------------------|---|

|                               |  |                          |   |
|-------------------------------|--|--------------------------|---|
| Magnesium oxide               | No information available                         | No information available | No information available                          |
| Crystalline silica (impurity) | LC50 Danio rerio (zebra fish) : > 10000 mg/l 96h | EC50: > 1000 mg/l 72h    | LC50 Daphnia magna (Water flea): > 10000 mg/l 24h |

**12.2 Persistence and degradability**

Not Applicable - Inorganic chemical.

| Chemical Name                 | Persistence and degradability |
|-------------------------------|-------------------------------|
| Magnesium oxide               | Inorganic compound            |
| Crystalline silica (impurity) | Inorganic compound            |

**12.3 Bioaccumulative potential**

Not Applicable - Inorganic chemical.

| Chemical Name                 | Bioaccumulation                |
|-------------------------------|--------------------------------|
| Magnesium oxide               | Product/Substance is inorganic |
| Crystalline silica (impurity) | Product/Substance is inorganic |

**12.4 Mobility****Mobility**

Insoluble in water.

| Chemical Name                 | Mobility           |
|-------------------------------|--------------------|
| Magnesium oxide               | Insoluble in water |
| Crystalline silica (impurity) | Insoluble in water |

**Mobility in soil**

No information available.

| Chemical Name                 | Mobility in soil               |
|-------------------------------|--------------------------------|
| Magnesium oxide               | No information available       |
| Crystalline silica (impurity) | Not expected to adsorb on soil |

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**



**Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)****ADR/RID/ADN/ADG Hazard class** Not regulated**IMDG/ANTAQ Hazard class** Not regulated**ICAO/ANAC Hazard class/division** Not regulated**14.4 Packing group****ADR/RID/ADN/ADG Packing group** Not regulated**IMDG/ANTAQ Packing group** Not regulated**ICAO/ANAC Packing group** Not regulated**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**Safe Work Australia.****Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).****Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)****Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)****The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)****International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|                  |   |
|------------------|---|
| Prepared by      | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel |
| Supersedes Date: | 31-Jul-2015   |
| Revision date    | 17-Jul-2018   |
| Version          | 10  |

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

### Key literature references and sources for data

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

### HMIS classification

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | E |

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



# Safety Data Sheet



## HYDRATED LIME

### 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

|                               |  |
|-------------------------------|--|
| <b>Product Name</b>           | HYDRATED LIME  |
| <b>Supplier Name</b>          | Cockburn Cement Limited A.B.N. 50.008.673.470  |
| <b>Address</b>                | PO Box 38, Hamilton Hill, WA 6963  |
| <b>Manufacturing Plant(s)</b> | Munster Works, Lot 242 Russell Road East, Munster, WA 6166<br>Kwinana Works, Leath Road, Kwinana, WA 6167<br>Kemerton Operations, Marriott Street, Kemerton, WA 6233                   |
| <b>Telephone</b>              | 08 9411 1000   |
| <b>Fax</b>                    | 08 9411 1150   |
| <b>Emergency</b>              | Bus Hrs 08 9411 1000 A/Hrs 08 9411 1000  |
| <b>Email</b>                  | orders@cockburncement.com.au   |
| <b>Web Site</b>               | <a href="http://www.cockburncement.com.au">http://www.cockburncement.com.au</a> & <a href="http://www.swancement.com.au">www.swancement.com.au</a>                                     |
| <b>Synonym(s)</b>             | Hylime, Marvelime, Industrial Hydrated Lime, Premium Hydrated Lime, Chemical Hydrated Lime, Calcium Hydroxide, Slaked Lime.  |
| <b>Use(s)</b>                 | Applications such as neutralising agent in water and sewage treatment, a binder in mortars and renders, soil stabilisation and maintaining alkaline conditions for mineral processing. |

### 2. HAZARDS IDENTIFICATION

This product is classified as hazardous according to Safe Work Australia criteria.  
Not classified as a dangerous good by the criteria of the ADG code, IMDG or IATA.

#### GHS Classifications

|  |            |
|--|------------|
| Skin Corrosion/Irritation:                                 | Category 2 |
| Serious Eye Damage / Eye Irritation:                       | Category 1 |
| Specific Target Organ Systemic Toxicity (Single Exposure): | Category 3 |

#### SIGNAL WORD

**DANGER**

#### Pictograms



#### Hazard statements

|      |                                   |
|------|-----------------------------------|
| H315 | Causes skin irritation.           |
| H318 | Causes serious eye damage.        |
| H335 | May cause respiratory irritation. |

#### Prevention statements

|      |  |
|------|--|
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray.                          |
| P264 | Wash skin thoroughly after handling.                                       |
| P271 | Use only outdoors or in a well-ventilated area.                            |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |

#### Response statements

|                    |  |
|--------------------|--|
| P302 + P352        | IF ON SKIN: Wash with plenty of soap and water.  |
| P304 + P340        | IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310               | Immediately call a POISON CENTRE or doctor/physician.  |
| P332 + P313        | If skin irritation occurs: Get medical advice/attention.   |
| P362               | Take off contaminated clothing and wash before re-use.   |

#### Disposal statements

|      |  |
|------|--|
| P501 | Dispose of contents/container in accordance with relevant regulations. |
|------|--|



|                 |                |                           |                |                  |                |
|-----------------|----------------|---------------------------|----------------|------------------|----------------|
| <b>UN No</b>    | None Allocated | <b>Hazchem Code</b>       | None Allocated | <b>Pkg Group</b> | None Allocated |
| <b>DG Class</b> | None Allocated | <b>Subsidiary Risk(s)</b> | None Allocated | <b>EPG</b>       | None Allocated |

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

| <b>Ingredient</b>           | <b>Formula</b>                 | <b>Conc.</b> | <b>CAS No.</b> |
|-----------------------------|--------------------------------|--------------|----------------|
| CALCIUM HYDROXIDE           | Ca(OH) <sub>2</sub>            | 65 - 75%     | 1305-62-0      |
| MAGNESIUM HYDROXIDE         | Mg(OH) <sub>2</sub>            | 3.5 - 5%     | 1309-42-8      |
| CRYSTALLINE SILICA (QUARTZ) | SiO <sub>2</sub>               | 0.5 - 3%     | 14808-60-7     |
| ALUMINIUM OXIDE             | Al <sub>2</sub> O <sub>3</sub> | 0 - 1.5%     | 1344-28-1      |
| IRON (III) OXIDE            | Fe <sub>2</sub> O <sub>3</sub> | 0 - 1%       | 1309-37-1      |
| LIMESTONE                   | CaCO <sub>3</sub>              | 0 - 2%       | 1317-65-3      |

- Loss on Ignition accounts for missing concentration

### 4. FIRST AID MEASURES

|                             |  |
|-----------------------------|--|
| <b>Eye</b>                  | Flush thoroughly with flowing water for at least 15 minutes and seek medical attention if symptoms persist. If a lime slurry is splashed into the eyes flush thoroughly for 15 minutes then seek urgent medical attention. |
| <b>Inhalation</b>           | Remove from dusty area to fresh air. If symptoms persist, seek medical attention.  |
| <b>Skin</b>                 | Quickly, but gently, wipe material off skin. Immediately remove all contaminated clothing and footwear. Wash skin thoroughly with copious amounts of water.  |
| <b>Ingestion</b>            | Rinse mouth and lips with water. Do not induce vomiting. Give water to drink to dilute stomach contents. If symptoms persist, seek medical attention.  |
| <b>Advice to Doctor</b>     | Treat symptomatically. Contact Poisons Information Centre (131126 Australia wide).   |
| <b>First Aid Facilities</b> | Eye wash station.  |

#### Additional Information - Aggravated Medical Conditions

|                   |  |
|-------------------|--|
| <b>Inhalation</b> | Inhalation of dust through prolonged, repeated exposure can cause bronchitis, silicosis (scarring of the lung.) It may also increase the risk of scleroderma (a disease affecting the connective tissue of the skin, joints, blood vessels and internal organs) and lung cancer. Epidemiological studies have shown that smoking increases the risk of bronchitis, silicosis (scarring of the lung) and lung cancer. |
| <b>Skin</b>       | Irritating to the skin. Prolonged and repeated skin contact with Hydrated Lime can cause irritant dermatitis or alkaline burns.  |
| <b>Eye</b>        | Irritating to the eye. If a large volume of lime dust (or slurry) is splashed into the eye alkaline burns can cause permanent damage.  |

### 5. FIRE FIGHTING

|                           |  |
|---------------------------|--|
| <b>Flammability</b>       | Non flammable. Does not cause dust explosions. Violent reaction with maleic anhydride, nitroethane, nitromethane, nitroparaffin, nitropropane, phosphorous and oxidants. |
| <b>Fire and Explosion</b> | Non flammable. No fire or explosion hazard exists.   |
| <b>Extinguishing</b>      | Non flammable.   |
| <b>Hazchem Code</b>       | None.  |



### 6. ACCIDENTAL RELEASE MEASURES

|                             |   |
|-----------------------------|---|
| <b>Spillage</b>             | If spilt (bulk), contact emergency services if appropriate. Wear dust-proof goggles, PVC/rubber gloves, a Class P2 respirator (where an inhalation risk exists), coveralls and rubber boots. Clear area of all unprotected personnel. Prevent spill entering drains or waterways. Collect and place in sealable containers for disposal or reuse. Avoid generating dust. Materials should be neutralised with dilute hydrochloric acid, eg 6M, before disposal. |
| <b>Emergency Procedures</b> | Follow safety requirements for personal protection under Section 8 Exposure Controls/Personal Protection.   |

### 7. HANDLING AND STORAGE

|                               |  |
|-------------------------------|--|
| <b>Storage</b>                | Concrete or steel bins and silos or plastic lined paper sacks are the recommended forms of storage. Store in a cool, dry, well ventilated area, removed from moisture, oxidising agents (eg phosphorus oxide), acids, ethanol, interhalogens (eg chlorine trifluoride) and foodstuffs. Ensure packages are adequately labelled, protected from physical damage, and sealed when not in use. Also store removed from maleic anhydride, nitroethane, nitromethane, nitroparaffin, nitropropane, phosphorus, polychlorinated phenols and potassium nitrate. |
| <b>Handling</b>               | Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.  |
| <b>Property/Environmental</b> | Refer to Section 13.   |

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

|                           |  |
|---------------------------|--|
| <b>Ventilation</b>        | Avoid generating dust. All work with Hydrated Lime should be carried out in such a way as to minimise exposure to dust and repeated skin contact. Where dust could be generated whilst handling Hydrated Lime, use local mechanical ventilation or extraction in areas where dust could escape into the work environment. For bulk deliveries, closed pumping systems are recommended. For handling of individual bags, follow personal protection instructions if no local exhaust ventilation is available.              |
| <b>Exposure Standards</b> | ALUMINIUM OXIDE (1344-28-1)<br>ES-TWA: 10 mg/m <sup>3</sup> (Respirable Dust)<br>CALCIUM CARBONATE (1317-85-3)<br>ES-TWA: 10 mg/m <sup>3</sup> (Respirable Dust)<br>CALCIUM OXIDE (1305-78-8)<br>ES-TWA: 2 mg/m <sup>3</sup> (Respirable Dust; Alkaline)<br>IRON (III) OXIDE (1309-37-1)<br>ES-TWA: 5 mg/m <sup>3</sup> (Respirable Dust)<br>MAGNESIUM OXIDE (1309-48-4)<br>ES-TWA: 10 mg/m <sup>3</sup> (Respirable Dust)<br>SILICA, CRYSTALLINE – QUARTZ (14808-60-7)<br>ES-TWA: 0.1 mg/m <sup>3</sup> (Respirable Dust) |



**PPE** Wear dust-proof goggles and rubber or PVC gloves. Where an inhalation risk exists, wear a Class P2 respirator. If there is potential for prolonged and/or excessive skin contact, wear coveralls. At high dust levels, wear a Class P3 respirator or a Powered Air Purifying Respirator (PAPR) with Class P3 filter.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                                    |  |                                 |               |
|------------------------------------|--|---------------------------------|---------------|
| <b>Appearance</b>                  | A white or off-white amorphous powder with a typical fineness of less than 1% retained on a 75 micron sieve. | <b>Solubility (water)</b>       | Slightly      |
| <b>Odour</b>                       | Slight Odour   | <b>Specific Gravity</b>         | 2.1 to 2.3    |
| <b>pH</b>                          | Approximately 12   | <b>% Volatiles</b>              | Not Available |
| <b>Vapour Pressure</b>             | Not Available  | <b>Flammability</b>             | Non Flammable |
| <b>Vapour Density</b>              | Not Available  | <b>Flash Point</b>              | Not Relevant  |
| <b>Boiling Point/Melting Point</b> | Decomposes to Calcium Oxide and water @580°C   | <b>Upper Explosion Limit</b>    | Not Relevant  |
| <b>Evaporation Rate</b>            | Not Available  | <b>Lower Explosion Limit</b>    | Not Relevant  |
| <b>Bulk Density</b>                | 300 - 700 kg/m <sup>3</sup>  | <b>Autoignition Temperature</b> | Not Available |
| <b>Particle Size</b>               | 99% < 75 microns   |                                 |               |

## 10. STABILITY AND REACTIVITY

|                               |   |
|-------------------------------|---|
| <b>Reactivity</b>             | Incompatible with oxidising agents (eg phosphorus oxide), ethanol, interhalogens (eg chlorine trifluoride) and acids. Also incompatible with maleic anhydride, nitroethane, nitromethane, nitroparaffin, nitropropane, phosphorus, polychlorinated phenols and potassium nitrate. |
| <b>Decomposition Products</b> | May evolve toxic gases if heated to decomposition.  |

## 11. TOXICOLOGICAL INFORMATION

|                       |   |
|-----------------------|---|
| <b>Acute Toxicity</b> | No known toxicity data available for this product.  |
| <b>Eye</b>            | Irritant upon contact with dust. Over exposure may result in pain, redness, corneal burns and ulceration with possible permanent damage.  |
| <b>Inhalation</b>     | Slightly corrosive. Irritating to the respiratory system causing coughing and sneezing. Over exposure may result in severe mucous membrane irritation and bronchitis. Crystalline silica (found in this product below the reportable limit) can cause silicosis (lung disease) with chronic over exposure, however due to low levels present and product application, adverse health effects are not anticipated. |
| <b>Skin</b>           | Irritating to the skin. Contact may results in skin rash, dermatitis and possible burns.  |
| <b>Ingestion</b>      | Slightly corrosive. Ingestion may result in burns to the mouth and throat, with vomiting and abdominal pain. Due to product form, ingestion is not considered a likely exposure route.  |
| <b>Mutagenicity</b>   | Insufficient data available for this product to classify as a mutagen.  |



|                        |   |
|------------------------|---|
| <b>Carcinogenicity</b> | Crystalline silica is carcinogenic to humans (IARC Group 1), however due to low levels present and product application, the criteria for classification is not met.   |
| <b>Toxicity Data</b>   | CALCIUM HYDROXIDE (1305-62-0)<br>LD50 (Ingestion): 7300 mg/kg (mouse)<br>MAGNESIUM HYDROXIDE (1309-43-8)<br>LD50 (Ingestion): 8500 mg/kg (rat, mouse)<br>SILICA, CRYSTALLINE – QUARTZ (1408-60-7)<br>Carcinogenicity: Classified as a human carcinogen (IARC Group 1) |

## 12. ECOLOGICAL INFORMATION

|                    |   |
|--------------------|---|
| <b>Environment</b> | The aquatic toxicity of calcium hydroxide is due to its alkalinity. It is neutralised to calcium carbonate by absorption of atmospheric carbon dioxide and is not degraded by oxidation. Calcium hydroxide does not bioaccumulate in the environment. |
|--------------------|---|

## 13. DISPOSAL CONSIDERATIONS

|                       |  |
|-----------------------|--|
| <b>Waste Disposal</b> | Reuse or recycle where possible. Alternatively, ensure product is covered with moist soil to prevent dust generation and dispose of to an approved landfill site. Contact the manufacturer for additional information. |
| <b>Legislation</b>    | Dispose of in accordance with relevant local legislation. Keep out of sewer and stormwater drains.   |

## 14. TRANSPORT INFORMATION

Not classified as a dangerous good by the criteria of the ADG Code.

Transport is by rail or road in bulk or bag form.

Drivers of trucks transporting bagged product should ensure that the bags are properly restrained.

|                      |                |                           |                |                  |                |
|----------------------|----------------|---------------------------|----------------|------------------|----------------|
| <b>Shipping Name</b> | None Allocated | <b>Hazchem Code</b>       | None Allocated | <b>Pkg Group</b> | None Allocated |
| <b>UN No</b>         | None Allocated | <b>Subsidiary Risk(s)</b> | None Allocated | <b>EPG</b>       | None Allocated |
| <b>DG Class</b>      | None Allocated |                           |                |                  |                |

## 14. REGULATORY INFORMATION

|                             |  |
|-----------------------------|--|
| <b>Poison Schedule AICS</b> | A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).<br>All chemicals listed on the Australian Inventory of Chemical Substances (AICS). |
|-----------------------------|--|

## 15. OTHER INFORMATION

|                               |  |
|-------------------------------|--|
| <b>Additional Information</b> | IARC – GROUP 1 – PROVEN HUMAN CARCINOGEN. This product contains an ingredient for which there is sufficient evidence to have been classified by the International Agency for Research into Cancer as a human carcinogen. The use of products known to be human carcinogens should be strictly monitored and controlled.<br><br>RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary. |
|-------------------------------|--|



**PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:** The Recommendation for protective equipment contained within this SDS report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

**HEALTH EFFECTS FROM EXPOSURE:** It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare an SDS report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**ABBREVIATIONS:**

mg/m<sup>3</sup> - Milligrams per cubic metre

ppm - Parts Per Million

ES-TWA - Exposure Standard - Time Weighted Average

pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline.

CAS# - Chemical Abstract Service Number - used to uniquely identify chemical compounds.

IARC - International Agency for Research on Cancer.

WES-TWA - Workplace Exposure Standard - Time Weighted Average

M - Moles per litre, a unit of concentration

**Report Status**

This document has been compiled by Cockburn Cement Limited the manufacturer of the product and serves as the manufacturer's Safety Data Sheet ("SDS").

While Cockburn Cement Limited has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Cockburn Cement Limited accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

**Contact Point**

For further information on this product contact:

Telephone: Office hours 08 9411 1000  
After hours 08 9411 1000  
Facsimile: 08 9411 1150  
Web site: <http://www.cockburncement.com.au>

**Advice Note**

The information in this document is believed to be accurate. Please check the currency of this SDS by contacting:

08 9411 1000

or

<http://www.cockburncement.com.au> or [www.swancement.com.au](http://www.swancement.com.au)

The provision of this information should not be construed as a recommendation to use this product in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Users should read this SDS and consider the information in the context of how the product will be handled and used in the workplace and in conjunction with other substances or products.



## Safety Data Sheet IDCAP\* D

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name IDCAP\* D  
Product code PID2179

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Shale control agent.

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### **Supplier**

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### **GHS Classification**

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

**Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Polymer

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria  
Suspended dust may present a dust explosion hazard

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients**

**3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name | EC No  | CAS No      | Weight-% |
|---------------|--------|-------------|----------|
| Polymer       | Listed | Proprietary | 60-100   |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures**

**4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                                 |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if symptoms occur.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

## Symptoms

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

## 4.3 Indication of any immediate medical attention and special treatment needed

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## 5. Fire-Fighting Measures

### 5.1 Extinguishing media

#### **Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

#### **Extinguishing media which must not be used for safety reasons**

None known.

### 5.2. Special hazards arising from the substance or mixture

#### **Unusual fire and explosion hazards**

Suspended dust may present a dust explosion hazard.

#### **Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>), Nitrogen oxides (NO<sub>x</sub>).

### 5.3 Advice for firefighters

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Avoid dust formation. Material becomes slippery when wet. Use caution if wet. Use personal protective equipment. See also section 8.

### 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

#### Methods for containment

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

#### Methods for cleaning up

Sweep up and shovel into suitable containers for disposal. Take precautionary measures against static discharges. After cleaning, flush away traces with water.

#### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

#### 7.1 Precautions for safe handling

##### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Material becomes slippery when wet. Use caution if wet.

##### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

#### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Suspended dust may present a dust explosion hazard Keep away from open flames, hot surfaces and sources of ignition Avoid contact with: Oxidizing agents Protect from moisture

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

#### 8.1 Control parameters

**Exposure limits** NUI = Nuisance dust, TWA 4mg/m<sup>3</sup> Respirable Dust, 10mg/m<sup>3</sup> Total Dust. No biological limit allocated

#### Component Information

| Chemical Name | Arabic         | Australia      | Egypt          |
|---------------|----------------|----------------|----------------|
| Polymer       | Not determined | Not determined | Not determined |
| Chemical Name | India          | Indonesian     | Japan          |
| Polymer       | Not determined | Not determined | Not determined |
| Chemical Name | Kazakhstan     | Kuwait         | New Zealand    |
| Polymer       | Not determined | Not determined | Not determined |
| Chemical Name | Malaysia       | Philippines    | Russia         |
| Polymer       | Not determined | Not determined | Not determined |
| Chemical Name | Thailand       | Vietnam        | Turkey         |
| Polymer       | Not determined | Not determined | Not determined |

#### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Provide appropriate exhaust ventilation at places where dust is formed

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Tightly fitting safety goggles Safety glasses with side-shields

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Nitrile Neoprene Frequent change is advisable

##### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Half mask with a  
particle filter P2 (European Norm EN 143 = former DIN 3181) At work in confined or poorly  
ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



#### 8.2.3 Environmental exposure controls

##### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

#### 9.1 Information on basic physical and chemical properties

|                |                      |
|----------------|----------------------|
| Physical state | Solid                |
| Appearance     | Powder Granules Dust |
| Odor           | Mild                 |
| Color          | White                |
| Odor threshold | Not applicable       |

| Property                   | Values                   | Remarks        |
|----------------------------|--------------------------|----------------|
| pH                         | No information available |                |
| pH @ dilution              | 6.0 ± 1.00               | @ 1%           |
| Melting / freezing point   | No information available |                |
| Boiling point/range        | No information available |                |
| Flash point                | Not applicable           |                |
| Evaporation rate (BuAc =1) | No information available |                |
| Flammability (solid, gas)  | Not applicable           |                |
| Flammability Limit in Air  |                          |                |
| Upper flammability limit   | Not applicable           |                |
| Lower flammability limit   | Not applicable           |                |
| Vapor pressure             | No information available |                |
| Vapor density              | No information available |                |
| Specific gravity           | 1.40 - 1.55              | @ 68°F / 20 °C |
| Bulk density               | 750 kg/m³                |                |

|                                     |  |
|-------------------------------------|--|
| <b>Relative density</b>             | No information available                           |
| <b>Water solubility</b>             | Soluble in water                                   |
| <b>Solubility in other solvents</b> | Soluble  |
| <b>Autoignition temperature</b>     | No information available                           |
| <b>Decomposition temperature</b>    | No information available                           |
| <b>Kinematic viscosity</b>          | No information available                           |
| <b>Dynamic viscosity</b>            | No information available                           |
| <b>log Pow</b>                      | No information available                           |
| <b>Explosive properties</b>         | Suspended dust may present a dust explosion hazard |
| <b>Oxidizing properties</b>         | None known.  |

## **9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

## **Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

# **10. Stability and Reactivity**

## **10.1 Reactivity**

Dust may form explosive mixture in air.

## **10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

## **10.3 Possibility of Hazardous Reactions**

### **Hazardous polymerization**

Hazardous polymerization does not occur.

## **10.4 Conditions to avoid**

Avoid contact with heat, sparks, open flame, and static discharge. Avoid dust formation. Protect from moisture.

## **10.5 Incompatible materials**

Oxidizing agents.

## **10.6 Hazardous decomposition products**

See Section 5.2.

# **11. Toxicological Information**

## **11.1 Information on toxicological effects**

### **Acute toxicity**

#### **Inhalation**

Inhalation of dust in high concentration may cause irritation of respiratory system. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

#### **Eye contact**

Dust may cause mechanical irritation.

|                               |   |
|-------------------------------|---|
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation. Repeated exposure may cause skin dryness or cracking. |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

#### Toxicology data for the components

| Chemical Name | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|---------------|-------------------|-------------------|-------------------|
| Polymer       | No data available | No data available | No data available |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.            |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.                       |
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of exposure</b>                                 | Inhalation.  |
| <b>Routes of entry</b>                                    | Inhalation.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

#### Toxicology data for the components

| Chemical Name | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|---------------|--------------------------|--------------------------|---|
| Polymer       | No information available | No information available | No information available                            |

## **12.2 Persistence and degradability**

Product is not biodegradable.

## **12.3 Bioaccumulative potential**

Does not bioaccumulate.

## **12.4 Mobility**

### **Mobility**

The product is water soluble, and may spread in water systems.

### **Mobility in soil**

No information available.

## **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

## **12.6 Other adverse effects.**

None known.

## **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

# **13. Disposal considerations**

## **13.1 Waste treatment methods**

### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

# **14. Transport information**

## **14.1. UN number**

Not regulated

## **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

## **14.3 Hazard class(es)**



**ADR/RID/ADN/ADG Hazard class** Not regulated  
**IMDG/ANTAQ Hazard class** Not regulated  
**ICAO/ANAC Hazard class/division** Not regulated

**14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated  
**IMDG/ANTAQ Packing group** Not regulated  
**ICAO/ANAC Packing group** Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

**USA (TSCA)** Complies

|                     |                 |
|---------------------|-----------------|
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Does not comply |
| Japan (ENCS)        | Complies        |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Complies        |
| New Zealand (NZIoC) | Complies        |

## 16. Other Information

|  |  |
|--|--|
| <b>Prepared by</b>   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse   |
| <b>Supersedes Date:</b>                                      | 05-Sep-2016  |
| <b>Revision date</b>   | 22-Oct-2018  |
| <b>Version</b>   | 7  |
| <b>This SDS has been revised in the following section(s)</b> | 2, 6, 7, 8, 9, 10, 11, 15, 16 No changes with regard to classification have been made. |

### Key literature references and sources for data

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

### HMIS classification

|                 |   |
|-----------------|---|
| Health          | 1 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | B |

\*A mark of M-I L.L.C., a Schlumberger Company

### Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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## Safety Data Sheet KLA-STOP\*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name KLA-STOP\*  
Product code PID12074

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Shale inhibitor.

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                                   |                           |
|-----------------------------------|---------------------------|
| Skin corrosion/irritation         | Category 1 Subcategory 1C |
| Serious eye damage/eye irritation | Category 1                |

Environmental hazards Not classified

Physical Hazards Not classified

## 2.2 Label elements



**Signal word**  
DANGER

### Hazard Statements

H314 - Causes severe skin burns and eye damage

### Precautionary statements

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### Supplementary precautionary statements

P264 - Wash face, hands and any exposed skin thoroughly after handling

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P363 - Wash contaminated clothing before reuse

### Contains

Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of toxic and corrosive gases/vapors

### Australian statement of hazardous/dangerous nature

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name  | EC No | CAS No    | Weight-% |
|--|-------|-----------|----------|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | -     | 9046-10-0 | 60-100   |

### Comments

The product contains other ingredients which do not contribute to the overall classification.

## 4. First Aid Measures

#### **4.1 First aid measures**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | Move the exposed person to fresh air at once. If breathing is difficult, (trained personnel should) give oxygen. If not breathing, give artificial respiration. Seek medical attention at once.  |
| <b>Ingestion</b>    | Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.   |
| <b>Skin contact</b> | Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns must be treated by a physician. |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention at once.  |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | Seek medical attention for all burns, regardless how minor they may seem. The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing agent suitable for type of surrounding fire.

##### **Extinguishing media which must not be used for safety reasons**

High volume water jet.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (COx).

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**Hazchem code ADG**

2X

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Keep people away from and upwind of spill/leak. Do not get on skin or clothing. Wash thoroughly after handling. Avoid contact with eyes. Do not breathe vapors or spray mist. Use personal protective equipment. See also section 8.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

#### **Methods for cleaning up**

Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations (see Section 13).

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin or on clothing. Avoid spills and splashing during use. Do not breathe vapors or spray mist.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not eat, drink, smoke, sniff Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

### **7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Keep away from open flames, hot surfaces and sources of ignition Avoid contact with: Strong acids

**Storage class** Corrosive storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** Contains no substances with occupational exposure limit values No biological limit allocated

#### Component Information

| Chemical Name  | Arabic         | Australia      | Egypt          |
|--|----------------|----------------|----------------|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not determined | Not determined | Not determined |
| Chemical Name  | India          | Indonesian     | Japan          |
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not determined | Not determined | Not determined |
| Chemical Name  | Kazakhstan     | Kuwait         | New Zealand    |
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not determined | Not determined | Not determined |
| Chemical Name  | Malaysia       | Philippines    | Russia         |
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not determined | Not determined | Not determined |
| Chemical Name  | Thailand       | Vietnam        | Turkey         |
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not determined | Not determined | Not determined |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes  
Chemical splash goggles and/or face shield

##### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training  
Impervious gloves made of: Nitrile Neoprene Rubber  
Break through time >480 minutes  
Glove thickness ≥0.4 mm

##### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

## Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



## 8.2.3 Environmental exposure controls

### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

# 9. Physical and Chemical Properties

## 9.1 Information on basic physical and chemical properties

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | No information available |
| Odor           | Ammoniacal               |
| Color          | Colorless                |
| Odor threshold | Not applicable           |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | No information available |         |
| pH @ dilution                | 9.2 - 10.2               | @ 5%    |
| Melting / freezing point     | No information available |         |
| Boiling point/range          | No information available |         |
| Flash point                  | > 93 °C / > 200 °F       | PMCC    |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | No information available |         |
| Vapor density                | No information available |         |
| Specific gravity             | 1.03 - 1.075             |         |
| Bulk density                 | No information available |         |
| Relative density             | No information available |         |
| Water solubility             | Miscible with water.     |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | 80 - 120 cP              | @ 24 °C |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |

|                      |                          |
|----------------------|--------------------------|
| Explosive properties | No information available |
| Oxidizing properties | No information available |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |



**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

Corrosive.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

**Hazardous polymerization**

Not known.

### 10.4 Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition.

### 10.5 Incompatible materials

Strong acids.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

**Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Vapors may irritate throat and respiratory system. Inhaled corrosive substances can lead to a toxic edema of the lungs. |
| <b>Eye contact</b>            | Causes burns. May cause irreversible damage to eyes.  |
| <b>Skin contact</b>           | Causes severe skin burns.   |
| <b>Ingestion</b>              | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

**Toxicology data for the components**

| Chemical Name  | LD50 Oral                      | LD50 Dermal                       | LC50 Inhalation                 |
|--|--------------------------------|-----------------------------------|---------------------------------|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | 2885 mg/kg ( Rat )<br>OECD 401 | 2979 mg/kg ( Rabbit )<br>OECD 402 | > 0.74 mg/l ( Rat )<br>OECD 403 |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

|   |  |
|---|--|
| <b>Carcinogenicity</b>                                    | This product does not contain any known or suspected carcinogens.                    |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | Skin contact. Eye contact. Inhalation.   |
| <b>Routes of entry</b>                                    | Skin contact. Inhalation.  |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name  | Toxicity to fish   | Toxicity to algae  | Toxicity to daphnia and other aquatic invertebrates |
|--|--------------------|--------------------|---|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | LC50 >700 mg/l 96h | EC50 >700 mg/l 72h | EC50 >1001 mg/l 48h                                 |

### 12.2 Persistence and degradability

Product is not biodegradable. See component information below.

| Chemical Name  | Persistence and degradability |
|--|-------------------------------|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Not biodegradable             |

### 12.3 Bioaccumulative potential

Does not bioaccumulate. See component information below.

| Chemical Name  | Bioaccumulation        |
|--|------------------------|
| Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups | Does not bioaccumulate |

## **12.4 Mobility**

### **Mobility**

The product is miscible with water. May spread in water systems.

### **Mobility in soil**

No information available.

## **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

## **12.6 Other adverse effects.**

None known.

## **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

# **13. Disposal considerations**

## **13.1 Waste treatment methods**

### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

# **14. Transport information**

## **14.1. UN number**

|                             |        |
|-----------------------------|--------|
| UN/ID No. (ADR/RID/ADN/ADG) | UN2735 |
| UN No. (IMDG/ANTAQ)         | UN2735 |
| UN No. (ICAO/ANAC)          | UN2735 |

## **14.2. UN proper shipping name**

AMINES, LIQUID, CORROSIVE, N.O.S. (contains Reaction products of propane-1,2-diol, propoxylated by amination of the terminal hydroxyl groups)

## **14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class 8

IMDG/ANTAQ Hazard class 8  
ICAO/ANAC Hazard class/division 8

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group III  
IMDG/ANTAQ Packing group III  
ICAO/ANAC Packing group III



**14.5 Environmental hazard**

No

**14.6 Special precautions**

Hazard identification no (ADR) 80  
EmS (IMDG) F-A, S-B  
Emergency Action Code (EAC) 2X  
Tunnel restriction code (E)  
Hazchem code ADG 2X

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Classified

**HSNO approval no.** HSR002491

**Group number** 8.3A, 8.2C

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**ADG Code – Australian Dangerous Goods Code**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**  
**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                            |          |
|----------------------------|----------|
| <b>USA (TSCA)</b>          | Complies |
| <b>Canada (DSL)</b>        | Complies |
| <b>Philippines (PICCS)</b> | Complies |
| <b>Japan (ENCS)</b>        | Complies |
| <b>China (IECSC)</b>       | Complies |
| <b>Australia (AICS)</b>    | Complies |
| <b>Korean (KECL)</b>       | Complies |
| <b>New Zealand (NZIoC)</b> | Complies |

## 16. Other Information

|  |   |
|--|---|
| <b>Prepared by</b>   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse          |
| <b>Supersedes Date:</b>                                      | 08-Feb-2019   |
| <b>Revision date</b>   | 21-Feb-2019   |
| <b>Version</b>   | 9   |
| <b>This SDS has been revised in the following section(s)</b> | 1, 2, 3, 5, 7, 8, 10, 11, 12, 15, 16 No changes with regard to classification have been made. |

**Key literature references and sources for data**

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 3 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | X |

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## Safety Data Sheet KLEEN UP\*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name KLEEN UP\*  
Product code PID859

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Detergent

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                                   |            |
|-----------------------------------|------------|
| Serious eye damage/eye irritation | Category 1 |
|-----------------------------------|------------|

Environmental hazards Not classified

Physical Hazards Not classified

## 2.2 Label elements



**Signal word**  
DANGER

### **Hazard Statements**

H318 - Causes serious eye damage

### **Precautionary statements**

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

### **Contains**

Alcohols, C11-14-iso-, C13-rich, ethoxylated

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

### **Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

| Chemical Name                                | EC No   | CAS No     | Weight-% |
|--|---------|------------|----------|
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | polymer | 78330-21-9 | 10-30    |

### **Comments**

The product contains other ingredients which do not contribute to the overall classification.

## 4. First Aid Measures

### 4.1 First aid measures

#### **Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

#### **Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.



|                     |  |
|---------------------|--|
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.               |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Seek medical attention at once. |

#### **4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### **Symptoms**

|                   |   |
|-------------------|---|
| <b>Inhalation</b> | Please see Section 11. Toxicological Information for further information. |
|-------------------|---|

|                  |   |
|------------------|---|
| <b>Ingestion</b> | Please see Section 11. Toxicological Information for further information. |
|------------------|---|

|                     |   |
|---------------------|---|
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
|---------------------|---|

|                    |   |
|--------------------|---|
| <b>Eye contact</b> | Please see Section 11. Toxicological Information for further information. |
|--------------------|---|

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

## **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## **6.3 Methods and material for containment and cleaning up**

### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

### **Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

## **6.4 Reference to other sections**

See section 13 for more information.

# **7. Handling and Storage**

## **7.1 Precautions for safe handling**

### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not eat, drink, smoke, sniff Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

## **7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Store at room temperature Do not freeze Avoid contact with: Strong oxidizing agents

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# **8. Exposure Controls/Personal Protection**

## **8.1 Control parameters**

**Exposure limits** Contains no substances with occupational exposure limit values No biological limit allocated

### **Component Information**

| Chemical Name                                | Arabic         | Australia      | Egypt          |
|--|----------------|----------------|----------------|
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | Not determined | Not determined | Not determined |
| Chemical Name                                | India          | Indonesian     | Japan          |
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | Not determined | Not determined | Not determined |
| Chemical Name                                | Kazakhstan     | Kuwait         | New Zealand    |

|  |                 |                    |                |
|--|-----------------|--------------------|----------------|
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | Not determined  | Not determined     | Not determined |
| <b>Chemical Name</b>                         | <b>Malaysia</b> | <b>Philippines</b> | <b>Russia</b>  |
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | Not determined  | Not determined     | Not determined |
| <b>Chemical Name</b>                         | <b>Thailand</b> | <b>Vietnam</b>     | <b>Turkey</b>  |
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | Not determined  | Not determined     | Not determined |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Impervious gloves made of: Neoprene Nitrile PVC  
Break through time >480 minutes  
Glove thickness >=0.4 mm

#### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                          |
|-----------------------|--------------------------|
| <b>Physical state</b> | Liquid                   |
| <b>Appearance</b>     | No information available |
| <b>Odor</b>           | Slight                   |
| <b>Color</b>          | Off-white                |
| <b>Odor threshold</b> | Not applicable           |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u>         |
|------------------------------|--------------------------|------------------------|
| pH                           | 7.0 - 8.5                | ASTM E70 (as supplied) |
| pH @ dilution                | No information available |                        |
| Melting / freezing point     | No information available |                        |
| Boiling point/range          | ~ 100 °C / ~ 212 °F      |                        |
| Flash point                  | > 100 °C / > 212 °F      | PMCC                   |
| Evaporation rate (BuAc =1)   | No information available |                        |
| Flammability (solid, gas)    | Not applicable           |                        |
| Flammability Limit in Air    |                          |                        |
| Upper flammability limit     | Not applicable           |                        |
| Lower flammability limit     | Not applicable           |                        |
| Vapor pressure               | No information available |                        |
| Vapor density                | No information available |                        |
| Specific gravity             | ~ 1.02                   | @ 20 °C                |
| Bulk density                 | No information available |                        |
| Relative density             | No information available |                        |
| Water solubility             | Soluble in water         |                        |
| Solubility in other solvents | No information available |                        |
| Autoignition temperature     | No information available |                        |
| Decomposition temperature    | No information available |                        |
| Kinematic viscosity          | No information available |                        |
| Dynamic viscosity            | No information available |                        |
| log Pow                      | Not determined           |                        |
| Explosive properties         | Not applicable           |                        |
| Oxidizing properties         | None known.              |                        |

#### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | <= 0°C                   |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## **10. Stability and Reactivity**

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Store at room temperature. Do not freeze.

### 10.5 Incompatible materials

Strong oxidizing agents.

## **10.6 Hazardous decomposition products**

See Section 5.2.

## **11. Toxicological Information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | Causes serious eye damage.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**LD50 Oral** > 2000 mg/kg (rat) (based on components) (MIXTURE)

#### **Toxicology data for the components**

| <b>Chemical Name</b>                         | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|--|-------------------|--------------------|------------------------|
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | No data available | No data available  | No data available      |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of Exposure** Eye contact.

**Routes of entry** No route of entry noted.

**Specific target organ toxicity - Single exposure** Not classified

**Specific target organ toxicity - Repeated exposure** Not classified.

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## **12. Ecological Information**

### **12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that

large or frequent spills can have a harmful or damaging effect on the environment.

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name                                | Toxicity to fish         | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|--|--------------------------|--------------------------|---|
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | No information available | No information available | No information available                            |

**12.2 Persistence and degradability**

Not readily biodegradable.

**12.3 Bioaccumulative potential**

Does not bioaccumulate.

**12.4 Mobility**

**Mobility**

Soluble in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations**

### **13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

## **14. Transport information**

### **14.1. UN number**

Not regulated

### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

### **14.3 Hazard class(es)**

|  |               |
|--|---------------|
| <b>ADR/RID/ADN/ADG Hazard class</b>    | Not regulated |
| <b>IMDG/ANTAQ Hazard class</b>         | Not regulated |
| <b>ICAO/ANAC Hazard class/division</b> | Not regulated |

### **14.4 Packing group**

|                                      |               |
|--------------------------------------|---------------|
| <b>ADR/RID/ADN/ADG Packing group</b> | Not regulated |
| <b>IMDG/ANTAQ Packing group</b>      | Not regulated |
| <b>ICAO/ANAC Packing group</b>       | Not regulated |

### **14.5 Environmental hazard**

No

### **14.6 Special precautions**

Not applicable

### **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## **15. Regulatory Information**

### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**  
No poisons schedule number allocated

**New Zealand Hazard Classification** Classified

**HSNO approval no.** HSR002503

**Group number** 8.3A

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances**

[NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|   |   |
|---|---|
| Prepared by   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse                          |
| Supersedes Date:                                      | 01-Aug-2016   |
| Revision date   | 14-Nov-2019   |
| Version   | 5   |
| This SDS has been revised in the following section(s) | 2, 3, 7, 8, 11, 15, 16 No changes with regard to classification have been made. Updated according to GHS/CLP. |

#### Key literature references and sources for data

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

\*A mark of M-I L.L.C., a Schlumberger Company

#### Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on



measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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A HUBER COMPANY

# Safety Data Sheet

## Kwik-Seal® Fine, Medium], Coarse [MI]

According to WHS Act and the Work Health and Safety Regulations (the WHS Regulations), Section 274.  
New Zealand HSNO Chemical Classification  
Globally Harmonized System (GHS)

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### SECTION 1: Identification: Product identifier and chemical identity

#### 1.1. Product identifier

Product Name: Kwik-Seal® Fine, Medium], Coarse [MI]

Wood, wood fibers, ground hulls or shells

CAS Number --

Synthetic flakes

CAS Number --

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Lost circulation material.

Uses advised against None known.

#### 1.3. Details of the supplier of the safety data sheet

Supplier M-I Australia Pty Ltd  
Level 5, 256 St Georges Terrace  
Perth WA 6000  
Tel: 08 9440 2900

Company: CP Kelco U.S., Inc.  
A Huber Company  
3000 Cumberland Blvd, Suite 600  
Atlanta, GA 30339 USA  
tel: +1 (678) 247-7300

Kelco Oil Field Group  
Regus House  
1 Berry Street  
Aberdeen, Scotland  
AB25 1HF  
UK  
Tel: +44 1224 843784

Internet [www.cpkelco.com](http://www.cpkelco.com)

E-mail [customer.request@cpkelco.com](mailto:customer.request@cpkelco.com)

1.4. Emergency telephone CHEMTREC: +1 800 424 9300 or International +1 703 527 3887

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**number**

In Asia Pacific: +65 6491 9100

EU KOFG Phone: +44 (0) 1224 843 784 Aberdeen, Scotland

In Australia - Carechem 24 hour emergency telephone number: +61 2801 44558

## SECTION 2: Hazard(s) Identification

### 2.1. Classification of the substance or mixture

**Physical Hazards** Not classified

**Health Hazards** Not classified

**Environmental Hazard** Not classified

### 2.2. Label elements

**Symbols/Pictograms** None.

**Signal Word** None.

**Hazard Statement** None

### Precautionary Statements

**Prevention** Employ good industrial hygiene practice. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wear protective gloves/protective clothing/eye protection/face protection. Combustible dust may form combustible (explosive) dust-air mixtures. Take precautionary measures against static discharges.

**Response** IF exposed or concerned: Get medical advice/attention. Wash with plenty of soap and water.

**Storage** Store away from incompatible materials. Keep in a dry place.

**Disposal** Dispose of contents/containers in accordance with local regulations.

**Hazards not otherwise classified (HNOC)** COMBUSTIBLE DUST MAY FORM COMBUSTIBLE (EXPLOSIVE) DUST/ AIR MIXTURES. Slippery, can cause falls if walked on.

## SECTION 3: Composition and Information on Ingredients

| Chemical Name             | Australia (AICS) | New Zealand | TSCA: United States | Hazardous Substances |
|---------------------------|------------------|-------------|---------------------|----------------------|
| Wood, wood fibers, ground | -                | -           | -                   | No                   |

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|                                    |   |   |   |    |
|------------------------------------|---|---|---|----|
| hulls or shells<br>CAS NUMBER-N/A  |   |   |   |    |
| Synthetic flakes<br>CAS NUMBER-N/A | - | - | - | No |

## SECTION 4: First Aid Measures

### 4.1. Description of first aid measures

|                     |  |
|---------------------|--|
| <b>Eye Contact</b>  | In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. |
| <b>Skin Contact</b> | Wash with plenty of soap and water.  |
| <b>Ingestion</b>    | Rinse mouth thoroughly with water.   |
| <b>Inhalation</b>   | If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.                          |

**4.2. Most important symptoms and effects, both acute and delayed** None known.

**4.3. Indication of any immediate medical attention and special treatment needed** Treat symptomatically. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

## SECTION 5: Fire Fighting Measures

**5.1. Extinguishing media**  
**Suitable Extinguishing Media** Water spray (fog). Dry chemical. Foam.

**Unsuitable Extinguishing Media** None known.

**5.2. Special hazards arising from the substance or mixture** Avoid dust formation.

**Hazardous Combustion Products** Carbon dioxide  
Carbon monoxide  
aldehydes  
organic acids

### 5.3. Advice for firefighters

**Special protective** Wear self-contained breathing apparatus and protective suit.

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equipment for firefighters

Fire-fighting measures

COMBUSTIBLE DUST MAY FORM COMBUSTIBLE (EXPLOSIVE) DUST/ AIR MIXTURES.

## SECTION 6: Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid inhalation of dust. Use personal protection recommended in Section 8.

For non-emergency personnel

Keep unauthorized personnel away.

For emergency responders

Keep unauthorized personnel away. Use personal protection recommended in Section 8.

### 6.2. Environmental precautions

Avoid runoff to waterways and sewers. Dispose of in accordance with federal, state and local regulations.

### 6.3. Methods and material for containment and cleaning up

Large Spill: Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Small Spill: Vacuum or sweep material and place in a disposal container.

### 6.4. Reference to other sections

Section 8: Exposure controls and personal protection. See Section 13 for additional waste treatment information.

## SECTION 7: Handling and Storage

### 7.1. Precautions for safe handling

Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid contact with skin, eyes or clothing. Avoid prolonged contact with material. Use personal protection recommended in Section 8. Employ good industrial hygiene practice.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed and dry. Store away from incompatible materials. See section 10.

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### SECTION 8: Exposure controls and personal protection

#### 8.1. Control parameters

##### Occupational exposure limits

###### Wood, wood fibers, ground hulls or shells

Exposure limits Not established

###### Synthetic flakes

Exposure limits Not established  
The creation of aerosols should be avoided.

#### 8.2. Exposure controls

**Engineering Measures** Ensure adequate ventilation, especially in confined areas

##### Personal protective equipment

**Eye/Face Protection** Wear safety glasses with side shields (or goggles).

**Skin and Body Protection** Wear suitable protective clothing.

**Hand protection** For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

**Respiratory Protection** Use NIOSH/MSHA approved respiratory protection equipment when airborne exposures exceeds established guidelines.

**Thermal hazards** None known.

**Hygiene Measures** Follow general hygiene considerations recognized as common good workplace practices

**Environmental Exposure Controls** Dispose of in accordance with local regulations

### SECTION 9: Physical and Chemical Properties

#### 9.1. Information on basic physical and chemical properties

**Physical State** Flakes. granulate.

**Form** Not determined

**Color** Tan to brown

**Odor** Mild

**Odor Threshold** No information available

**pH:** No information available

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**pH:**

|                                      |                          |
|--------------------------------------|--------------------------|
| <b>Melting Point / Melting Range</b> | Not applicable           |
| <b>Boiling Point</b>                 | Not applicable           |
| <b>Flash Point:</b>                  | Not applicable           |
| <b>Evaporation Rate</b>              | Not applicable           |
| <b>Flammability (solid, gas)</b>     | Combustible              |
| <b>Vapor Pressure</b>                | Not applicable           |
| <b>Vapor Density</b>                 | Not applicable           |
| <b>Water Solubility</b>              | Insoluble                |
| <b>Partition coefficient</b>         | No information available |
| <b>Autoignition Temperature</b>      | Not applicable           |
| <b>Oxidizing Properties</b>          | Not applicable           |
| <b>Fat solubility (g/l)</b>          | None                     |

## SECTION 10: Stability and Reactivity

|   |  |
|---|--|
| <b>10.1. Reactivity</b>                         | No data available  |
| <b>10.2. Chemical stability</b>                 | Stable under normal conditions   |
| <b>10.3. Possibility of hazardous reactions</b> | None under normal processing   |
| <b>10.4. Conditions to avoid</b>                | Keep away from heat, sparks and flame.   |
| <b>10.5. Incompatible materials</b>             | None known.  |
| <b>10.6. Hazardous decomposition products</b>   | Carbon dioxide (CO <sub>2</sub> ) Nitrogen oxides (NO <sub>x</sub> ) Organic acids Aldehydes Cyanide compounds Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentration |

## SECTION 11: Toxicological Information

**General Information**

Users are advised to consider national Occupational Exposure Limits or other

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equivalent values.

### Information on Likely Routes of Exposure

|                   |  |
|-------------------|--|
| <b>Inhalation</b> | Inhalation of dust may cause irritation of the respiratory system. May cause respiratory tract irritation. |
| <b>Skin</b>       | Prolonged exposure may cause skin irritation.  |
| <b>Eyes</b>       | May cause irritation.  |
| <b>Ingestion</b>  | None known.  |

**Symptoms** Inhalation of dust may cause irritation of the respiratory system

### 11.1. Information on toxicological effects

|   |  |
|---|--|
| <b>Acute Toxicity</b>                                     | Based on available data, the classification criteria are not met.                                      |
| <b>Serious eye damage/eye irritation</b>                  | Based on available data, the classification criteria are not met.                                      |
| <b>Respiratory Sensitization</b>                          | Based on available data, the classification criteria are not met.                                      |
| <b>Skin Corrosion/Irritation</b>                          | Prolonged or repeated contact may dry skin and cause irritation.                                       |
| <b>Skin Sensitization</b>                                 | Based on available data, the classification criteria are not met.                                      |
| <b>Germ cell mutagenicity</b>                             | Based on available data, the classification criteria are not met.                                      |
| <b>Reproductive Effects</b>                               | This product does not contain any known or suspected reproductive hazards.                             |
| <b>Reproductive Toxicity</b>                              | Based on available data, the classification criteria are not met.                                      |
| <b>Carcinogenicity</b>                                    | This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP. |
| <b>Specific target organ toxicity - Single exposure</b>   | Based on available data, the classification criteria are not met.                                      |
| <b>Specific target organ toxicity - Repeated exposure</b> | Based on available data, the classification criteria are not met.                                      |
| <b>Chronic Effects</b>                                    | Based on available data, the classification criteria are not met.                                      |

## SECTION 12: Ecological Information

**12.1. Ecotoxicity** Not classified.



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**Wood, wood fibers, ground hulls or shells - CAS NUMBER-N/A**

96-Hour LC50 Crustacea 1000000 ppm Acute

**Synthetic flakes - CAS NUMBER-N/A**

96-Hour LC50 Crustacea 1000000 ppm Acute

**12.2. Persistence and degradability** Inherently biodegradable, not fulfilling criteria.

**12.3. Bioaccumulative potential** No information available.

**Partition coefficient** Not available.

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** No information available.

**12.5. Results of PBT and vPvB assessment** This substance does not meet the criteria for classification as PBT or vPvB.

**12.6. Other adverse effects** None known

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Contaminated Packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal.

**Waste codes** Waste codes should be assigned by the user based on the application for which the product was used

**Disposal Methods** Dispose of waste product or used containers according to local regulations

## SECTION 14: Transport Information

### Mode of Transportation (Road, Water, Air, Rail)

**ICAO** Not regulated

**IMDG/IMO** Not regulated

**RID** Not regulated

**DOT** Not regulated

**14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**  
Not applicable

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### SECTION 15: Regulatory Information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### Global Inventories

| Chemical Name                             | CAS Number | Australia (AICS) | Canada (DSL) | China (IECSC) | REACH registration number | EC No | Japan | S. Korea (KECL) | Mexico | New Zealand | Philippines (PICCS) | Taiwan | TSCA: United States |
|---|------------|------------------|--------------|---------------|---------------------------|-------|-------|-----------------|--------|-------------|---------------------|--------|---------------------|
| Wood, wood fibers, ground hulls or shells | --         | -                | -            | -             | --                        | --    | -     | -               | -      | -           | -                   | -      | -                   |
| Synthetic flakes                          | --         | -                | -            | -             | --                        | --    | -     | -               | -      | -           | -                   | -      | -                   |

##### Legend

X / Y: Complies , - / N: Not Listed , Exempt

### SECTION 16: Other information

#### Prepared by

CP Kelco Global Regulatory Affairs  
Email: Regulatory.Affairs@cpkelco.com

#### Reason for Revision

According to WHS Act and the Work Health and Safety Regulations (the WHS Regulations), Section 274.  
New Zealand HSNO Chemical Classification  
Globally Harmonized System (GHS)

#### Hazards identification

##### Physical Hazards

Not classified

##### Health Hazards

Not classified

##### Environmental Hazard

Not classified

#### Labeling

##### Symbols/Pictograms

None.

##### Signal Word

None.

##### Hazard Statement

None

#### Training Advice

Do not handle until all safety precautions have been read and understood.

#### Abbreviations and acronyms

International Agency for Research on Cancer (IARC)  
International Air Transport Association (IATA)  
International Maritime Dangerous Goods (IMDG)  
International Uniform Chemical Information Database (IUCLID)  
Workplace Hazardous Materials Information System (WHMIS) status and classification  
EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification  
DOT (Department of Transportation)

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OSHA (Occupational Safety and Health Administration of the US Department of Labor)

TWA - Time-Weighted Average

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)

The Classification, Labeling and Packaging of Substances and Mixtures (CLP) Regulation (EC 1272/2008)

PPE - Personal Protection Equipment

NIOSH - National Institute for Occupational Safety and Health

TDG (Transport of Dangerous Goods) Canada

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

Reportable Quantity (RQ) (RQ/% in mixture)

STEL - Short Term Exposure Limit

TLV® - Threshold Limit Value

Derived No Effect Level (DNEL)

SVHC: Substances of Very High Concern for Authorization:

Land transport (ADR/RID)

Biochemical oxygen demand (BOD)

Chemical oxygen demand (COD)

ICAO (air)

(IMDG) International Maritime Dangerous Goods

Positive Pressure Self-Contained Breathing Apparatus (SCBA)

Predicted No Effect Concentration (PNEC)

Globally Harmonized System (GHS)

## Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**



## Safety Data Sheet Liquid Retarder D81

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Liquid Retarder D81  
**Product code** D081

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains** No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician**

Treat symptomatically.

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

**Suitable extinguishing media**Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.**Extinguishing media which must not be used for safety reasons**

Do not use water jet.

### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Avoid spills and splashing during use.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing. Do not eat, drink or smoke when using this product.

## 7.2 Conditions for safe storage, including any incompatibilities

|                                |  |
|--------------------------------|--|
| Technical measures/precautions | Ensure adequate ventilation.   |
| Storage precautions            | Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Store away from incompatibles, Strong acids, Strong oxidizing agents. |
| Storage class                  | Chemical storage.  |
| Packaging materials            | Use specially constructed containers only.   |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

|                 |   |
|-----------------|---|
| Exposure limits | The product does not contain any hazardous materials with occupational exposure limits established. |
|-----------------|---|

### Notes

No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation. Local exhaust ventilation.

### Personal protective equipment

|                          |   |
|--------------------------|---|
| Eye protection           | Use eye protection according to EN 166, designed to protect against liquid splashes. Safety glasses with side-shields. Tightly fitting safety goggles.  |
| Hand protection          | Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training. Impervious gloves made of: Neoprene, Nitrile. Break through time >480 minutes. Glove thickness >0.4 mm. Be aware that liquid may penetrate the gloves. Frequent change is advisable. |
| Respiratory protection   | In case of insufficient ventilation, wear suitable respiratory equipment. Use respirator with organic vapor protection (A, brown). At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.  |
| Skin and body protection | Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.   |
| Hygiene Measures         | Wash hands before eating, drinking or smoking. Remove and wash contaminated clothing.   |

before re-use

**8.2.3 Environmental exposure controls**

**Environmental exposure** Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

|                       |                         |
|-----------------------|-------------------------|
| <b>Physical state</b> | Liquid                  |
| <b>Appearance</b>     | Aqueous solution        |
| <b>Odor</b>           | Of burnt sugar / Slight |
| <b>Color</b>          | Dark brown              |
| <b>Odor threshold</b> | Not applicable          |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | 3.5 - 5.1                |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | No information available |                |
| Boiling point/range          | No information available |                |
| Flash point                  | Does not flash           |                |
| Evaporation rate (BuAc =1)   | Not applicable           |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | Not applicable           |                |
| Vapor density                | No information available |                |
| Specific gravity             | 1.24 - 1.26              | @ 27 °C        |
| Bulk density                 | No information available |                |
| Relative density             | No information available |                |
| Water solubility             | Soluble in water         |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | 400 °C / 752 °F          |                |
| Decomposition temperature    | No information available |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | 350 mPa.s                | @ 20 °C        |
| log Pow                      | No information available |                |
| <b>Explosive properties</b>  | Not applicable           |                |
| <b>Oxidizing properties</b>  | None known.              |                |

**9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.



## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Keep away from direct sunlight.

### 10.5 Incompatible materials

Strong oxidizing agents. Strong acids.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### **Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of Exposure** Skin contact. Eye contact. Inhalation.

**Routes of entry** No route of entry noted.

---

|   |  |
|---|--|
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

Listed on PLONOR list of OSPAR

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### 12.2 Persistence and degradability

No product level data available.

### 12.3 Bioaccumulative potential

Does not bioaccumulate.

### 12.4 Mobility

#### **Mobility**

Soluble in water.

#### **Mobility in soil**

No information available.

### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)**

**The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)**

**International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel

**Supersedes Date:** 27-Mar-2018

**Revision date** 12-May-2020

**Version** 4

**This SDS has been revised in the following section(s)** 9, 12, No changes with regard to classification have been made.

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

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## Safety Data Sheet

### Liquid Trifunctional Additive D194

#### 1. Identification of the substance/mixture and of the company/undertaking

##### 1.1 Product identifier

**Product name** Liquid Trifunctional Additive D194  
**Product code** D194

##### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

##### 1.3 Details of the supplier of the safety data sheet

###### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

##### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

#### 2. Hazards Identification

##### 2.1 Classification of the substance or mixture

###### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

##### 2.2 Label elements

###### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of irritating gases and vapors

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Skin contact**

Wash skin thoroughly with soap and water. Get medical attention if irritation persists.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.

**4.2. Most important symptoms and effects, both acute and delayed****General advice**

The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

**Symptoms****Inhalation**

Please see Section 11. Toxicological Information for further information.

**Ingestion**

Please see Section 11. Toxicological Information for further information.

**Skin contact**

Please see Section 11. Toxicological Information for further information.

**Eye contact**

Please see Section 11. Toxicological Information for further information.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician**

Treat symptomatically.

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

**Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**



### 7.1 Precautions for safe handling

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |   |
|---------------------------------------|---|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation.  |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid contact with: Strong oxidizing agents. |
| <b>Storage class</b>                  | Chemical storage.   |
| <b>Packaging materials</b>            | Use specially constructed containers only.  |

## **8. Exposure Controls/Personal Protection**

### 8.1 Control parameters

|                        |  |
|------------------------|--|
| <b>Exposure limits</b> | The product does not contain any hazardous materials with occupational exposure limits established. No biological limit allocated. |
|------------------------|--|

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### **Engineering Controls**

Ensure adequate ventilation

#### **Personal protective equipment**

|                                 |  |
|---------------------------------|--|
| <b>Eye protection</b>           | Use eye protection according to EN 166, designed to protect against liquid splashes. Safety glasses with side-shields. Tightly fitting safety goggles.   |
| <b>Hand protection</b>          | Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training. Impervious gloves made of: Neoprene Nitrile. Break through time >480 minutes. Glove thickness >0.4 mm. Be aware that liquid may penetrate the gloves. Frequent change is advisable. |
| <b>Respiratory protection</b>   | In case of insufficient ventilation wear suitable respiratory equipment. Respirator with combination filter for vapour/particulate (EN 141) Type A/P2. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.                           |
| <b>Skin and body protection</b> | Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.  |
| <b>Hygiene Measures</b>         | Wash hands before eating, drinking or smoking. Remove and wash contaminated clothing before re-use.  |



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | No information available |
| Odor           | Mild                     |
| Color          | Brown                    |
| Odor threshold | No information available |

| Property                     | Values                   | Remarks |
|------------------------------|--------------------------|---------|
| pH                           | 10                       |         |
| pH @ dilution                | No information available |         |
| Melting / freezing point     | -2 °C / 28.4 °F          |         |
| Boiling point/range          | 104 °C / 219.2 °F        |         |
| Flash point                  | No information available |         |
| Evaporation rate (BuAc =1)   | No information available |         |
| Flammability (solid, gas)    | Not applicable           |         |
| Flammability Limit in Air    |                          |         |
| Upper flammability limit     | Not applicable           |         |
| Lower flammability limit     | Not applicable           |         |
| Vapor pressure               | 14.2 mmHg                | @ 20 °C |
| Vapor density                | No information available |         |
| Specific gravity             | 1.30                     |         |
| Bulk density                 | No information available |         |
| Relative density             | No information available |         |
| Water solubility             | Soluble in water         |         |
| Solubility in other solvents | No information available |         |
| Autoignition temperature     | No information available |         |
| Decomposition temperature    | No information available |         |
| Kinematic viscosity          | <600 cst                 |         |
| Dynamic viscosity            | No information available |         |
| log Pow                      | No information available |         |

|                      |                          |
|----------------------|--------------------------|
| Explosive properties | No information available |
| Oxidizing properties | No information available |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

**10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

None known.

**10.5 Incompatible materials**

Strong oxidizing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of Exposure** Skin contact. Inhalation. Ingestion. Eye contact.

**Routes of entry** Ingestion. Inhalation.

---

|   |  |
|---|--|
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### 12.2 Persistence and degradability

No product level data available.

### 12.3 Bioaccumulative potential

No product level data available.

### 12.4 Mobility

#### **Mobility**

The product is water soluble, and may spread in water systems.

#### **Mobility in soil**

No information available.

### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number****14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

None

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

#### International inventories

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|                  |   |
|------------------|---|
| Prepared by      | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel |
| Supersedes Date: | 03-Jun-2015   |
| Revision date    | 12-Feb-2019   |
| Version          | 3   |

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

#### **Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

#### **Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no

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## Safety Data Sheet Low Temperature Cement Set Enhancer D186

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Low Temperature Cement Set Enhancer D186  
**Product code** D186

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                                   |            |
|-----------------------------------|------------|
| Acute toxicity - Oral             | Category 4 |
| Serious eye damage/eye irritation | Category 1 |

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements



**Signal word**

DANGER

**Hazard Statements**

H302 - Harmful if swallowed

H318 - Causes serious eye damage

**Precautionary statements**

P270 - Do not eat, drink or smoke when using this product

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Supplementary precautionary statements**

P264 - Wash face, hands and any exposed skin thoroughly after handling

P330 - Rinse mouth

P391 - Collect spillage

**Contains**

Calcium nitrate

2,2' -oxydiethanol

Calcium Bromide

2,2'-Methyliminodiethanol

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name             | EC No     | CAS No     | Weight-% |
|---------------------------|-----------|------------|----------|
| Calcium nitrate           | 233-332-1 | 10124-37-5 | 10-30    |
| 2,2' -oxydiethanol        | 203-872-2 | 111-46-6   | 1-5      |
| Calcium Bromide           | 232-164-6 | 7789-41-5  | 1-5      |
| 2,2'-Methyliminodiethanol | 203-312-7 | 105-59-9   | 1-5      |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

## 4. First Aid Measures

### 4.1 First aid measures

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                              |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Never give anything by mouth to an unconscious person. |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Seek medical attention if irritation occurs.                  |
| <b>Eye Contact</b>  | Remove contact lenses, if worn. Immediately flush eyes with water for 15 minutes while holding eyelids open. Seek medical attention.                                |

### 4.2. Most important symptoms and effects, both acute and delayed

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

#### Symptoms

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

### 4.3 Indication of any immediate medical attention and special treatment needed

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## 5. Fire-Fighting Measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use extinguishing media appropriate for surrounding material.

#### Extinguishing media which must not be used for safety reasons

High volume water jet.

### 5.2. Special hazards arising from the substance or mixture

#### Unusual fire and explosion hazards

Thermal decomposition can lead to release of irritating gases and vapors.

#### Hazardous combustion products

Fire or high temperatures create: Ammonia, Nitrogen oxides (NO<sub>x</sub>), Carbon oxides (CO<sub>x</sub>).

### 5.3 Advice for firefighters

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## 6. Accidental Release Measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Wear protective gloves/clothing and eye/face protection. Avoid contact with eyes. Do not get on skin or clothing. Wash thoroughly after handling. See also section 8.

### 6.2 Environmental precautions

Prevent further leakage or spillage. The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

### 6.4 Reference to other sections

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

**Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

**Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Remove contaminated clothing

### 7.2 Conditions for safe storage, including any incompatibilities

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.   |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid contact with:<br>Acids Bases Strong reducing agents |
| <b>Storage class</b>                  | Chemical storage.  |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Component Information**

| Chemical Name             | Arabic                   | Australia                            | Egypt                                   |
|---------------------------|--------------------------|--------------------------------------|---|
| Calcium nitrate           | Not determined           | Not determined                       | Not determined                          |
| 2,2' -oxydiethanol        | Not determined           | 23ppmTWA<br>100mg/m <sup>3</sup> TWA | Not determined                          |
| Calcium Bromide           | Not determined           | Not determined                       | Not determined                          |
| 2,2'-Methyliminodiethanol | Not determined           | Not determined                       | Not determined                          |
| Chemical Name             | India                    | Indonesian                           | Japan                                   |
| Calcium nitrate           | Not determined           | Not determined                       | Not determined                          |
| 2,2' -oxydiethanol        | Not determined           | Not determined                       | Not determined                          |
| Calcium Bromide           | Not determined           | Not determined                       | Not determined                          |
| 2,2'-Methyliminodiethanol | Not determined           | Not determined                       | Not determined                          |
| Chemical Name             | Kazakhstan               | Kuwait                               | New Zealand                             |
| Calcium nitrate           | Not determined           | Not determined                       | Not determined                          |
| 2,2' -oxydiethanol        | 10 mg/m <sup>3</sup> MAC | Not determined                       | 23 ppm TWA<br>101 mg/m <sup>3</sup> TWA |
| Calcium Bromide           | Not determined           | Not determined                       | Not determined                          |
| 2,2'-Methyliminodiethanol | Not determined           | Not determined                       | Not determined                          |
| Chemical Name             | Malaysia                 | Philippines                          | Russia                                  |
| Calcium nitrate           | Not determined           | Not determined                       | Not determined                          |
| 2,2' -oxydiethanol        | Not determined           | Not determined                       | 10 mg/m <sup>3</sup> MAC                |
| Calcium Bromide           | Not determined           | Not determined                       | Not determined                          |
| 2,2'-Methyliminodiethanol | Not determined           | Not determined                       | Not determined                          |
| Chemical Name             | Thailand                 | Vietnam                              | Turkey                                  |
| Calcium nitrate           | Not determined           | Not determined                       | Not determined                          |
| 2,2' -oxydiethanol        | Not determined           | Not determined                       | Not determined                          |
| Calcium Bromide           | Not determined           | Not determined                       | Not determined                          |
| 2,2'-Methyliminodiethanol | Not determined           | Not determined                       | Not determined                          |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Local exhaust ventilation

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Impervious gloves made of: Nitrile PVC

Break through time >480 minutes

Glove thickness 0.4 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

#### Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor/acid gas protection (E, yellow) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

#### Hygiene Measures

Wash hands before breaks and immediately after handling the product



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | No information available |
| Odor           | None                     |
| Color          | Light green              |
| Odor threshold | Not applicable           |

| Property                     | Values                   | Remarks   |
|------------------------------|--------------------------|-----------|
| pH                           | 8 - 10                   |           |
| pH @ dilution                | No information available |           |
| Melting / freezing point     | < -21 °C / -7 °F         |           |
| Boiling point/range          | ~ 108 °C / 226 °F        |           |
| Flash point                  | No information available |           |
| Evaporation rate (BuAc =1)   | No information available |           |
| Flammability (solid, gas)    | Not applicable           |           |
| Flammability Limit in Air    |                          |           |
| Upper flammability limit     | Not applicable           |           |
| Lower flammability limit     | Not applicable           |           |
| Vapor pressure               | ~2 kPa                   | @ 25 °C   |
| Vapor density                | 1 (air = 1)              |           |
| Specific gravity             | 1.4                      |           |
| Bulk density                 | No information available |           |
| Relative density             | 1.4                      |           |
| Water solubility             | Soluble in water         |           |
| Solubility in other solvents | No information available |           |
| Autoignition temperature     | No information available |           |
| Decomposition temperature    | 538 °C / 1000 °F         |           |
| Kinematic viscosity          | No information available |           |
| Dynamic viscosity            | 2 mPa s                  | @ 15.5 °C |
| log Pow                      | No information available |           |
| Explosive properties         | No information available |           |
| Oxidizing properties         | No information available |           |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

**10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

None under normal processing.

**10.4 Conditions to avoid**

Do not allow liquid to evaporate. Dry material is a strong oxidizer.

**10.5 Incompatible materials**

Acids. Bases. Strong reducing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Vapors may irritate throat and respiratory system.              |
| <b>Eye contact</b>            | Causes serious eye damage.                                      |
| <b>Skin contact</b>           | Irritating to skin. Substance may cause slight skin irritation. |
| <b>Ingestion</b>              | Harmful if swallowed.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

**Toxicology data for the components**

| Chemical Name             | LD50 Oral             | LD50 Dermal              | LC50 Inhalation                      |
|---------------------------|-----------------------|--------------------------|--------------------------------------|
| Calcium nitrate           | No data available     | No data available        | No data available                    |
| 2,2'-oxydiethanol         | = 12565 mg/kg ( Rat ) | = 11890 mg/kg ( Rabbit ) | > 4600 mg/m <sup>3</sup> ( Rat ) 4 h |
| Calcium Bromide           | = 4100 mg/kg ( Rat )  | No data available        | No data available                    |
| 2,2'-Methyliminodiethanol | No data available     | No data available        | No data available                    |

|                          |   |
|--------------------------|---|
| <b>Sensitization</b>     | This product does not contain any components suspected to be sensitizing. |
| <b>Mutagenic effects</b> | This product does not contain any known or suspected mutagens.            |
| <b>Carcinogenicity</b>   | This product does not contain any known or suspected carcinogens.         |

|   |  |
|---|--|
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.           |
| <b>Routes of Exposure</b>                                 | Skin contact. Eye contact. Inhalation. Ingestion.                                    |
| <b>Routes of entry</b>                                    | Skin contact. Eye contact. Inhalation. Ingestion.                                    |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.  
The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name             | Toxicity to fish                           | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|---------------------------|--|--------------------------|---|
| Calcium nitrate           | No information available                   | No information available | No information available                            |
| 2,2' -oxydiethanol        | = 75200 mg/L LC50 Pimephales promelas 96 h | No information available | = 84000 mg/L EC50 Daphnia magna 48 h                |
| Calcium Bromide           | No information available                   | No information available | No information available                            |
| 2,2'-Methyliminodiethanol | No information available                   | No information available | No information available                            |

### 12.2 Persistence and degradability

Not readily biodegradable.

### 12.3 Bioaccumulative potential

Bioaccumulation is unlikely.

### 12.4 Mobility

#### Mobility

The product is water soluble, and may spread in water systems.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods****Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

**14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group Not regulated

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable



**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Australian Standard for the Uniform Scheduling of Drugs and Poisons

2,2'-oxydiethanol  
Schedule 6  
Schedule 5  
Calcium Bromide  
Schedule 4

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].

National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)

The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

**International inventories**

|                     |                 |
|---------------------|-----------------|
| USA (TSCA)          | Complies        |
| Canada (DSL)        | Complies        |
| Philippines (PICCS) | Does not comply |
| Japan (ENCS)        | Complies        |
| China (IECSC)       | Complies        |
| Australia (AICS)    | Complies        |
| Korean (KECL)       | Complies        |
| New Zealand (NZIoC) | Complies        |

**16. Other Information**

|                  |   |
|------------------|---|
| Prepared by      | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Poh Yue Cheong |
| Supersedes Date: | 10-Feb-2016   |
| Revision date    | 23-Aug-2019   |

**Version** 8**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made. Updated according to GHS/CLP.**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 3 |
| Flammability    | 1 |
| Physical hazard | 0 |
| PPE             | X |

**Disclaimer**

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## Safety Data Sheet Low Temperature Dispersant D230

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Low Temperature Dispersant D230  
**Product code** D230

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
Schlumberger Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
Level 5, 10 Telethon Avenue  
Perth WA 6000

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518, Canada 001 613 996 6666

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Contains No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
| <b>Symptoms</b>       |  |
| <b>Inhalation</b>     | Please see Section 11. Toxicological Information for further information.  |
| <b>Ingestion</b>      | Please see Section 11. Toxicological Information for further information.  |
| <b>Skin contact</b>   | Please see Section 11. Toxicological Information for further information.  |
| <b>Eye contact</b>    | Please see Section 11. Toxicological Information for further information.  |

**4.3 Indication of any immediate medical attention and special treatment needed****Notes to physician**

Treat symptomatically.

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

Heating of containers may cause pressure rise, with risk of bursting.

**Hazardous combustion products**Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>).**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from freezing.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** The product does not contain any hazardous materials with occupational exposure limits established.  
No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation

#### Personal protective equipment

**Eye protection** Eye protection must conform to standard EN 166. Tightly fitting safety goggles. Safety glasses with side-shields.

**Hand protection** Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training.  
Use protective gloves made of: Butyl rubber, Nitrile rubber.  
Be aware that liquid may penetrate the gloves. Frequent change is advisable.

**Respiratory protection** No personal respiratory protective equipment normally required. In case of insufficient ventilation, wear suitable respiratory equipment. Respirator with combination filter for vapour/particulate (EN 141) Type A/P2. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection** Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

**9. Physical and Chemical Properties****9.1 Information on basic physical and chemical properties**

|                       |                  |
|-----------------------|------------------|
| <b>Physical state</b> | Liquid           |
| <b>Appearance</b>     | Aqueous solution |
| <b>Odor</b>           | Characteristic   |
| <b>Color</b>          | Colorless        |

| <b>Property</b>                                | <b>Values</b>            | <b>Remarks</b> |
|--|--------------------------|----------------|
| <b>pH</b>                                      | 3.5 - 5.5                |                |
| <b>pH @ dilution</b>                           | No information available |                |
| <b>Melting / freezing point</b>                | ~0 °C / ~32 °F           |                |
| <b>Boiling point/range</b>                     | No information available |                |
| <b>Flash point</b>                             | Not applicable           |                |
| <b>Evaporation rate (BuAc =1)</b>              | No information available |                |
| <b>Flammability</b>                            | Not applicable           |                |
| <b>Explosion limits:</b>                       |                          |                |
| Upper explosion limit                          | No information available |                |
| Lower explosion limit                          | No information available |                |
| <b>Vapor pressure</b>                          | No information available |                |
| <b>Relative Vapor Density</b>                  | No information available |                |
| <b>Specific gravity</b>                        | No information available |                |
| <b>Bulk density</b>                            | No information available |                |
| <b>Water solubility</b>                        | Dispersible              |                |
| <b>Solubility in other solvents</b>            | No information available |                |
| <b>Autoignition temperature</b>                | No information available |                |
| <b>Decomposition temperature</b>               | No information available |                |
| <b>Kinematic viscosity</b>                     | No information available |                |
| <b>Dynamic viscosity</b>                       | No information available |                |
| <b>Partition Coefficient (n-octanol/water)</b> | No information available |                |
| <b>Density and/or Relative Density</b>         | 1.006 - 1.046 g/ml       |                |
| <b>Explosive properties</b>                    | Not applicable           |                |
| <b>Oxidizing properties</b>                    | Not applicable           |                |

**9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Keep away from direct sunlight. Protect from freezing.

### 10.5 Incompatible materials

No materials to be especially mentioned.

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Inhalation

Inhalation of vapors in high concentration may cause irritation of respiratory system.

##### Eye contact

May cause slight irritation.

##### Skin contact

Prolonged contact may cause redness and irritation.

##### Ingestion

Ingestion may cause stomach discomfort.

##### Unknown acute toxicity

Not applicable.

#### Sensitization

This product does not contain any components suspected to be sensitizing.

#### Mutagenic effects

This product does not contain any known or suspected mutagens.

#### Carcinogenicity

This product does not contain any known or suspected carcinogens.

#### Reproductive toxicity

This product does not contain any known or suspected reproductive hazards.

#### Routes of Exposure

None known.

#### Routes of entry

No route of entry noted.



**Specific target organ toxicity - Single exposure** Not classified  
**Specific target organ toxicity - Repeated exposure** Not classified.

**Aspiration hazard** Not applicable.

### **11.2 Information on other hazards**

**Other information** Key literature references and sources for data. See Section 16 for more information.

## **12. Ecological information**

### **12.1 Toxicity**

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### **12.2 Persistence and degradability**

The organic portion of this material is not biodegradable.

### **12.3 Bioaccumulative potential**

Does not bioaccumulate.

### **12.4 Mobility**

**Mobility**

Dispersible.

**Mobility in soil**

No information available.

### **12.5 Other adverse effects**

None known.

### **12.6 Other information.**

Key literature references and sources for data. See Section 16 for more information.

## **13. Disposal considerations**

**13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

**14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

**14.5 Environmental hazard**

No

**Marine pollutant**

No

**14.6 Special precautions**

Not applicable

**14.7 Maritime transport in bulk according to IMO instruments**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**Safe Work Australia.**

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG) ADG Code – Australian Dangerous Goods Code

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)  
The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|  |                 |
|--|-----------------|
| USA (TSCA)                                 | Complies        |
| Canada (DSL)                               | Complies        |
| Philippines (PICCS)                        | Does not comply |
| Japan (ENCS)                               | Does not comply |
| China (IECSC)                              | Does not comply |
| Australia (AICS)                           | Complies        |
| Korean (KECL)                              | Does not comply |
| New Zealand (NZIoC)                        | Complies        |
| Eurasian Economic Union: Russian Inventory | Complies        |

## 16. Other Information

**Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam

**Supersedes Date:** 05-Apr-2016

**Revision date** 23-Apr-2021

**Version** 5

**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.

#### **Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

#### **HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 0 |
| Flammability    | 0 |
| Physical hazard | 0 |
| PPE             | B |

#### **Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness

of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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## Safety Data Sheet Low-Temperature Liquid Dispersant D145A

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Low-Temperature Liquid Dispersant D145A  
**Product code** D145A

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518, Canada 001 613 996 6666

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

##### Health hazards

|                 |             |
|-----------------|-------------|
| Carcinogenicity | Category 1B |
|-----------------|-------------|

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

**Signal word**

DANGER

**Hazard Statements**

H350 - May cause cancer

**Precautionary statements**

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

**Contains**

Formaldehyde (impurity)

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Hazardous according to the criteria of NOHSC.

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name           | EC No     | CAS No  | Weight-% |
|-------------------------|-----------|---------|----------|
| Formaldehyde (impurity) | 200-001-8 | 50-00-0 | < 0.2    |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

Note B: Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations.

Note D: Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed in Part 3.

**4. First Aid Measures****4.1 First aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

|                     |   |
|---------------------|---|
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.                                 |
| <b>Skin contact</b> | Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Seek medical attention if irritation occurs.  |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues. |

#### **4.2. Most important symptoms and effects, both acute and delayed**

##### **Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

#### **4.3 Indication of any immediate medical attention and special treatment needed**

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## **5. Fire-Fighting Measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Water spray, dry chemical, carbon dioxide (CO<sub>2</sub>), or foam.

#### **Extinguishing media which must not be used for safety reasons**

Do not use a solid water stream as it may scatter and spread fire.

### **5.2. Special hazards arising from the substance or mixture**

#### **Unusual fire and explosion hazards**

None known.

#### **Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>), Nitrogen oxides (NO<sub>x</sub>), Harmful organic chemical fumes.

### **5.3 Advice for firefighters**

#### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

#### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

## **6. Accidental Release Measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas. Do not get on skin or clothing. Wash thoroughly after handling. Use personal protective

equipment. Do not breathe vapors or spray mist. See also section 8.

## 6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

### Methods for cleaning up

Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations (see Section 13).

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Avoid spills and splashing during use. Do not breathe vapors or spray mist. Persons susceptible to allergic reactions should not handle this product.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid excessive heat for prolonged periods of time. Protect from freezing. Avoid contact with: Strong acids, Strong bases, Strong oxidizing agents, Strong reducing agents.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

### Component Information

| Chemical Name           | Arabic                                     | Australia  | Egypt  |
|-------------------------|--|--|--|
| Formaldehyde (impurity) | 0.3 ppm STEL<br>0.4 mg/m <sup>3</sup> STEL | 2ppmSTEL<br>2.5mg/m <sup>3</sup> STEL<br>1ppmTWA<br>1.2mg/m <sup>3</sup> TWA | 0.3 ppm Ceiling<br>0.37 mg/m <sup>3</sup> Ceiling<br>Suspected Human Carcinogen<br>0.3 ppm TWA |
| Chemical Name           | India                                      | Indonesian   | Japan  |
| Formaldehyde (impurity) | 2 ppm STEL                                 | 0.3 ppm STEL   | 0.2 ppm Ceiling  |



|                         |  |   |  |
|-------------------------|--|---|--|
|                         | 3 mg/m <sup>3</sup> STEL<br>1.0 ppm TWA<br>1.5 mg/m <sup>3</sup> TWA | 0.3 mg/m <sup>3</sup> STEL                            | 0.24 mg/m <sup>3</sup> Ceiling<br>Group 2 airway sensitizer<br>Group 1 skin sensitizer<br>0.1 ppm ACL<br>0.1 ppm OEL<br>0.12 mg/m <sup>3</sup> OEL |
| <b>Chemical Name</b>    | <b>Kazakhstan</b>  | <b>Kuwait</b>   | <b>New Zealand</b>   |
| Formaldehyde (impurity) | 0.5 mg/m <sup>3</sup> MAC  | 0.016 ppm TWA<br>0.1 ppm STEL                         | 0.5 ppm TWA<br>0.33 ppm TWA<br>sensitizer<br>Confirmed carcinogen<br>1 ppm Ceiling   |
| <b>Chemical Name</b>    | <b>Malaysia</b>  | <b>Philippines</b>                                    | <b>Russia</b>  |
| Formaldehyde (impurity) | 0.3 ppm Ceiling<br>0.37 mg/m <sup>3</sup> Ceiling                    | Not determined  | 0.5 mg/m <sup>3</sup> MAC (vapor)  |
| <b>Chemical Name</b>    | <b>Thailand</b>  | <b>Vietnam</b>  | <b>Turkey</b>  |
| Formaldehyde (impurity) | 2 ppm STEL<br>0.75 ppm TWA   | 0.5 mg/m <sup>3</sup> TWA<br>1 mg/m <sup>3</sup> STEL | Not determined   |

**Notes**

No biological limit allocated

**8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**Engineering Controls**

Ensure adequate ventilation Keep airborne concentrations below exposure limits

**Personal protective equipment****Eye protection**

Use eye protection according to EN 166, designed to protect against liquid splashes Tightly fitting safety goggles Safety glasses with side-shields

**Hand protection**

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Impervious gloves made of: Butyl rubber Nitrile

Break through time &gt;480 minutes

Glove thickness 0.7 mm

Be aware that liquid may penetrate the gloves. Frequent change is advisable.

**Respiratory protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection**

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before breaks and immediately after handling the product Remove and wash contaminated clothing before re-use

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

**9. Physical and Chemical Properties**

**9.1 Information on basic physical and chemical properties**

|                |                          |
|----------------|--------------------------|
| Physical state | Liquid                   |
| Appearance     | Clear                    |
| Odor           | Characteristic           |
| Color          | No information available |
| Odor threshold | Not applicable           |

| <u>Property</u>              | <u>Values</u>              | <u>Remarks</u> |
|------------------------------|----------------------------|----------------|
| pH                           | 9.0 - 11.4                 |                |
| pH @ dilution                | No information available   | Not applicable |
| Melting / freezing point     | 0 °C / 32 °F               |                |
| Boiling point/range          | ~ 100 °C / 212 °F          |                |
| Flash point                  | Non-flammable              |                |
| Evaporation rate (BuAc =1)   | No information available   |                |
| Flammability (solid, gas)    | Not applicable             |                |
| Flammability Limit in Air    |                            |                |
| Upper flammability limit     | Not applicable             |                |
| Lower flammability limit     | Not applicable             |                |
| Vapor pressure               | No information available   |                |
| Vapor density                | No information available   |                |
| Specific gravity             | No information available   |                |
| Bulk density                 | No information available   |                |
| Relative density             | No information available   |                |
| Water solubility             | Miscible with water.       |                |
| Solubility in other solvents | No information available   |                |
| Autoignition temperature     | No information available   |                |
| Decomposition temperature    | No information available   |                |
| Kinematic viscosity          | 30 - 60 mm <sup>2</sup> /s | @ 20 °C        |
| Dynamic viscosity            | No information available   |                |
| log Pow                      | No information available   |                |
| Explosive properties         | No information available   |                |
| Oxidizing properties         | No information available   |                |

**9.2 Other information**

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | None                     |
| Density          | 1.24 - 1.26 g/ml @ 20 °C |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Avoid excessive heat for prolonged periods of time. Protect from freezing.

#### **10.5 Incompatible materials**

Strong acids. Strong bases. Strong oxidizing agents. Strong reducing agents.

#### **10.6 Hazardous decomposition products**

See Section 5.2.

## **11. Toxicological Information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

|                               |   |
|-------------------------------|---|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system.    |
| <b>Eye contact</b>            | May cause slight irritation.  |
| <b>Skin contact</b>           | Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.   |
| <b>Unknown acute toxicity</b> | Not applicable.   |

#### **Toxicology data for the components**

| <b>Chemical Name</b>    | <b>LD50 Oral</b>    | <b>LD50 Dermal</b>     | <b>LC50 Inhalation</b>   |
|-------------------------|---------------------|------------------------|--------------------------|
| Formaldehyde (impurity) | = 100 mg/kg ( Rat ) | = 270 mg/kg ( Rabbit ) | = 0.578 mg/L ( Rat ) 4 h |

|   |  |
|---|--|
| <b>Sensitization</b>                                      | EUH208 - Contains ( Formaldehyde ). May produce an allergic reaction.  |
| <b>Mutagenic effects</b>                                  | Contains an known or suspected mutagen.  |
| <b>Carcinogenicity</b>                                    | Contains a known or suspected carcinogen. Formaldehyde is listed by IARC in Group 1 as carcinogenic to humans. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.                                     |
| <b>Routes of Exposure</b>                                 | Inhalation. Skin contact. Eye contact.   |
| <b>Routes of entry</b>                                    | Inhalation. Skin contact. Eye contact.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.                           |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name           | Toxicity to fish  | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates                     |
|-------------------------|---|--------------------------|---|
| Formaldehyde (impurity) | 23.2 - 29.7 mg/L LC50 Pimephales promelas 96 h 100 - 136 mg/L LC50 Oncorhynchus mykiss 96 h 0.032 - 0.226 mL/L LC50 Oncorhynchus mykiss 96 h = 41 mg/L LC50 Brachydanio rerio 96 h = 1510 µg/L LC50 Lepomis macrochirus 96 h 22.6 - 25.7 mg/L LC50 Pimephales promelas 96 h | No information available | 11.3 - 18 mg/L EC50 Daphnia magna 48 h = 2 mg/L LC50 Daphnia magna 48 h |

### 12.2 Persistence and degradability

See component information below.

| Chemical Name           | Persistence and degradability |
|-------------------------|-------------------------------|
| Formaldehyde (impurity) | Rapidly biodegradable         |

### 12.3 Bioaccumulative potential

See component information below.

| Chemical Name           | Bioaccumulation                      |
|-------------------------|--------------------------------------|
| Formaldehyde (impurity) | Does not bioaccumulate log Pow =0.35 |

### 12.4 Mobility

#### Mobility

Soluble in water. See component information below.

| Chemical Name           | Mobility          |
|-------------------------|-------------------|
| Formaldehyde (impurity) | Miscible in water |

#### Mobility in soil

See component information below.

| Chemical Name           | Mobility in soil   |
|-------------------------|--|
| Formaldehyde (impurity) | Henry's Law Constant 0.034 (in Pa m <sup>3</sup> /mol) @ 25 °C |

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

#### Australian Standard for the Uniform Scheduling of Drugs and Poisons

Formaldehyde (impurity)  
Schedule 6

New Zealand Hazard Classification Classified

HSNO approval no. HSR002512

Group number 6.7A

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 [P.U.(A) 310/2013] (CLASS Regulations)  
The Industry Code of Practice on Chemical Classification and Hazard Communication 2014 [P.U. (B) 128/2014] (ICOP)

#### International inventories

|  |          |
|--|----------|
| USA (TSCA)                                 | Complies |
| Canada (DSL)                               | Complies |
| Philippines (PICCS)                        | Complies |
| Japan (ENCS)                               | Complies |
| China (IECSC)                              | Complies |
| Australia (AICS)                           | Complies |
| Korean (KECL)                              | Complies |
| New Zealand (NZIoC)                        | Complies |
| Eurasian Economic Union: Russian Inventory | Complies |

## 16. Other Information

Prepared by Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Poh Yue Cheong

Supersedes Date: 03-Mar-2016

Revision date 17-Mar-2021

Version 3

This SDS has been revised in the following section(s) All sections There have been changes with regard to classification.

Key literature references and sources for data

[www.ChemADVISOR.com](http://www.ChemADVISOR.com)  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

#### **Disclaimer**

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## Safety Data Sheet Low-Temperature Liquid Extender D155

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Low-Temperature Liquid Extender D155  
**Product code** D155

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None



**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Fumed silica

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients****3.1 Substances**

Not applicable

**3.2 Mixtures**

| Chemical Name | EC No     | CAS No     | Weight-% |
|---------------|-----------|------------|----------|
| Fumed silica  | 273-761-1 | 69012-64-2 | 30-60    |

**Comments**

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures****4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                   |   |
|-------------------|---|
| <b>Inhalation</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>  | Please see Section 11. Toxicological Information for further information. |

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

**Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

**Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

**Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

#### **6.3 Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

#### **6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

|                                |   |
|--------------------------------|---|
| Technical measures/precautions | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.  |
| Storage precautions            | Keep containers tightly closed in a dry, cool and well-ventilated place. React with hydrofluoric acid (HF) forming toxic gas (SiF <sub>4</sub> ). Store above 0°C. Protect from freezing. |
| Storage class                  | Chemical storage.   |
| Packaging materials            | Use specially constructed containers only.  |

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

|                 |  |
|-----------------|--|
| Exposure limits | Because this product is a liquid, the dust-related Workplace Exposure Limits for the components do not apply.<br>No biological limit allocated |
|-----------------|--|

#### Component Information

| Chemical Name | Arabic   | Australia               | Egypt                   |
|---------------|--|-------------------------|-------------------------|
| Fumed silica  | 10 mg/m <sup>3</sup> TWA<br>3 mg/m <sup>3</sup> TWA<br>2 mg/m <sup>3</sup> TWA | Not determined          | Not determined          |
| Chemical Name | India  | Indonesian              | Japan                   |
| Fumed silica  | Not determined   | 2 mg/m <sup>3</sup> TWA | Not determined          |
| Chemical Name | Kazakhstan   | Kuwait                  | New Zealand             |
| Fumed silica  | Not determined   | Not determined          | 2 mg/m <sup>3</sup> TWA |
| Chemical Name | Malaysia   | Philippines             | Russia                  |
| Fumed silica  | 2 mg/m <sup>3</sup> TWA  | Not determined          | Not determined          |
| Chemical Name | Thailand   | Vietnam                 | Turkey                  |
| Fumed silica  | Not determined   | Not determined          | Not determined          |

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation. Mechanical ventilation or local exhaust ventilation is required.

**Personal protective equipment****Eye protection**

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

**Hand protection**

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Impervious gloves made of: Neoprene Nitrile Rubber  
Break through time >480 minutes  
Glove thickness  $\geq 0.4$  mm

**Respiratory protection**

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
No personal respiratory protective equipment normally required In case of inadequate ventilation wear respiratory protection Respirator with combination filter for vapor/particulate Type A/P2 At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**Skin and body protection**

Wear suitable protective clothing Eye wash and emergency shower must be available at the work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use

**8.2.3 Environmental exposure controls****Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Liquid         |
| <b>Appearance</b>     | Slurry         |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | Gray           |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | 5-7                      |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | No information available |                |
| Boiling point/range          | No information available |                |
| Flash point                  | No information available |                |
| Evaporation rate (BuAc =1)   | Similar to water.        |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | No information available |                |
| Vapor density                | No information available |                |
| Specific gravity             | 1.4                      | 20 °C          |
| Bulk density                 | No information available |                |
| Relative density             | No information available |                |
| Water solubility             | Insoluble in water       |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |

|                           |                          |         |
|---------------------------|--------------------------|---------|
| Decomposition temperature | No information available |         |
| Kinematic viscosity       | No information available |         |
| Dynamic viscosity         | 70 mPa s                 | @ 20 °C |
| log Pow                   | No information available |         |

|                      |                |
|----------------------|----------------|
| Explosive properties | Not applicable |
| Oxidizing properties | None known.    |

## 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | 50                       |
| Density          | No information available |

### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## 10. Stability and Reactivity

### 10.1 Reactivity

React with hydrofluoric acid (HF) forming toxic gas (SiF<sub>4</sub>).

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### Hazardous polymerization

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Protect from freezing. Keep at temperatures above 0°C.

### 10.5 Incompatible materials

Hydrofluoric acid (HF).

### 10.6 Hazardous decomposition products

See Section 5.2.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute toxicity

|                     |   |
|---------------------|---|
| Product information | Because this product is a liquid, under normal and recommended use, exposure to Respirable Crystalline Silica will not apply. |
|---------------------|---|

|            |  |
|------------|--|
| Inhalation | Breathing dried dust or spray mist may irritate respiratory tract. |
|------------|--|

|             |                              |
|-------------|------------------------------|
| Eye contact | May cause slight irritation. |
|-------------|------------------------------|

|              |   |
|--------------|---|
| Skin contact | Prolonged contact may cause redness and irritation. |
|--------------|---|

|           |   |
|-----------|---|
| Ingestion | Ingestion may cause stomach discomfort. |
|-----------|---|

Unknown acute toxicity Not applicable.

**Toxicology data for the components**

| Chemical Name | LD50 Oral      | LD50 Dermal    | LC50 Inhalation   |
|---------------|----------------|----------------|-------------------|
| Fumed silica  | >5000 mg/kg bw | >5000 mg/kg bw | No data available |

**Sensitization** This product does not contain any components suspected to be sensitizing.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** This product does not contain any known or suspected carcinogens.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards.

**Routes of Exposure** Skin contact. Eye contact. Inhalation.

**Routes of entry** No route of entry noted.

**Specific target organ toxicity - Single exposure** Not classified

**Specific target organ toxicity - Repeated exposure** Not classified.

**Aspiration hazard** Not applicable.

**Other information** Key literature references and sources for data. See Section 16 for more information.

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Listed on PLONOR list of OSPAR

**Toxicity to algae**

This product is not considered toxic to algae.

**Toxicity to fish**

This product is not considered toxic to fish.

**Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

**Toxicology data for the components**

| Chemical Name | Toxicity to fish | Toxicity to algae   | Toxicity to daphnia and other aquatic invertebrates |
|---------------|------------------|---------------------|---|
| Fumed silica  | LC50>100 mg/l    | LC50>323 mg/l (72h) | LC50>1003 mg/l                                      |

### 12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

**12.3 Bioaccumulative potential**

Not Applicable - Inorganic chemical.

**12.4 Mobility****Mobility**

Insoluble in water.

**Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

**12.6 Other adverse effects.**

None known.

**12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

**13. Disposal considerations****13.1 Waste treatment methods****Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

**14. Transport information****14.1. UN number**

Not regulated

**14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

**14.3 Hazard class(es)**

|                                 |               |
|---------------------------------|---------------|
| ADR/RID/ADN/ADG Hazard class    | Not regulated |
| IMDG/ANTAQ Hazard class         | Not regulated |
| ICAO/ANAC Hazard class/division | Not regulated |

**14.4 Packing group**

|                               |               |
|-------------------------------|---------------|
| ADR/RID/ADN/ADG Packing group | Not regulated |
| IMDG/ANTAQ Packing group      | Not regulated |
| ICAO/ANAC Packing group       | Not regulated |

**14.5 Environmental hazard**

No

**14.6 Special precautions**

Not applicable

**14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

**15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**International inventories**

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

**16. Other Information**

|             |   |
|-------------|---|
| Prepared by | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel |
|-------------|---|

|                  |             |
|------------------|-------------|
| Supersedes Date: | 12-Feb-2016 |
|------------------|-------------|

|               |             |
|---------------|-------------|
| Revision date | 13-Nov-2019 |
|---------------|-------------|

|         |   |
|---------|---|
| Version | 4 |
|---------|---|

|   |   |
|---|---|
| This SDS has been revised in the following section(s) | All sections No changes with regard to classification have been made. |
|---|---|

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information



National occupational exposure limits

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## Safety Data Sheet M-I BAR\* (All Grades)

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** M-I BAR\* (All Grades)  
**Product code** PID938  
**Synonyms** M-I BAR\*, M-I BAR\* FINE, M-I BAR\* ULTRA FINE

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Weighting agent.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified  
**Environmental hazards** Not classified  
**Physical Hazards** Not classified

## 2.2 Label elements

### Signal word

None

### Hazard Statements

This product is not classified as hazardous therefore no (H) hazard statements assigned.

### Precautionary statements

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

### Contains

Barite

Crystalline silica (impurity)

## 2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

Thermal decomposition can lead to release of irritating gases and vapors

### Australian statement of hazardous/dangerous nature

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

## 3. Composition/information on Ingredients

### 3.1 Substances

| Chemical Name                 | EC No     | CAS No     | Weight-% |
|-------------------------------|-----------|------------|----------|
| Barite                        | 236-664-5 | 13462-86-7 | 60-100   |
| Crystalline silica (impurity) | 238-878-4 | 14808-60-7 | 1-5      |

### 3.2 Mixtures

Not applicable

### Comments

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

## 4. First Aid Measures

### 4.1 First aid measures

#### Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

#### Ingestion

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

#### Skin contact

Wash skin thoroughly with soap and water. Get medical attention if irritation persists.

#### Eye Contact

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.

#### **4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### **Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing agent suitable for type of surrounding fire.

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8. Do not breathe dust. Material becomes slippery when wet. Use caution if wet.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

### Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent further leakage or spillage if safe to do so.

### Methods for cleaning up

Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Material becomes slippery when wet. Use caution if wet.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

|                                       |  |
|---------------------------------------|--|
| <b>Technical measures/precautions</b> | Ensure adequate ventilation. Keep airborne concentrations below exposure limits.                         |
| <b>Storage precautions</b>            | Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid wet and humid conditions. |
| <b>Storage class</b>                  | Chemical storage.  |
| <b>Packaging materials</b>            | Use specially constructed containers only.   |

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

**Exposure limits** No biological limit allocated

### Component Information

| Chemical Name                 | Arabic                    | Australia                                 | Egypt   |
|-------------------------------|---------------------------|---|---|
| Barite                        | Not determined            | Not determined                            | Not determined                                    |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA | 0.1 mg/m <sup>3</sup> TWA respirable dust | Not determined                                    |
| Chemical Name                 | India                     | Indonesian                                | Japan   |
| Barite                        | Not determined            | Not determined                            | Not determined                                    |
| Crystalline silica (impurity) | Not determined            | 0.1 mg/m <sup>3</sup> TWA                 | Not determined                                    |
| Chemical Name                 | Kazakhstan                | Kuwait                                    | New Zealand                                       |
| Barite                        | 6 mg/m <sup>3</sup> MAC   | Not determined                            | Not determined                                    |
| Crystalline silica (impurity) | 1 mg/m <sup>3</sup> MAC   | Not determined                            | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen |
| Chemical Name                 | Malaysia                  | Philippines                               | Russia  |

|                               |                             |                |  |
|-------------------------------|-----------------------------|----------------|--|
| Barite                        | Not determined              | Not determined | 6 mg/m <sup>3</sup> TWA<br>Fibrogenic substance 0233   |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | Not determined | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance<br>glass; regulated under Quartz 1123,<br>1124 |
| <b>Chemical Name</b>          | <b>Thailand</b>             | <b>Vietnam</b> | <b>Turkey</b>  |
| Barite                        | Not determined              | Not determined | Not determined   |
| Crystalline silica (impurity) | 0.025 mg/m <sup>3</sup> TWA | Not determined | Not determined   |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Safety glasses with side-shields Tightly fitting safety goggles

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Neoprene Nitrile PVC Frequent change is advisable

#### Respiratory protection

In case of inadequate ventilation wear respiratory protection Suitable mask with particle  
filter P3 (European Norm 143) At work in confined or poorly ventilated spaces, respiratory  
protection with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

#### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



### 8.2.3 Environmental exposure controls

#### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |                |
|-----------------------|----------------|
| <b>Physical state</b> | Solid          |
| <b>Appearance</b>     | Powder Dust    |
| <b>Odor</b>           | Odorless       |
| <b>Color</b>          | Tan - Gray     |
| <b>Odor threshold</b> | Not applicable |

| <u>Property</u>              | <u>Values</u>  | <u>Remarks</u> |
|------------------------------|--|----------------|
| pH                           | Not applicable   |                |
| pH @ dilution                | No information available                                   |                |
| Melting / freezing point     | No information available                                   |                |
| Boiling point/range          | No information available                                   |                |
| Flash point                  | Not applicable   |                |
| Evaporation rate (BuAc =1)   | No information available                                   |                |
| Flammability (solid, gas)    | Not applicable   |                |
| Flammability Limit in Air    |  |                |
| Upper flammability limit     | Not applicable   |                |
| Lower flammability limit     | Not applicable   |                |
| Vapor pressure               | No information available                                   |                |
| Vapor density                | No information available                                   |                |
| Specific gravity             | 4.2 g/cm <sup>3</sup> (minimum)                            |                |
| Bulk density                 | 1.714-2.162 kg/m <sup>3</sup> / 107-135 lb/ft <sup>3</sup> |                |
| Relative density             | No information available                                   |                |
| Water solubility             | Insoluble in water   |                |
| Solubility in other solvents | No information available                                   |                |
| Autoignition temperature     | No information available                                   |                |
| Decomposition temperature    | No information available                                   |                |
| Kinematic viscosity          | No information available                                   |                |
| Dynamic viscosity            | No information available                                   |                |
| log Pow                      | No information available                                   |                |
| Explosive properties         | Not applicable   |                |
| Oxidizing properties         | No information available                                   |                |

#### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

#### Comments

The data listed above are typical physical and chemical properties and should not be construed as product specification.

## **10. Stability and Reactivity**

### 10.1 Reactivity

No specific reactivity hazards associated with this product.

### 10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

### 10.3 Possibility of Hazardous Reactions

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### 10.4 Conditions to avoid

Avoid dust formation. Avoid wet and humid conditions.

### 10.5 Incompatible materials

No materials to be especially mentioned.

## **10.6 Hazardous decomposition products**

See Section 5.2.

# **11. Toxicological Information**

## **11.1 Information on toxicological effects**

### **Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Product information</b>    | This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis.<br><br>Respirable quartz <0.3% . Report number: N0600517. |
| <b>Inhalation</b>             | Inhalation of dust in high concentration may cause irritation of respiratory system.   |
| <b>Eye contact</b>            | Dust may cause mechanical irritation.  |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.  |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

### **Toxicology data for the components**

| <b>Chemical Name</b>          | <b>LD50 Oral</b>      | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|-------------------------------|-----------------------|--------------------|------------------------|
| Barite                        | > 15000 mg/kg ( Rat ) | No data available  | No data available      |
| Crystalline silica (impurity) | = 500 mg/kg ( Rat )   | No data available  | No data available      |

|   |   |
|---|---|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.                                 |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.  |
| <b>Carcinogenicity</b>                                    | Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.                                |
| <b>Routes of Exposure</b>                                 | Inhalation.   |
| <b>Routes of entry</b>                                    | Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified  |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.   |
| <b>Aspiration hazard</b>                                  | Not applicable.   |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.                      |



## 12. Ecological Information

### 12.1 Toxicity

Listed on PLONOR list of OSPAR

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Toxicity to algae

This product is not considered toxic to algae.

#### Toxicity to fish

This product is not considered toxic to fish.

#### Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates.

#### Toxicology data for the components

| Chemical Name                 | Toxicity to fish                                 | Toxicity to algae        | Toxicity to daphnia and other aquatic invertebrates |
|-------------------------------|--|--------------------------|---|
| Barite                        | No information available                         | No information available | No information available                            |
| Crystalline silica (impurity) | LC50 Danio rerio (zebra fish) : > 10000 mg/l 96h | EC50: > 1000 mg/l 72h    | LC50 Daphnia magna (Water flea): > 10000 mg/l 24h   |

### 12.2 Persistence and degradability

Product is not biodegradable. See component information below.

| Chemical Name                 | Persistence and degradability |
|-------------------------------|-------------------------------|
| Barite                        | Inorganic compound            |
| Crystalline silica (impurity) | Inorganic compound            |

### 12.3 Bioaccumulative potential

Does not bioaccumulate. See component information below.

| Chemical Name                 | Bioaccumulation                |
|-------------------------------|--------------------------------|
| Barite                        | Product/Substance is inorganic |
| Crystalline silica (impurity) | Product/Substance is inorganic |

### 12.4 Mobility

#### Mobility

Insoluble in water. See component information below.

| Chemical Name                 | Mobility           |
|-------------------------------|--------------------|
| Barite                        | Insoluble in water |
| Crystalline silica (impurity) | Insoluble in water |

#### Mobility in soil

See component information below.

| Chemical Name                 | Mobility in soil               |
|-------------------------------|--------------------------------|
| Barite                        | Not expected to adsorb on soil |
| Crystalline silica (impurity) | Not expected to adsorb on soil |

#### **12.5 Results of PBT and vPvB assessment**

Not classified as PBT/vPvB by current EU criteria.

#### **12.6 Other adverse effects.**

None known.

#### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### **13.1 Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### **14.1. UN number**

Not regulated

#### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

#### **14.3 Hazard class(es)**

**ADR/RID/ADN/ADG Hazard class** Not regulated  
**IMDG/ANTAQ Hazard class** Not regulated  
**ICAO/ANAC Hazard class/division** Not regulated

#### **14.4 Packing group**

**ADR/RID/ADN/ADG Packing group** Not regulated  
**IMDG/ANTAQ Packing group** Not regulated  
**ICAO/ANAC Packing group** Not regulated

#### **14.5 Environmental hazard**

No

#### **14.6 Special precautions**

Not applicable

#### **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of:  
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**  
No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required

**Group number** Not required

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

**National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].**

**Safe Work Australia.**

**Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).**

**Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)**

#### International inventories

|                            |          |
|----------------------------|----------|
| <b>USA (TSCA)</b>          | Complies |
| <b>Canada (DSL)</b>        | Complies |
| <b>Philippines (PICCS)</b> | Complies |
| <b>Japan (ENCS)</b>        | Complies |
| <b>China (IECSC)</b>       | Complies |
| <b>Australia (AICS)</b>    | Complies |
| <b>Korean (KECL)</b>       | Complies |
| <b>New Zealand (NZIoC)</b> | Complies |

CAS Number 7727-43-7 can be used to identify the substance mentioned in Section 3 for the International Inventories.

## 16. Other Information

|  |  |
|--|--|
| <b>Prepared by</b>   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse |
| <b>Supersedes Date:</b>                                      | 02-Sep-2015  |
| <b>Revision date</b>   | 05-Mar-2019  |
| <b>Version</b>   | 11   |
| <b>This SDS has been revised in the following section(s)</b> | All sections No changes with regard to classification have been made.                |

**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits

**HMIS classification**

|                 |    |
|-----------------|----|
| Health          | 1* |
| Flammability    | 0  |
| Physical hazard | 0  |
| PPE             | E  |

\*A mark of M-I L.L.C., a Schlumberger Company

**Disclaimer**

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

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## Safety Data Sheet M-I GEL \*

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name M-I GEL \*  
Product code PID971

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Viscosifier.

Uses advised against Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

#### 2.2 Label elements

**Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Crystalline silica (impurity)

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on Ingredients**

**3.1 Substances**

| Chemical Name                 | EC No     | CAS No     | Weight-% |
|-------------------------------|-----------|------------|----------|
| Crystalline silica (impurity) | 238-878-4 | 14808-60-7 | < 10     |

**3.2 Mixtures**

Not applicable

**Comments**

Naturally occurring mineral.

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

The product contains other ingredients which do not contribute to the overall classification.

**4. First Aid Measures**

**4.1 First aid measures**

**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Skin contact**

Wash skin thoroughly with soap and water. Get medical attention immediately if symptoms occur.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.

#### **4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### **Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing media appropriate for surrounding material.

##### **Extinguishing media which must not be used for safety reasons**

Do not use water jet.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

None known.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8.

#### **6.2 Environmental precautions**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to applicable federal, state and local regulations.

### Environmental exposure controls

Local authorities should be advised if significant spillages cannot be contained.

## 6.3 Methods and material for containment and cleaning up

### Methods for containment

Cover powder spill with plastic sheet or tarp to minimize spreading. Prevent further leakage or spillage if safe to do so.

### Methods for cleaning up

Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

## 6.4 Reference to other sections

See section 13 for more information.

# 7. Handling and Storage

## 7.1 Precautions for safe handling

### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

## 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

# 8. Exposure Controls/Personal Protection

## 8.1 Control parameters

**Exposure limits** No biological limit allocated

### Component Information

| Chemical Name                 | Arabic                      | Australia                                 | Egypt  |
|-------------------------------|-----------------------------|---|--|
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | 0.1 mg/m <sup>3</sup> TWA respirable dust | Not determined   |
| Chemical Name                 | India                       | Indonesian                                | Japan  |
| Crystalline silica (impurity) | Not determined              | 0.1 mg/m <sup>3</sup> TWA                 | 0.03 mg/m <sup>3</sup> OEL   |
| Chemical Name                 | Kazakhstan                  | Kuwait                                    | New Zealand  |
| Crystalline silica (impurity) | 1 mg/m <sup>3</sup> MAC     | 0.1 mg/m <sup>3</sup> TWA                 | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen                                      |
| Chemical Name                 | Malaysia                    | Philippines                               | Russia   |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | Not determined                            | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance 1177, 1178 |
| Chemical Name                 | Thailand                    | Vietnam                                   | Turkey   |
| Crystalline silica (impurity) | 0.025 mg/m <sup>3</sup> TWA | Not determined                            | Not determined   |

## 8.2 Exposure controls



All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation Local exhaust ventilation

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Safety glasses with side-shields Tightly fitting safety goggles

##### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Neoprene Nitrile Frequent change is advisable

##### Respiratory protection

When workers are facing concentrations above the exposure limit they must use  
appropriate certified respirators Suitable mask with particle filter P3 (European Norm 143)  
At work in confined or poorly ventilated spaces, respiratory protection with air supply must  
be used.

##### Skin and body protection

Wear suitable protective clothing Provide eyewash station.

##### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



#### 8.2.3 Environmental exposure controls

##### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Solid          |
| Appearance     | Powder         |
| Odor           | Odorless       |
| Color          | Cream - Gray   |
| Odor threshold | Not applicable |

| Property                   | Values                   | Remarks |
|----------------------------|--------------------------|---------|
| pH                         | 9-10                     |         |
| pH @ dilution              | No information available |         |
| Melting / freezing point   | No information available |         |
| Boiling point/range        | No information available |         |
| Flash point                | Not applicable           |         |
| Evaporation rate (BuAc =1) | No information available |         |
| Flammability (solid, gas)  | Not applicable           |         |
| Flammability Limit in Air  |                          |         |
| Upper flammability limit   | Not applicable           |         |
| Lower flammability limit   | Not applicable           |         |
| Vapor pressure             | No information available |         |
| Vapor density              | No information available |         |
| Specific gravity           | 2.3 - 2.6                | @ 20 °C |

|                                     |   |
|-------------------------------------|---|
| <b>Bulk density</b>                 | 48 – 52 lb/ft <sup>3</sup> (769 – 833 kg/m <sup>3</sup> ) |
| <b>Relative density</b>             | No information available                                  |
| <b>Water solubility</b>             | Insoluble in water  |
| <b>Solubility in other solvents</b> | No information available                                  |
| <b>Autoignition temperature</b>     | No information available                                  |
| <b>Decomposition temperature</b>    | No information available                                  |
| <b>Kinematic viscosity</b>          | No information available                                  |
| <b>Dynamic viscosity</b>            | No information available                                  |
| <b>log Pow</b>                      | No information available                                  |

|                             |                |
|-----------------------------|----------------|
| <b>Explosive properties</b> | Not applicable |
| <b>Oxidizing properties</b> | None known.    |

## **9.2 Other information**

|                         |                          |
|-------------------------|--------------------------|
| <b>Pour point</b>       | No information available |
| <b>Molecular weight</b> | No information available |
| <b>VOC content(%)</b>   | None                     |
| <b>Density</b>          | No information available |

## **Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

# **10. Stability and Reactivity**

## **10.1 Reactivity**

No specific reactivity hazards associated with this product.

## **10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

## **10.3 Possibility of Hazardous Reactions**

### **Hazardous polymerization**

Hazardous polymerization does not occur.

## **10.4 Conditions to avoid**

None known.

## **10.5 Incompatible materials**

No materials to be especially mentioned.

## **10.6 Hazardous decomposition products**

See Section 5.

# **11. Toxicological Information**

## **11.1 Information on toxicological effects**

### **Acute toxicity**

### **Product information**

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis.

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of dust in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | Dust may cause mechanical irritation.  |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                  |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

#### Toxicology data for the components

| Chemical Name                 | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|-------------------------------|-------------------|-------------------|-------------------|
| Crystalline silica (impurity) | No data available | No data available | No data available |

|   |   |
|---|---|
| <b>Sensitization</b>                                      | This product does not contain any components suspected to be sensitizing.                                 |
| <b>Mutagenic effects</b>                                  | This product does not contain any known or suspected mutagens.  |
| <b>Carcinogenicity</b>                                    | Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled. |
| <b>Reproductive toxicity</b>                              | This product does not contain any known or suspected reproductive hazards.                                |
| <b>Routes of Exposure</b>                                 | Inhalation.   |
| <b>Routes of entry</b>                                    | Inhalation.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified  |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.   |
| <b>Aspiration hazard</b>                                  | Not applicable.   |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information.                      |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.  
The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.  
Listed on PLONOR list of OSPAR

#### Toxicity to algae

See component information below.

#### Toxicity to fish

See component information below.

#### Toxicity to daphnia and other aquatic invertebrates

See component information below.

#### Toxicology data for the components

| Chemical Name                 | Toxicity to fish                                 | Toxicity to algae     | Toxicity to daphnia and other aquatic invertebrates |
|-------------------------------|--|-----------------------|---|
| Crystalline silica (impurity) | LC50 Danio rerio (zebra fish) : > 10000 mg/l 96h | EC50: > 1000 mg/l 72h | LC50 Daphnia magna (Water flea): > 10000 mg/l 24h   |

#### 12.2 Persistence and degradability

Not Applicable - Inorganic chemical. See component information below.

| Chemical Name                 | Persistence and degradability |
|-------------------------------|-------------------------------|
| Crystalline silica (impurity) | Inorganic compound            |

#### 12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical. See component information below.

| Chemical Name                 | Bioaccumulation                |
|-------------------------------|--------------------------------|
| Crystalline silica (impurity) | Product/Substance is inorganic |

#### 12.4 Mobility

##### Mobility

Insoluble in water. See component information below.

| Chemical Name                 | Mobility           |
|-------------------------------|--------------------|
| Crystalline silica (impurity) | Insoluble in water |

##### Mobility in soil

See component information below.

| Chemical Name                 | Mobility in soil               |
|-------------------------------|--------------------------------|
| Crystalline silica (impurity) | Not expected to adsorb on soil |

#### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

#### 12.6 Other adverse effects.

None known.

#### 12.7 Other information

Key literature references and sources for data. See Section 16 for more information.

## 13. Disposal considerations

#### 13.1 Waste treatment methods

**Waste from residues/unused products**

Dispose of in accordance with local regulations.

**Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

## 14. Transport information

### 14.1. UN number

Not regulated

### 14.2. UN proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

### 14.3 Hazard class(es)

**ADR/RID/ADN/ADG Hazard class** Not regulated

**IMDG/ANTAQ Hazard class** Not regulated

**ICAO/ANAC Hazard class/division** Not regulated

### 14.4 Packing group

**ADR/RID/ADN/ADG Packing group** Not regulated

**IMDG/ANTAQ Packing group** Not regulated

**ICAO/ANAC Packing group** Not regulated

### 14.5 Environmental hazard

No

### 14.6 Special precautions

Not applicable

### 14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code

Please contact SDS@slb.com for info regarding transport in Bulk.

## 15. Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of:

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

**Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified

**HSNO approval no.** Not required.

**Group number** Not required.

**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].**

**National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].**

National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

#### International inventories

|                     |          |
|---------------------|----------|
| USA (TSCA)          | Complies |
| Canada (DSL)        | Complies |
| Philippines (PICCS) | Complies |
| Japan (ENCS)        | Complies |
| China (IECSC)       | Complies |
| Australia (AICS)    | Complies |
| Korean (KECL)       | Complies |
| New Zealand (NZIoC) | Complies |

## 16. Other Information

|  |   |
|--|---|
| <b>Prepared by</b>   | Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse                |
| <b>Supersedes Date:</b>                                      | 01-Feb-2016   |
| <b>Revision date</b>   | 17-Feb-2020   |
| <b>Version</b>   | 4   |
| <b>This SDS has been revised in the following section(s)</b> | All sections No changes with regard to classification have been made. Updated according to GHS/CLP. |

#### **Key literature references and sources for data**

www.ChemADVISOR.com  
Supplier  
National Chemical Inventories  
National regulatory information  
National occupational exposure limits

#### **HMIS classification**

|                 |    |
|-----------------|----|
| Health          | 1* |
| Flammability    | 0  |
| Physical hazard | 0  |
| PPE             | E  |

\*A mark of M-I L.L.C., a Schlumberger Company

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## Safety Data Sheet Mid-Range liquid FLAC D256

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** Mid-Range liquid FLAC D256  
**Product code** D256

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Used as a cementing additive in oilfield applications

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier

Schlumberger Oilfield Australia Pty Ltd  
ABN: 74 002 459 225  
ACN: 002 459 225  
256 St. Georges Terrace, Perth WA 6000  
+47 5157 7424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### GHS Classification

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

##### Signal word

None



**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

-

**Contains** No hazardous components

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.  
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

### 3. Composition/information on Ingredients

**3.1 Substances**

Not applicable

**3.2 Mixtures**

This product does not contain any hazardous ingredients, or ingredients with national workplace exposure limits.

### 4. First Aid Measures

**4.1 First aid measures**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.                      |
| <b>Ingestion</b>    | Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. |
| <b>Skin contact</b> | Wash skin thoroughly with soap and water. Get medical attention if irritation persists.   |
| <b>Eye Contact</b>  | Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Get medical attention if any discomfort continues.            |

**4.2. Most important symptoms and effects, both acute and delayed**

|                       |  |
|-----------------------|--|
| <b>General advice</b> | The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible. |
|-----------------------|--|

**Symptoms**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Please see Section 11. Toxicological Information for further information. |
| <b>Ingestion</b>    | Please see Section 11. Toxicological Information for further information. |
| <b>Skin contact</b> | Please see Section 11. Toxicological Information for further information. |
| <b>Eye contact</b>  | Please see Section 11. Toxicological Information for further information. |

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician**

Treat symptomatically.

**5. Fire-Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.**Extinguishing media which must not be used for safety reasons**

None known.

**5.2. Special hazards arising from the substance or mixture****Unusual fire and explosion hazards**

None known.

**Hazardous combustion products**

Fire or high temperatures create: Carbon oxides (CO<sub>x</sub>), Nitrogen oxides (NO<sub>x</sub>), Ammonia, Sulfur oxides, Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

**5.3 Advice for firefighters****Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

**Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

**6. Accidental Release Measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. See also section 8. Contaminated surfaces will be extremely slippery.

**6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

**Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and material for containment and cleaning up****Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

**6.4 Reference to other sections**

See section 13 for more information.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use. If spilled, take caution, as material can cause surfaces to become very slippery. Repeated or prolonged contact may cause allergic reactions in very susceptible persons.

#### Hygiene Measures

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing

### 7.2 Conditions for safe storage, including any incompatibilities

**Technical measures/precautions** Ensure adequate ventilation.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place Keep away from direct sunlight. Avoid excessive heat for prolonged periods of time. Protect from freezing  
Avoid contact with: Oxidizing agents

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## 8. Exposure Controls/Personal Protection

### 8.1 Control parameters

**Exposure limits** The product does not contain any hazardous materials with occupational exposure limits established. No biological limit allocated

### 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

#### Engineering Controls

Ensure adequate ventilation

#### Personal protective equipment

##### Eye protection

Use eye protection according to EN 166, designed to protect against liquid splashes Safety glasses with side-shields Tightly fitting safety goggles

##### Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Impervious gloves made of: Butyl Neoprene Nitrile Rubber  
Break through time >480 minutes  
Glove thickness  $\geq 0.4$  mm

##### Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable.  
No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Respirator with a vapor filter (EN 141) Use respirator with organic vapor protection (A, brown) At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

##### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the

work place.

**Hygiene Measures**

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing before re-use

**Environmental exposure**

Use appropriate containment to avoid environmental contamination See section 6 for more information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                |                |
|----------------|----------------|
| Physical state | Liquid         |
| Appearance     | Clear          |
| Odor           | Slight         |
| Color          | Light yellow   |
| Odor threshold | Not applicable |

| <u>Property</u>              | <u>Values</u>            | <u>Remarks</u> |
|------------------------------|--------------------------|----------------|
| pH                           | 3 - 7                    |                |
| pH @ dilution                | No information available |                |
| Melting / freezing point     | < 5 °C / 41 °F           |                |
| Boiling point/range          | > 100 °C / 212 °F        |                |
| Flash point                  | Does not flash           |                |
| Evaporation rate (BuAc =1)   | Similar to water.        |                |
| Flammability (solid, gas)    | Not applicable           |                |
| Flammability Limit in Air    |                          |                |
| Upper flammability limit     | Not applicable           |                |
| Lower flammability limit     | Not applicable           |                |
| Vapor pressure               | 2.3 kPa @ 20°C           |                |
| Vapor density                | Similar to water.        |                |
| Specific gravity             | 1.0 - 1.3                |                |
| Bulk density                 | No information available |                |
| Relative density             | 1.0-1.3                  |                |
| Water solubility             | Miscible with water.     |                |
| Solubility in other solvents | No information available |                |
| Autoignition temperature     | No information available |                |
| Decomposition temperature    | > 100°C / 212°F          |                |
| Kinematic viscosity          | No information available |                |
| Dynamic viscosity            | No information available |                |
| log Pow                      | No information available |                |
| Explosive properties         | No information available |                |
| Oxidizing properties         | No information available |                |

### 9.2 Other information

|                  |                          |
|------------------|--------------------------|
| Pour point       | No information available |
| Molecular weight | No information available |
| VOC content(%)   | No information available |
| Density          | No information available |

**Comments**

The data listed above are typical physical and chemical properties and should not be construed as product specification.

**10. Stability and Reactivity****10.1 Reactivity**

No specific reactivity hazards associated with this product.

**10.2 Chemical stability**

Stable under normal temperature conditions and recommended use.

**10.3 Possibility of Hazardous Reactions****Hazardous polymerization**

Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Protect from freezing. Keep away from direct sunlight. Avoid excessive heat for prolonged periods of time.

**10.5 Incompatible materials**

Incompatible with oxidizing agents.

**10.6 Hazardous decomposition products**

See Section 5.2.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute toxicity**

|                               |  |
|-------------------------------|--|
| <b>Inhalation</b>             | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| <b>Eye contact</b>            | May cause slight irritation.   |
| <b>Skin contact</b>           | Prolonged contact may cause redness and irritation.                                    |
| <b>Ingestion</b>              | Ingestion may cause stomach discomfort.  |
| <b>Unknown acute toxicity</b> | Not applicable.  |

**Sensitization** This product does not contain any components suspected to be sensitizing >0.1%.

**Mutagenic effects** This product does not contain any known or suspected mutagens.

**Carcinogenicity** Contains a known or suspected carcinogen.

**Reproductive toxicity** This product does not contain any known or suspected reproductive hazards at concentrations >0.1%.

|   |  |
|---|--|
| <b>Routes of Exposure</b>                                 | Inhalation. Skin contact. Eye contact.   |
| <b>Routes of entry</b>                                    | Inhalation. Skin contact. Eye contact.   |
| <b>Specific target organ toxicity - Single exposure</b>   | Not classified   |
| <b>Specific target organ toxicity - Repeated exposure</b> | Not classified.  |
| <b>Aspiration hazard</b>                                  | Not applicable.  |
| <b>Other information</b>                                  | Key literature references and sources for data. See Section 16 for more information. |

## 12. Ecological Information

### 12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts will affect pH and harm aquatic organisms

#### **Toxicity to algae**

This product is not considered toxic to algae.

#### **Toxicity to fish**

This product is not considered toxic to fish.

#### **Toxicity to daphnia and other aquatic invertebrates**

This product is not considered toxic to invertebrates.

### 12.2 Persistence and degradability

Not readily biodegradable.

### 12.3 Bioaccumulative potential

Product has a low potential to bioconcentrate.

### 12.4 Mobility

#### **Mobility**

The product is miscible with water. May spread in water systems.

#### **Mobility in soil**

No information available.

### 12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

#### **12.6 Other adverse effects.**

None known.

#### **12.7 Other information**

Key literature references and sources for data. See Section 16 for more information.

### **13. Disposal considerations**

#### **13.1 Waste treatment methods**

##### **Waste from residues/unused products**

Dispose of in accordance with local regulations.

##### **Contaminated packaging**

Empty containers should be taken for local recycling, recovery or waste disposal.

### **14. Transport information**

#### **14.1. UN number**

Not regulated

#### **14.2. UN proper shipping name**

The product is not covered by international regulation on the transport of dangerous goods

#### **14.3 Hazard class(es)**

ADR/RID/ADN/ADG Hazard class Not regulated

IMDG/ANTAQ Hazard class Not regulated

ICAO/ANAC Hazard class/division Not regulated

#### **14.4 Packing group**

ADR/RID/ADN/ADG Packing group Not regulated

IMDG/ANTAQ Packing group Not regulated

ICAO/ANAC Packing group Not regulated

#### **14.5 Environmental hazard**

No

#### **14.6 Special precautions**

Not applicable

#### **14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code**

Please contact SDS@slb.com for info regarding transport in Bulk.

### **15. Regulatory Information**

#### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of:

**The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)****Australian Standard for the Uniform Scheduling of Drugs and Poisons**

No poisons schedule number allocated

**New Zealand Hazard Classification** Not classified**HSNO approval no.** not required**Group number** Not required**National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].****National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].****National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].****Safe Work Australia.****Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).****Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)****International inventories**

|                            |                 |
|----------------------------|-----------------|
| <b>USA (TSCA)</b>          | Complies        |
| <b>Canada (DSL)</b>        | Complies        |
| <b>Philippines (PICCS)</b> | Does not comply |
| <b>Japan (ENCS)</b>        | Does not comply |
| <b>China (IECSC)</b>       | Does not comply |
| <b>Australia (AICS)</b>    | Complies        |
| <b>Korean (KECL)</b>       | Does not comply |
| <b>New Zealand (NZIoC)</b> | Complies        |

**16. Other Information****Prepared by** Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Muriel Martin Beurel**Supersedes Date:** 11-Apr-2016**Revision date** 11-Jul-2019**Version** 2**This SDS has been revised in the following section(s)** All sections No changes with regard to classification have been made.**Key literature references and sources for data**

www.ChemADVISOR.com

Supplier

National Chemical Inventories

National regulatory information

National occupational exposure limits



**HMIS classification**

|                 |   |
|-----------------|---|
| Health          | 0 |
| Flammability    | 0 |
| Physical hazard | 0 |
| PPE             | B |

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## Safety Data Sheet M-I-X\* II (All Grades)

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

**Product name** M-I-X\* II (All Grades)  
**Product code** PID11307

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Lost circulation material.

**Uses advised against** Consumer use

#### 1.3 Details of the supplier of the safety data sheet

**Supplier**  
M-I Australia Pty Ltd  
ABN: 67 009 214 162  
Level 5  
256 St. George Tce  
Perth  
WA 6000  
T = +61 08 9440 2900  
F = +61 08 9322 3080  
+47 51577424

SDS@slb.com

#### 1.4 Emergency Telephone Number

**Emergency telephone** - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

### 2. Hazards Identification

#### 2.1 Classification of the substance or mixture

##### **GHS Classification**

**Health hazards** Not classified

**Environmental hazards** Not classified

**Physical Hazards** Not classified

#### 2.2 Label elements

**Signal word**

None

**Hazard Statements**

This product is not classified as hazardous therefore no (H) hazard statements assigned.

**Precautionary statements**

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

**Contains**

Cellulose fibre

Crystalline silica (impurity)

**2.3 Other hazards**

Not classified as PBT/vPvB by current EU criteria

Suspended dust may present a dust explosion hazard

Product dust may be irritating to eyes, skin and respiratory system

**Australian statement of hazardous/dangerous nature**

Classified as Non-Hazardous according to the criteria of NOHSC.

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

**3. Composition/information on ingredients**

**3.1 Substances**

| Chemical Name                 | EC No     | CAS No      | Weight-% |
|-------------------------------|-----------|-------------|----------|
| Cellulose fibre               | Listed    | Proprietary | 60-100   |
| Crystalline silica (impurity) | 238-878-4 | 14808-60-7  | <2       |

**3.2 Mixtures**

Not applicable

**Comments**

Naturally occurring mineral.

This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the workplace exposure limit (WEL) may lead to chronic lung disease such as silicosis. IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I.

**4. First Aid Measures**

**4.1 First aid measures**

**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Ingestion**

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Skin contact**

Wash skin thoroughly after handling. Get medical attention immediately if symptoms occur.

**Eye Contact**

Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if

present and easy to do. Continue rinsing. Get medical attention if any discomfort continues.

#### **4.2. Most important symptoms and effects, both acute and delayed**

**General advice** The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

#### **Symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.

**Ingestion** Please see Section 11. Toxicological Information for further information.

**Skin contact** Please see Section 11. Toxicological Information for further information.

**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-Fighting Measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2. Special hazards arising from the substance or mixture**

##### **Unusual fire and explosion hazards**

Dust may form explosive mixture in air.

##### **Hazardous combustion products**

Thermal decomposition can lead to release of irritating gases and vapors Carbon oxides (CO<sub>x</sub>).

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

##### **Special Fire-Fighting Procedures**

Containers close to fire should be removed immediately or cooled with water.

### **6. Accidental Release Measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Use personal protective equipment. See also section 8. Material becomes slippery when wet. Use caution if wet.

#### **6.2 Environmental precautions**

The product should not be allowed to enter drains, water courses or the soil.

#### **Environmental exposure controls**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

### **6.3 Methods and material for containment and cleaning up**

#### **Methods for containment**

Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

#### **Methods for cleaning up**

Take precautionary measures against static discharges. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

### **6.4 Reference to other sections**

See section 13 for more information.

## **7. Handling and Storage**

### **7.1 Precautions for safe handling**

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

#### **Hygiene Measures**

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

### **7.2 Conditions for safe storage, including any incompatibilities**

**Technical measures/precautions** Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

**Storage precautions** Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid heat, flames and other sources of ignition. Suspended dust may present a dust explosion hazard. Protect from moisture. Avoid contact with: Oxidizing agents.

**Storage class** Chemical storage.

**Packaging materials** Use specially constructed containers only.

## **8. Exposure controls/personal protection**

### **8.1 Control parameters**

**Exposure limits** No biological limit allocated

#### **Component Information**

| Chemical Name                 | Arabic                    | Australia                              | Egypt                    |
|-------------------------------|---------------------------|--|--------------------------|
| Cellulose fibre               | 10 mg/m <sup>3</sup> TWA  | 10mg/m <sup>3</sup> TWAINhalable dust  | Not determined           |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA | 0.1mg/m <sup>3</sup> TWArepirable dust | Not determined           |
| Chemical Name                 | India                     | Indonesian                             | Japan                    |
| Cellulose fibre               | Not determined            | 10 mg/m <sup>3</sup> TWA               | Not determined           |
| Crystalline silica (impurity) | Not determined            | 0.1 mg/m <sup>3</sup> TWA              | Not determined           |
| Chemical Name                 | Kazakhstan                | Kuwait                                 | New Zealand              |
| Cellulose fibre               | 2 mg/m <sup>3</sup> MAC   | Not determined                         | 10 mg/m <sup>3</sup> TWA |

|                               |                             |  |   |
|-------------------------------|-----------------------------|--|---|
| Crystalline silica (impurity) | 1 mg/m <sup>3</sup> MAC     | Not determined   | 0.1 mg/m <sup>3</sup> TWA<br>Confirmed carcinogen   |
| <b>Chemical Name</b>          | <b>Malaysia</b>             | <b>Philippines</b>   | <b>Russia</b>   |
| Cellulose fibre               | 10 mg/m <sup>3</sup> TWA    | Not determined   | 10 mg/m <sup>3</sup> MAC  |
| Crystalline silica (impurity) | 0.1 mg/m <sup>3</sup> TWA   | Not determined   | 3 mg/m <sup>3</sup> STEL<br>1 mg/m <sup>3</sup> TWA<br>Fibrogenic substance<br>glass;regulated under Quartz 1123,<br>1124 |
| <b>Chemical Name</b>          | <b>Thailand</b>             | <b>Vietnam</b>   | <b>Turkey</b>   |
| Cellulose fibre               | Not determined              | 10 mg/m <sup>3</sup> TWA<br>5 mg/m <sup>3</sup> TWA<br>20 mg/m <sup>3</sup> STEL | Not determined  |
| Crystalline silica (impurity) | 0.025 mg/m <sup>3</sup> TWA | Not determined   | Not determined  |

## 8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

### Engineering Controls

Ensure adequate ventilation Mechanical ventilation or local exhaust ventilation is required.

### Personal protective equipment

#### Eye protection

Use eye protection according to EN 166, designed to protect against powders and dusts  
Tightly fitting safety goggles Safety glasses with side-shields

#### Hand protection

Wear gloves according to EN 374 to protect against skin effects from powders Use  
protective gloves made of: Nitrile Neoprene Frequent change is advisable

#### Respiratory protection

No personal respiratory protective equipment normally required In case of insufficient  
ventilation, wear suitable respiratory equipment Suitable mask with particle filter P3  
(European Norm 143) At work in confined or poorly ventilated spaces, respiratory protection  
with air supply must be used.

#### Skin and body protection

Wear suitable protective clothing Eye wash and emergency shower must be available at the  
work place.

### Hygiene Measures

Wash hands before eating, drinking or smoking Remove and wash contaminated clothing  
before re-use



## 8.2.3 Environmental exposure controls

### Environmental exposure

Use appropriate containment to avoid environmental contamination See section 6 for more  
information

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

|                       |             |
|-----------------------|-------------|
| <b>Physical state</b> | Solid       |
| <b>Appearance</b>     | Powder Dust |
| <b>Odor</b>           | Slight      |