

# Well Drilling Environment Plan

Summary Document

HSE-SUM-049 | Revision 8 | 15/02/2021



HSE

## Contents

|          |   |          |
|----------|---|----------|
| <b>1</b> | <b>Introduction .....</b>                                 | <b>1</b> |
| 1.1      | Contact Details .....                                     | 1        |
| <b>2</b> | <b>Overview of Activity .....</b>                         | <b>1</b> |
| 2.1      | Timing.....   | 2        |
| 2.2      | Civil Construction .....                                  | 2        |
| 2.3      | Well Drilling and Testing .....                           | 2        |
| 2.3.1    | Mud and Cuttings.....                                     | 2        |
| 2.4      | Water Source.....   | 2        |
| 2.5      | Waste Management.....                                     | 2        |
| 2.6      | Demobilisation and Rehabilitation.....                    | 3        |
| <b>3</b> | <b>ENVIRONMENTAL IMPACTS AND MANAGEMENT MEASURES.....</b> | <b>3</b> |
| 3.1      | Communication and Consultation .....                      | 5        |

## Figures

|          |                                     |   |
|----------|-------------------------------------|---|
| Figure 1 | Location of the Activity area. .... | 1 |
|----------|-------------------------------------|---|

## Table

|         |  |   |
|---------|--|---|
| Table 1 | Characteristics of the wells .....   | 1 |
| Table 2 | Summary of the existing environment, potential impacts and management approach with the Activity. .... | 4 |

## Appendices

- Appendix A – Full Chemical Disclosure
- Appendix B – Chemical SDSs

## 1 Introduction

Buru Energy (Company) has developed the *Well Drilling Environment Plan* (HSE-PLN-048) (Environment Plan) for the management of environmental aspects associated with drilling and testing of the Kurrajong 1, Rafael 1 and Ungani 8(H) conventional oil wells (the Activity). Note that two options are included for the Ungani 8(H) well: a vertical and a horizontal option. This Summary Document summarises the operations and mitigation and management measures in the Environment Plan.

### 1.1 Contact Details

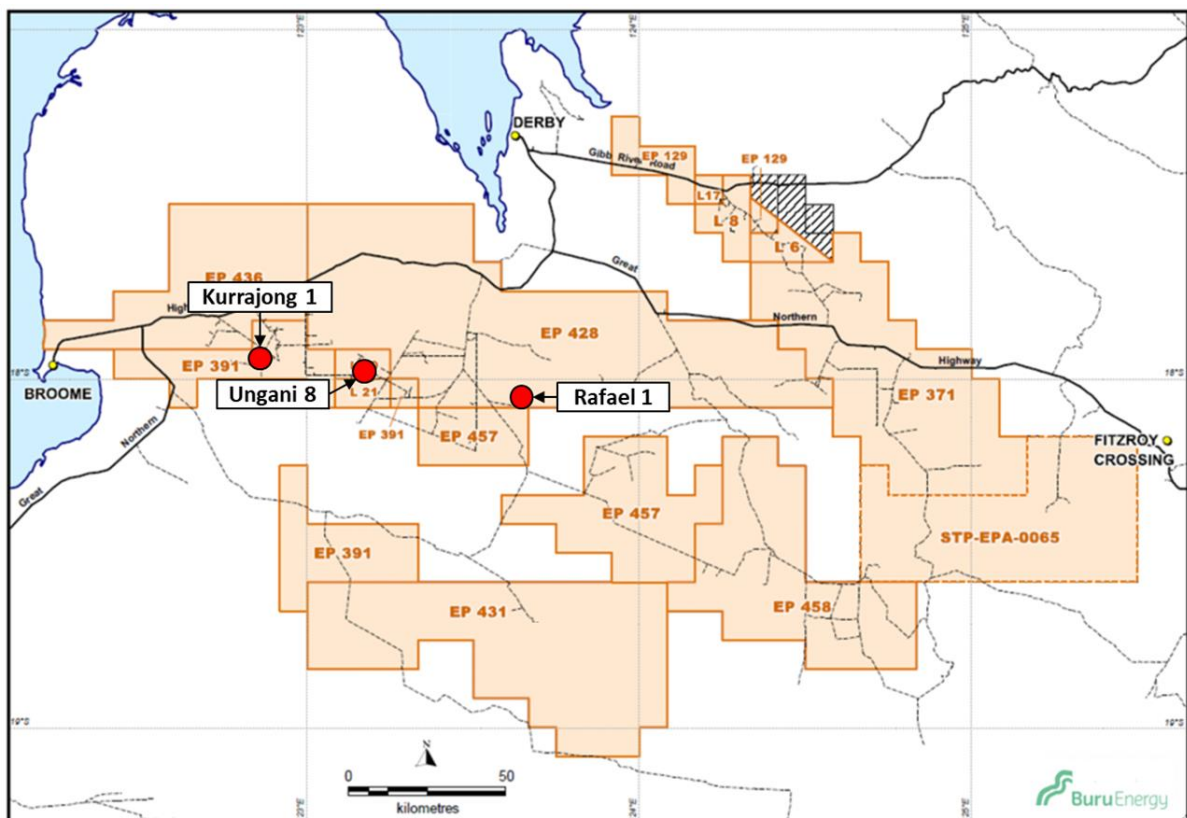
Chief Operating Officer  
 Buru Energy Limited  
 Phone: +61 8 9215 1800  
 Fax: +61 8 9215 1899  
 Email: [info@buruenergy.com](mailto:info@buruenergy.com)

## 2 Overview of Activity

Location and operational details specific to the Activities are provided in Table 1. The location of the Activity areas is shown in Figure 1.

**Table 1 Characteristics of the wells**

| Well        | Locality       | Surface Location                 |                                    | Permit |
|-------------|----------------|----------------------------------|------------------------------------|--------|
| Kurrajong 1 | 70 km E Broome | 489,019 E; 8,015,935 N           |                                    | EP 391 |
| Rafael 1    | 85 km S Derby  | 566,080 E; 8,001,600 N           |                                    | EP 428 |
| Ungani 8(H) | 90 SW Derby    | Vertical: 517,908 E; 8,011,154 N | Horizontal: 517,175 E; 8,011,414 N | L 20   |



**Figure 1 Location of the Activity area.**

## 2.1 Timing

It is expected that the Activity will commence in the 2021 dry season.

## 2.2 Civil Construction

The new well sites and access tracks will be constructed as part of the Activity. Within the well sites, the following infrastructure will be established:

- water storage facilities (turkeys nest and/or tanks);
- rig hardstand area;
- cuttings sump; and
- well cellar and conductor.

Subsoil removed from the cuttings sumps and turkeys nest (if present) will be utilised for levelling and gently sloping the well site away from well centre to provide drainage during rainfall events. The well sites and access tracks will be stabilised as required (e.g. using gravel, cement blend).

## 2.3 Well Drilling and Testing

The drilling rig will operate 24 hours a day, seven days a week with two crew shifts totalling approximately 30 personnel for the drilling operations. A Company Representative will supervise the Activity.

Drilling a well generally involves the following key stages:

- drilling the well as a number of hole sections/intervals with decreasing diameter;
- installing steel well casings in drilled hole sections;
- filling the annulus outside the well casings with cement as required for well integrity; and
- conducting wireline logging of hole sections.

Further testing may be conducted to evaluate prospective zones if positive results of hydrocarbons are determined during initial testing, or to test injectivity of the well. This will be undertaken following completion of drilling operations and demobilisation of the drilling rig.

### 2.3.1 Mud and Cuttings

All chemicals and other substances to be used down hole during the Activity have been fully disclosed in accordance with Regulation 15(9) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* and *Chemical Disclosure Guideline* (DMP 2013). Full chemical disclosure is provided in Appendix A, with all Material Safety Data Sheets (MSDSs) provided in Appendix B.

During drilling, returned drilling mud and cuttings will be treated to separate solids and liquids. A lined cuttings sump will be constructed within the well site for storage and settling of drilling mud and cuttings.

## 2.4 Water Source

Water for the Activities will be sourced from existing water bore/s or new water bore/s. Construction of each bore and taking of water will be licensed in accordance with the *Rights in Water and Irrigation Act 1914* administered by the Department of Water and Environmental Regulation.

## 2.5 Waste Management

Waste likely to be generated during the Activity can be classified as putrescible waste, general waste, industrial waste and septic waste. Waste will be managed and monitored in accordance with the

Company *Waste Management Procedure* (HSE-PRO-005). Sewage will likely be treated through an Aerated Wastewater Treatment System on site.

## 2.6 Demobilisation and Rehabilitation

Depending on the results of the testing, at completion of drilling each well, the well will either be suspended or plugged and abandoned. In either case the well site will be demobilised in accordance with the Environment Plan.

Following removal of all infrastructure, including the disposal of waste to a licensed waste disposal facility, the Activity area will be rehabilitated in accordance with the Company *Rehabilitation Management Procedure* (HSE-PRO-025).

## 3 Environmental Impacts and Management Measures

The Activity will be undertaken within petroleum Exploration Permits EP 391 and EP 428, and Production Licence L 20 (Figure 1). The Rafael 1 well is on an existing well site. A summary of the existing environmental characteristics of surrounding the Activity area, potential impacts that could result from the Activity and the risk of these potential impacts occurring is provided in Table 2. Included in this table are also the management and mitigation measures that form part of the implementation strategy to minimise environmental risk.

Table 2 Summary of the existing environment, potential impacts and management approach with the Activity.

| Environmental Characteristic                 | Description  | Potential Impact   | Key Management Measures   | Risk  | Implementation Strategy  |
|--|--|--|---|---|--|
| <b>Surface and groundwater</b>               | The Fitzroy River itself is located over 20 km from the nearest wellsite. There are some areas subject to inundation during the wet season from around 500 m away from the Activity areas.<br>Depth to groundwater in the Activity area is around 30-45 m.   | Contamination of surface and/or ground water.  | <ul style="list-style-type: none"> <li>Well Control with blowout preventer (BOP).</li> <li>Proactive management of operations in regards to extreme weather events including consideration of long term weather forecasts.</li> <li>If operations are undertaken during the wet season, chemical storage areas will be covered.</li> <li>Cuttings and drilling fluid stored and handled in accordance with the <i>Cuttings, Soil and Fluid Management Procedure</i> (HSE-PRO-007) including containment within tanks or lined areas.</li> <li>The bore water use will be as low as operationally practicable and in accordance with licence.</li> <li>Sewage and grey water will be treated through Aerated Wastewater Treatment System.</li> <li>Rain water in bunds following rainfall events will be managed by assessing the water within the bund for contamination. Only non-contaminated water will then be pumped onto the well site or firebreak.</li> <li>Cuttings and remaining drilling fluids will be tested at completion of drilling to inform disposal.</li> <li>Risk of groundwater influx is known to be low given numerous wells drilled in the area.</li> </ul> | Given the mitigation and management measures that will be implemented surface and ground water contamination is considered unlikely.                          | <ul style="list-style-type: none"> <li>Weekly inspection/checklist of the Activity area.</li> <li>OCR (Drilling Supervisor) to ensure all cuttings stored within cuttings facility.</li> <li>Baseline and post operations groundwater quality and depth sampling.</li> <li>Inspection of rain water in bunds for contamination prior to discharge.</li> <li>Inspection/checklist of the Activity area following demobilisation for waste.</li> </ul> |
| <b>Landforms and soil</b>                    | Landforms of the Activity area are described as sandplains, with deep red and yellow sands, pindan and other low woodlands.<br>The Activity areas are classified as having an extremely low probability of occurrence of acid sulphate soils.  | Contamination of surface and/or ground water.  | <ul style="list-style-type: none"> <li>The Activity areas will be constructed to minimise disturbance of soil and landforms.</li> <li>Cement, polymer, gravel, etc. will only be used in parts of the well sites, camp sites, laydown areas and access tracks that require additional compaction and stabilisation.</li> <li>In the event of heavy rainfall during construction, earthmoving operations will cease. An assessment will be undertaken prior to recommencing operations.</li> </ul>   | Through the implementation of management measures, it is unlikely that the Activity will have a significant impact on landforms.                              |  |
| <b>Vegetation and flora</b>                  | Dominant vegetation types described during the on-ground surveys were broadly consistent with vegetation units previously described by Beard (1979): <ul style="list-style-type: none"> <li>Kurrajong 1, Ungani 8: 699 (shrublands);</li> <li>Ungani 8H: 64 (grasslands);</li> <li>Rafael 1: 7001 (shrublands).</li> </ul> These vegetation types are considered to be widespread throughout the region and not considered to be representative of any listed threatened ecological communities or priority ecological communities, and none are expected to occur.<br>No threatened flora species were identified in the Activity areas. The Activity areas are not within any areas of conservation (e.g. ESAs). | Loss of native flora species including competition by weed species.                                  | <ul style="list-style-type: none"> <li>Earthmoving machinery and equipment will be inspected and cleaned prior to arrival at the Activity area.</li> <li>Externally sourced gravel will be weed free.</li> <li>For each well site, a Civils Work Program will be prepared for civil construction operations.</li> <li>Following completion of drilling each well, demobilisation will be undertaken.</li> <li>Following well plug and abandonment, rehabilitation will be implemented. Environmental monitoring of rehabilitation will then commence.</li> </ul>  | Through the implementation of management measures, it is unlikely that the Activity will have a significant impact on vegetation and flora                    | <ul style="list-style-type: none"> <li>OCR to ensure earthmoving machinery and equipment are inspected and cleaned prior to arrival.</li> <li>Inspection for weeds following demobilisation and rehabilitation.</li> <li>OCR to ensure that clearing is limited to the Activity area.</li> </ul>   |
| <b>Fauna</b>                                 | The only conservation significant fauna species identified in the vicinity of the Activity areas are highly mobile bird species and potentially a Spectacled hare-wallaby scat.<br><br>These species are not considered to be specifically reliant on habitat contained within the Activity area, and equivalent habitat exists more widely in the surrounding region.   | Loss of a local population of a conservation significant fauna species.<br>Disturbance of fauna.     | <ul style="list-style-type: none"> <li>Vehicle and personnel access will be limited to Activity area.</li> <li>Fence surrounding open lined excavations will be left in place to prevent macro-fauna access.</li> <li>Egress paths installed in open lined excavations.</li> <li>Travel in accordance with the <i>Travel Management Procedure</i> (HSE-PRO-002).</li> </ul>   | Through the implementation of management measures, it is unlikely that the Activity will have a significant impact on conservation significant fauna species. | <ul style="list-style-type: none"> <li>Following construction, a survey of the well site to confirm size of cleared area.</li> </ul>   |
| <b>Cultural heritage and local community</b> | The townships of Broome and Derby are the largest population centres near the Activities. The nearest Aboriginal Communities are over 35 km from the Activity areas. The Activity areas are located within sparsely populated regions with limited settlement, transport or communications infrastructure.<br>The Activity areas are located within Yawuru and Nyikina Mangala land and on the Roebuck Plains, Yakka Munga and Luluigui pastoral leases.   | Disturbance of heritage site.<br>Disturbance of stock.<br>Disturbance of local station or community. | <ul style="list-style-type: none"> <li>Ongoing liaison with relevant stakeholders.</li> <li>The Company will undertake a heritage survey with Traditional Owners prior to commencing the Activities. Operations will not commence until heritage clearance is obtained.</li> <li>Representatives Traditional Owners will conduct cultural heritage monitoring of civil works.</li> </ul>  | Given the implementation of the management measures, impacts on cultural heritage and the community are unlikely.   | <ul style="list-style-type: none"> <li>OCR to ensure vehicles and personnel limited to access tracks, camp sites and well sites.</li> <li>Monitoring of civil works undertaken by Traditional Owner representatives.</li> </ul>  |

### 3.1 Communication and Consultation

The Company has engaged in communication and consultation with relevant stakeholders as summarised in the Environment Plan. As the Activity area is located within a sparsely populated region with limited settlement, transport or communications infrastructure, relevant stakeholders are limited to government departments, traditional owners and pastoralists. The stakeholders consulted with to date include:

- Nyikina Mangala Traditional Owners;
- Yawuru Traditional Owners;
- Yakka Munga Station;
- Roebuck Plains Station;
- Luluigui Station;
- Department of Fire and Emergency Services;
- Department of Water and Environmental Regulation;
- Broome and Derby Police; and
- Shire of Derby-West Kimberley.

These stakeholders have been consulted via phone, written notices and face-to-face meetings.

No issues have been raised in relation to the Activity through the consultation process. The Company will continue to communicate with stakeholders and consult during all phases of the Activity, on a formal and informal basis, and by email, letter, face-to-face and telephone.

## **Appendix A – Full Chemical Disclosure**

| A. SYSTEM DETAILS                         |   |
|---|---|
| OPERATOR:                                 | Buru Energy Ltd                         |
| PROJECT / WELL:                           | Drilling and Workover Campaign          |
| SYSTEM:                                   | Drilling Fluid – KCl / Polymer / Glycol |
| TOTAL VOLUME OF SYSTEM (m <sup>3</sup> ): | Approximately 400 m <sup>3</sup>        |

## B. PRODUCT LIST

| Trade name      | Supplier    | Purpose         | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|-----------------|-------------|-----------------|-----------------------|---|---------------|
| Fresh water     | Onsite bore | Mix water       | 57.9203%              | N/A   | N/A           |
| Sodium Chloride | Halliburton | Weighting Agent | 15.8800%              | <p><b>Toxicology Data</b><br/>LD50 Oral: 3000 mg/kg (Rat), 3550 mg/kg (Rat) LD50 Dermal: &gt; 10000 mg/kg (Rabbit) LC50 Inhalation: 42 mg/l (Rat) 1 h</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity Data to Algae - EC50 (120h) 2430 mg/l (Nitzschia sp.) Toxicity to Fish – TLM96 &gt; 1,000 mg/l (Oncorhynchus mykiss); LC50 (96 Hr) 5480 mg/L (Lepomis macrochirus); NOEC (33d) 252 mg/L (Pimephales promelas) Toxicity to Microorganisms - NOEC 5,000 - 8,000 mg/l (activated sludge) NOEC 292-584 mg/l (Escherichia coli) Toxicity to Invertebrates – TLM96 &gt; 1,000,000 ppm (Mysidopsis bahia); LC50 (48h) 874-4136 mg/l (Daphnia magna); NOEC (21d) 314 mg/l (Daphnia pulex)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Sodium Chloride is an inorganic, naturally occurring salt and Biodegradation does not apply due to being inorganic (does not contain any Carbon or Hydrogen). Sodium Chloride is fully water soluble, abundant in nature and highly mobile in soil. The product is not known to be bioaccumulative.</p> | Yes           |
| BARACARB        | Halliburton | Bridging Agent  | 6.5600%               | <p><b>Toxicology Data</b><br/>LD50 Oral: &gt; 15,000 mg/kg (human) LD50 Dermal: No information available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/><b>Crystalline silica, quartz (&lt;1%)</b><br/>Toxicity to Algae - EC50 (72h) = 440 mg/l (Selenastrum capricornutum) Toxicity to Fish – LLO (96 Hr) = 10,000 mg/L (Danio rerio) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – LL50 (24h) &gt;10,000 mg/l (Daphnia magna)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Inorganic substance<br/>Does not bioaccumulate</p>  | Yes           |
| Barite          | Halliburton | Weighting Agent | 5.0000%               | <p><b>Toxicology data</b><br/><b>Barium Sulfate (60-100%)</b><br/>LD 50 Oral: &gt; 5000 mg/kg (Rat), &gt; 3000 mg/kg (Mouse) LD50 Dermal: No data available LC50 Inhalation: &gt; 1.1 mg/l (rat, aerosol, 4hr) (Similar substance)</p> <p><b>Crystalline silica, Quartz (1-5%)</b><br/>LD 50 Oral: &gt; 15,000 mg/kg (Human) LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/><b>Barium Sulfate (60-100%)</b><br/>Toxicity to Algae: No Information available. Toxicity to Fish: LC50 (96h) 3.5 mg/l (Danio rerio) BCF 1.2-74.4 l/kg (Lepomis macrochirus) Toxicity to Microorganisms: No Information available Toxicity to Invertebrates: NOEC (7d) 100 mg/l (Cancer anthonyi)</p> <p><b>Crystalline silica, Quartz (1-5%)</b></p>   | Yes           |

| Trade name         | Supplier    | Purpose          | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|--------------------|-------------|------------------|-----------------------|---|---------------|
|                    |             |                  |                       | <p>Toxicity to Algae: No Information available. Toxicity to Fish: LL0 (96h) 10,000 mg/l (Danio rerio) (similar substance) Toxicity to Microorganisms: No Information available Toxicity to Invertebrates: LL50 (24h) &gt; 10,000 mg/l (Daphnia magna) (similar substance)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Barite is a naturally occurring salt (Barium Sulphate). The product is an inert and none reactive salt, non-Toxic and no mobility in soil. Barium sulphate (major ingredient of barite ~60-100%) is insoluble in water and not biodegradable. The product is not known to be bioaccumulative.</p>   |               |
| Potassium Chloride | Halliburton | Shale Inhibition | 4.2800%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available - LD50: &gt; 5000 mg/kg (Rat)LD50 Dermal: No data availableLC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available - 72h EC50: &gt; 100 mg/L (Scenedesmus subspicatus) [ECHA] Toxicity to Fish – No information available - 96h LC50: 880 mg/L (Pimephales promelas) [ECHA] Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - 48h EC50: 660 mg/L (Daphnia magna) [ECHA]; TLM96: 100-330 ppm (Crangon crangon)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Bioaccumulation BCF: 0.47 [OECD SIDS];<br/>Biodegradation: Product is inorganic - biodegradation is not applicable.</p>  | Yes           |
| GEM CP             | Halliburton | Shale Inhibition | 1.6400%               | <p><b>Toxicology data for Components</b><br/><b>Methyloxirane polymer with oxirane, monbutyl ether (60-100%)</b><br/>LD50 Oral: &gt; 47248 mg/kg-bw (rat)LD50 Dermal: &gt; 21140 mg/kg-bw (rabbit) LC50 Inhalation: 0.26 mg/l (Rat, 4h, aerosol)</p> <p><b>Substance Ecotoxicity Data</b><br/><b>Methyloxirane polymer with oxirane, monbutyl ether (60-100%)</b><br/>Toxicity to Algae - EC50 (72h) = 465 mg/l (Skeletonema costatum) Toxicity to Fish – LC50 = 3170 mg/l (Pimephales promelas); LC50 (96 Hr) &gt; 1800 mg/L (Scophthalmus maximus) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 = 17,000 mg/l (Daphnia magna); LC50 (48h) = 356 mg/l (Acartia tonsa)</p> <p><b>Biodegradation/bioaccumulation:</b><br/><b>Methyloxirane polymer with oxirane, monbutyl ether (60-100%)</b><br/>24% @ 20d<br/>Low Pow = 0.353</p>  | Yes           |
| GEM GP             | Halliburton | Shale Inhibition | 1.6400%               | <p><b>Toxicology data for Components</b><br/><b>Polyethylene glycol butyl ether (60-100%)</b><br/>LD50 Oral: &gt; 5000 mg/kg (rat); &gt; 2000 mg/kg (rat)LD50 Dermal: 6540 mg/kg (rat); 3540 mg/kg (rabbit) (similar substance); &gt; 2000 mg/kg (rat) (similar substance) LC50 Inhalation: &gt; 2.6 mg/l (Rat) 4h (similar substance); &gt; 2000 mg/l (Rat) 1h (similar substance)</p> <p><b>Substance Ecotoxicity Data</b><br/><b>Polyethylene glycol butyl ether (60-100%)</b><br/>Toxicity to Algae - EC50 (72h) = 391 mg/l (growth rate) (Skeletonema costatum) Toxicity to Fish – EC50 = 475ppm (Abra alba); LC50 (96 Hr) &gt; 1800 mg/L (Scophthalmus maximus) Toxicity to Microorganisms - IC50 (16h): &gt; 5,000 mg/l (Growth inhibition, Activated sludge) (similar substance) - 2-(2-(2-butoxyethoxy)ethoxy)ethanol)EC10 (30m): &gt; 1995 mg/l (respiration rate, activated sludge (similar substance - 2-(2-(2-butoxyethoxy) ethoxy) ethanol) Toxicity to Invertebrates – TLM48: 310 mg/l (Acartia tonsa); EC50(48h): &gt; 3200 mg/L (Daphnia magna) (similar substance – ethanol,2-butoxy-, manufacture of, by-products from)</p> <p><b>Biodegradation/bioaccumulation:</b><br/><b>Polyethylene glycol butyl ether (60-100%)</b><br/>Readily biodegradable<br/>Low Pow = 0.436</p> | Yes           |

| Trade name | Supplier    | Purpose                    | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|-------------|----------------------------|-----------------------|---|---------------|
| QUIK-FREE  | Halliburton | Spotting Fluid /Stuck Pipe | 0.9400%               | <p><b>Product Toxicity</b><br/> Fish Toxicity 48h LC50: &gt;10,000 mg/L (Leuciscusidus melanotus)<br/> Crustacean Toxicity 24h EC50: &gt;500 mg/L (Daphnia magna)</p> <p><b>fatty acid ester (30-60%):</b><br/> No ecotoxicity data available in sources consulted. However, environmental risks are expected to be low because: • Component is defined by Germany's Federal Environmental Agency as "Not Considered Hazardous to Water" (Water Classification Annex 1)</p> <p><b>Glycerine (30-60%):</b> Acute Fish Toxicity 48h LC50: &gt; 10000 mg/l (Leuciscus idus melanotus); Acute Crustacean Toxicity 24h EC50: &gt;500 mg/l (Daphnia magna); Source: IUCLID 2000</p> <p><b>Modified bentonite (1-5%):</b> Acute Fish Toxicity 96h LC50: &gt; 500 mg/l (Oncorhynchus mykiss) Acute Crustacean Toxicity 48h EC50: &lt;500 mg/l (Daphnia magna); Source: OECD SIDS</p> <p><b>Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil (&lt;1%)</b><br/> Acute Fish Toxicity 96h LL50: &gt; 1000 mg/l (Pimephales promelas); Acute Crustacean Toxicity 48h EL50: &gt; 1000 mg/l (Daphnia sp) Acute Algae Toxicity 72h EL50: &gt; 1000mg/l (Selenastrum capricornutum); Source US EPA HPV</p> <p><b>fatty acid ester (&lt;1%):</b><br/> No ecotoxicity data available in sources consulted. However, environmental risks are expected to be low because: • Component is defined by Germany's Federal Environmental Agency as "Not Considered Hazardous to Water" (Water Classification Annex 1)</p> <p><b>Soybean oil (&lt;1%):</b><br/> No ecotoxicity data available in sources consulted. However, environmental risks are expected to be low because: • Component is defined by Germany's Federal Environmental Agency as "Not Considered Hazardous to Water" (Water Classification Annex 1). Component is considered not Persistent or Bioaccumulative, according to Environment Canada (Canada DSL); and • Component is defined in the EU under REACH Annex IV as a Minimal Risk Compound".</p> <p><b>Lecithins (&lt;1%):</b><br/> No ecotoxicity data available in sources consulted. However, environmental risks are expected to be lower because: • Component is derived from a naturally occurring substance • Component is defined by US FDA as a "Generally Recognised As Safe (GRAS) Substance"; • Component is defined by the USDA's National Organic Program as a "Substance Allowed as Ingredients in or on Organic Processed Products";</p> <p><b>Isopropanol (&lt;0.1%):</b><br/> • Component is considered not Persistent or Bioaccumulative, according to Environment Canada (Canada DSL); and • Component is defined in the EU under REACH Annex IV as a Minimal Risk Compound".<br/> Acute Fish Toxicity 96h LC50: &gt; 9640 mg/l (Pimephales Promelas); Acute Crustacean Toxicity 48h LC50: 1400 mg/l (Crangon crangon) Acute Algae Toxicity 72h EL50: &gt; 1000mg/l (Scenedesmus subspicatus); Source: IUCLID 2000</p> <p><b>Ethylene glycol monobutyl ether (&lt;0.1%):</b><br/> Acute Fish Toxicity 96h LC50: 14900 mg/l (Lepomis macrochirus) Acute Crustacean Toxicity 48h LC50: 600-1000 mg/l (Crangon crangon); Source: IUCLID 2000</p> <p><b>Diethylene glycol monobutyl ether (&lt;0.1%):</b><br/> Acute Fish Toxicity 96h LC50: 1300 mg/l (Lepomis macrochirus) Acute Crustacean Toxicity 248h EC50: 2300 mg/l (Daphnia magna); Source: ECOTOX</p> <p><b>Crystalline silics, quartz (&lt;0.1%):</b><br/> Toxicity to Algae: No Information available. Toxicity to Fish: LL0 (96h) 10,000 mg/l (Danio rerio) (similar substance) Toxicity to Microorganisms: No Information available Toxicity to Invertebrates: LL50 (24h) &gt; 10,000 mg/l (Daphnia magna) (similar substance)</p> <p><b>Synthetic amorphous silica (&lt;0.1%):</b><br/> Acute Fish Toxicity 96h LL0: &gt; 10000 mg/l (Branchdanio rerio) Acute Crustacean Toxicity 24h EL50: &gt; 10000mg/l (Daphnia magna)</p> <p><b>Na-Al silicates (&lt;0.1%)</b></p> | Yes           |

| Trade name             | Supplier    | Purpose          | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------------------|-------------|------------------|-----------------------|---|---------------|
|                        |             |                  |                       | <p>Acute Fish Toxicity 96h LL0: &gt; 10000 mg/l (Branchdanio rerio) Acute Algae Toxicity 72h NOEL: 10000mg/l (Scenedesmus subspicatus) Source: IUCLID 2000</p> <p><b>Quaternary Ammonium Compounds (&lt;0.1%):</b><br/>           Acute Fish Toxicity 96h LC50: &gt; 1000 mg/l (Brachydanio rerio) Acute Crustacean Toxicity 48h EC50: 35.2 mg/l (Daphnia magna) Acute Algae Toxicity 72h EL50: 0.050mg/l (Selenastrum capricornutum); Source: US EPA HPV</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           No product information available</p> <p><b>Crystalline silica, quartz (&lt;0.1%):</b><br/>           Biodegradation is "not applicable" for crystalline silica since it is inorganic. Concentration-based toxicity values were not available. Silica is a naturally occurring, insoluble component of soil. Silica plays an essential role in most plants and animals</p>  |               |
| BAROFIBRE              | Halliburton | Lost Circulation | 0.7000%               | <p><b>Toxicology Data</b><br/>           LD50 Oral: No data available LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>           Toxicity to Algae - No information available Toxicity to Fish – No information available - LC50: 445 mg/l (Cyprinus carpio) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - TLM48: 1875 mg/l (Daphnia magna)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           No information available.</p>  | Yes           |
| STEELSEAL (all grades) | Halliburton | Lost Circulation | 0.6000%               | <p><b>Toxicology Data</b><br/>           Oral LD50: &gt;5000 mg/kg (Rat)<br/>           Dermal LD50: &gt;2000 mg/kg (Rat)<br/>           Inhalation LC50: &gt;37.8 mg/L (Rat)</p> <p>No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p> <p><b>Ecotoxicity Data</b><br/>           Algae toxicity EC50: &gt;10000 mg/L (Skeletonema costatum)<br/>           Fish toxicity LC50: &gt;10000 (Cyprinodon variegatus)<br/>           Crustacean toxicity EC50: &gt;10000 mg/L (Acartia tonsa)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           Substance is inorganic - bioaccumulation is not applicable<br/>           Substance is inorganic - biodegradation is not applicable</p>   | Yes           |
| BARAZAN D PLUS         | Halliburton | Viscosifier      | 0.4700%               | <p><b>Toxicology Data</b><br/> <b>Xanthan Gum (60-100%)</b><br/>           LD50 Oral: No data available - LD 50: &gt;5000 mg/kg (Rat) LD50 Dermal: No data available LC50 Inhalation: No data available - LC50: &gt; 21 mg/l rat</p> <p><b>Glyoxal D50 Oral:</b> LD 50: 200 mg/kg (Rat) LD50 Dermal: LD50: 12,700 mg/kg (Rabbit) LC50 Inhalation: LC50: 2.44 mg/l (rat)</p> <p><b>Substance Ecotoxicity Data</b><br/> <b>Xanthan Gum (60-100%)</b><br/>           Toxicity to Algae - No information available Toxicity to Fish – No information available - TLM96: 320-560 ppm (Oncorhynchus mykiss) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - TLM96: &gt; 75000ppm (Mysidopsis bahia)</p> <p><b>Glyoxal (≤40%)</b><br/>           Toxicity to Algae - EC50 (72h): &gt; 500 mg/L (Desmodesmus subspicatus); EC50 (96h): &gt; 500 mg/L (Desmodesmus subspicatus); EC50 (96h): ≤=348.59 mg/L [static] (Pseudokirchneriella subspicatus); Toxicity to Fish – LC50 (96h): 215 mg/l [static] Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 (48h): 404 mg/l (Daphnia Magna)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           No information available.</p> | Yes           |

| Trade name     | Supplier    | Purpose                   | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|----------------|-------------|---------------------------|-----------------------|---|---------------|
| PAC-L          | Halliburton | Fluid Loss                | 0.4700%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available Toxicity to Fish – No information available - Acute Fish Toxicity TLM96: &gt; 500 mg/l (Golden orfe) Toxicity to Microorganisms – No information available Toxicity to Invertebrates – No information available</p> <p><b>Biodegradation/bioaccumulation:</b><br/>No information available</p>   | Yes           |
| EZ MUD DP      | Halliburton | Shale Inhibition          | 0.3500%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available - Acute Algae Toxicity EC50: 4310 mg/l (Skeletonema costatum) Toxicity to Fish – No information available Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - Acute Crustacean Toxicity TLM48: 2202 mg/l (Acartia tonsa)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>No information available.</p>  | Yes           |
| BARAKLEAN DUAL | Halliburton | Solvent Cleaning Solution | 0.3500%               | <p><b>Ethylene glycol monobutyl ether (30-60%)</b><br/><b>Toxicology data for Components</b><br/>LD50 Oral: 1414 mg/kg-bw (guinea pig) LD50 Dermal: &gt; 2000 mg/kg (rabbit) LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - EC50 (72h): = 1840 mg/l (Pseudokircchne subcapitata) Toxicity to Fish – LC50 (96h) = 1474 mg/l (Oncorhynchus mykiss); NOAEC (21d): &gt; 100 mg/l (Danio rerio) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 (48h) = 1800 mg/l (Daphnia Magna), EC50 (21 d) = 297 mg/l (Daphnia magna)</p> <p><b>Alcohols, C9-11, ethoxylated (10-30%)</b><br/><b>Toxicology data for Components</b><br/>LD50 Oral: 1400 mg/kg (Rat), 1378 mg/kg (Rat) LD50 Dermal: &gt; 2000 mg/kg (rabbit) LC50 Inhalation: No toxicity at saturation (similar substances)</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae EC50 (96h): 0.26 mg/l (Selenastrum capricornutum) Toxicity to Fish LC50 (96h): 5.7 mg/l (Oncorhynchus mykiss); NOEC (30d): 0.28 mg/l (Pimephales promelas) (similar substance) Toxicity to Micro organisms: EC50 (3h): 140 mg/L (Activated sludge, domestic) Toxicity to Invertebrates EC50 (48h): 2.5 mg/l (Daphnia Magna), NOEC (21 d) 1.75 mg/l (Daphnia Magna) (similar substance)</p> <p><b>Citric Acid (1-5%)</b><br/>Acute Fish Toxicity 96h LC50: &gt;440-760 mg/l (Leuciscus idus) Acute Crustacean Toxicity 72h EC50: 120 mg/l (Daphnia magna) Acute Toxicity 7d EC3: 640 mg/l (Scenedesmus quadricauda) Source: IUCLID 2000</p> <p><b>Aluminium Sulfate (&lt;1%)</b><br/>Acute Fish Toxicity 96h LC50: 37 mg/l (Gambusia affinis) Acute Crustacean Toxicity 15min EC50: 136 mg/l (Daphnia magna) Source: IUCLID 2000</p> <p><b>Water (10-30%)</b><br/>N/A</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Ethylene glycol monobutyl ether – Readily bodegradable (75-88% @ 28d)<br/>Mixture of C9-C11 alcohol ethoxylate – Readily bodegradable (72-89% @ 28d) (similar substances)<br/>Ethylene glycol monobutyl ether<br/>Log Pow 0.81</p> | Yes           |

| Trade name         | Supplier    | Purpose          | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|--------------------|-------------|------------------|-----------------------|--|---------------|
| BDF-427            | Halliburton | Coagulant        | 0.2000%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available Toxicity to Fish – No information available - LC50: (96 hour) 5-10 mg/l (Brachidanio rerio) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - EC50: (48 hour) 20-50 mg/l (Daphnia magna)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>No information available.</p>   | Yes           |
| N-SQUEEZE          | Halliburton | Lost Circulation | 0.2000%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available. LD50 Dermal: No data available. LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available. Toxicity to Fish – No information available. Toxicity to Microorganisms - No information available. Toxicity to Invertebrates – No information available</p> <p><b>Woodfibre (30-60%):</b><br/>This component is an organic substance, ecotoxicity information is not known. However, environmental risks are expected to be low because: Component is derived from a naturally occurring substance</p> <p><b>Cellulose (30-60%)</b><br/>(CAS#: 9004-34-6) has "no known toxicity". Acute Fish Toxicity LC50 &gt;100mg/l Acute Crustacean Toxicity EC50: &gt;100 mg/l Acute Algae Toxicity EC50: &gt;100mg/l Source IUCLID 2000</p> <p><b>Guar Gum (30-60%)</b><br/>Component is naturally occurring substance. No ecotoxicity information was available in the IUCLID. Source: IUCLID 2000 Acute Crustacean Toxicity 48h LC50: 422 mg/l (Daphnia magna) Acute Fish Toxicity 96h LC50: 218 mg/l (Oncorhynchus) Source: ECOTOX</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Composed of natural products that are readily biodegradable.</p> | Yes           |
| Sodium Bicarbonate | Halliburton | pH control       | 0.1200%               | <p><b>Toxicology Data for Components</b><br/>LD50 Oral: No data available LD50 Dermal: No data available LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available - EC50 (5d): 650 mg/l (Nitzschia linearis) Toxicity to Fish – No information available - LC50 (96h): 7550 mg/l (Gambusia affinis) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available - EC50 (48h): 2350 mg/l (Daphnia magna) Source: IUCLID 2000</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Sodium Bicarbonate is an inorganic, naturally occurring salt and partially biodegradable. Sodium Bicarbonate is fully water soluble and highly mobile in soil. The product is not known to be Bioaccumulative.</p>  | Yes           |
| ALDACIDE G         | Halliburton | Biocide          | 0.1200%               | <p><b>Glutaraldehyde (10-30%)</b></p> <p><b>Toxicology data for Components</b><br/>LD50 Oral: 50 mg/kg (guinea pig) LD50 Dermal: 560 µL/kg (rabbit) LC50 Inhalation: 0.28-0.5 mg/l (Rat) 4h</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - EC50 (72h) 0.61 mg/L (Desmodesmus subspicatus) Toxicity to Fish – LC50 (96h) 10 mg/L (Lepomis macrochirus); NOEC (97d) 1.6 mg/L (Oncorhynchus mykiss); LC50 (96h) 3.5 mg/L (Oncorhynchus mykiss) Toxicity to Microorganisms - EC50 (17h) 6.65 mg/L (Pseudomonas putida) Toxicity to Invertebrates – EC50 (48h) 0.35 mg/L (Daphnia magna); EC50 (48h) 0.7 mg/L (Acartia tonsa); NOEC (21d) 0.13 mg/L (Daphnia magna)</p> <p><b>Methanol (&lt;1%)</b></p> <p><b>Toxicology data for Components</b><br/>LD50 Oral: 300 mg/kg-bw (human); &lt;790-13,000 mg/kg (rabbit) LD50 Dermal: 1000 mg/kg-bw (human); 17,100 mg/kg (rabbit) LC50 Inhalation: 10 mg/l (human, vapour, 4h)</p> <p><b>Substance Ecotoxicity Data</b></p>   | Yes           |

| Trade name     | Supplier    | Purpose    | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|----------------|-------------|------------|-----------------------|--|---------------|
|                |             |            |                       | <p>Toxicity to Algae - EC50 (96 h) = 22000 mg/L (Pseudokirchnerella subcapitata); NOEC (8 d) =8000 mg/L (Scenedesmus quadricauda) Toxicity to Fish – LC50 (96 h) = 15400 mg/L (Lepomis macrochirus); EC50 (200 h) =14536 mg/L (Oryzias latipes) Toxicity to Microorganisms - IC50 (3h) &gt; 1000 mg/L (activated sludge) Toxicity to Invertebrates – EC50 (96 h) =18260 mg/L (Daphnia magna); NOEC (21 d) =208 mg/L (Daphnia magna)</p> <p><b>Water (≥70%)</b><br/>N/A</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Readily biodegradable (95-97% @ 28d)<br/>Log Pow -0.77</p>  |               |
| BARA-DEFOAM HP | Halliburton | Defoamer   | 0.1000%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available<br/>LD50 Dermal: No data available<br/>LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available Toxicity to Fish – No information available Toxicity to Microorganisms - No information available Toxicity to Invertebrates – No information available</p> <p><b>Polypropylene glycol (60-100%)</b><br/>Acute Fish Toxicity 96h LC50: 1700 mg/l (Lpomis macrochirus); Source: ECOTOX</p> <p><b>Methyloxirane polymer with oxirane, ether with 1,2,3-propanetriol (10-30%)</b><br/>Aquatic toxicity: LC50 &gt;100 mg/L (Leuciscus idus)<br/>Environmental risks are expected to be low because: • Component is defined by Germany's Federal Environmental Agency as "Hazard Class 1 - Low Hazard to waters" (water Classification Annex 2); • Component is considered not Persistent, bioaccumulative, or Inherently Toxic, according to Environment Canada (Canada DSL); and • The component exhibits low hazards to mammals: Oral Rat LD50 &gt; 10 g/kg; Dermal LD50 Rabbit &gt; 5g/kg</p> <p><b>Methyloxirane polymer with oxirane, ether with 1,2-propanediol (10-30%)</b><br/>Acute toxicity to fish: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 &gt;100 mg/L in the most sensitive species tested).<br/>LL50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, &gt; 100 mg/l<br/>Acute toxicity to aquatic invertebrates: EL50, Daphnia magna (Water flea), static test, 48 Hour, &gt; 100 mg/L<br/>Environmental risks are expected to be low because: • Component is defined by Germany's Federal Environmental Agency as "Hazard Class 1 - Low Hazard to waters" (water Classification Annex 2); •</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Component is considered not Bioaccumulative or Inherently Toxic, according to Environment Canada (Canada DSL)</p> | Yes           |
| Caustic Soda   | Halliburton | pH control | 0.0700%               | <p><b>Toxicology Data</b><br/>LD50 Oral: No data available<br/>LD50 Dermal: 1350 mg/kg (Rabbit) LC50 Inhalation: No data available</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - No information available Toxicity to Fish – LC50 (96h) 125 mg/L (Gambusia affinis); LC50 (48h) 189 mg/L (Leuciscus melanotus); LC50 (24h) 145 mg/L (Poecilia reticulata) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 (48h) 40.4 mg/L (Ceriodaphnia sp.)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Caustic Soda is inorganic compound (NaOH), which is neutralized in nature into salt and water. Being inorganic product, biodegradation is not a concern. The product is not known to be Bioaccumulative.</p>  | Yes           |
| Citric Acid    | Halliburton | pH control | 0.0500%               | <p>Acute Fish Toxicity 96h LC50: &gt;440-760 mg/l (Leuciscus idus) Acute Crustacean Toxicity 72h EC50: 120 mg/l (Daphnia magna) Acute Toxicity 7d EC3: 640 mg/l (Scenedesmus quadricauda) Source: IUCLID 2000</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Citric Acid is extract of Citrus and rapidly biodegradable. BOD30/COD = 90%. Rapidly biodegradable in water and soil. The product is not known to be Bioaccumulative.</p>  | Yes           |

| Trade name        | Supplier         | Purpose             | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|-------------------|------------------|---------------------|-----------------------|---|---------------|
| Soda Ash          | Halliburton      | Buffer              | 0.0500%               | <p><b>Toxicology Data</b><br/>LD50 Oral: 4090 mg/kg (Rat); 2800 mg/kg (Rat) LD50 Dermal: 2210 mg/kg (Mouse); &gt;2000 mg/kg (Rabbit) LC50 Inhalation: 2.3 mg/L (Rat) 2h</p> <p><b>Substance Ecotoxicity Data</b><br/>Toxicity to Algae - EC50 242 mg/L (Nitzschia) Toxicity to Fish – TLM24 385 mg/L (Lepomis macrochirus); LC50 310-1220 mg/L (Pimephales promelas); LC50 (96h) 300 mg/L (Lepomis macrochirus) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 265 mg/L (Daphnia magna); EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.)</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Soda Ash is an inorganic (Sodium Carbonate), naturally occurring salt and partially biodegradable. Soda Ash is fully water soluble and highly mobile in soil.<br/>Biodegradability does not pertain to inorganic substances. Does not bioaccumulate. Dissociates into ions.</p> | Yes           |
| STAR SHIELD®      | Impact Fluids    | Wellbore Stabiliser | 2.2897%               | <p><b>Product Data</b><br/>This product consists of naturally occurring substances and is not expected to pose an ecological hazard as a result of its intended use.<br/>The 96h LC50 mysid shrimp, in Generic mud number 7: &gt;1,000,000 ppm suspended particulate phase<br/>Natural products – exempt from chemical disclosure requirements.</p>   | Yes           |
| <b>Total</b>      |                  |                     | 100%                  |   |               |
| Hydrochloric Acid | Coogee Chemicals | pH Control          | Contingency, 0.07%    | <p>Constituent 1 as an ingredient 32%</p> <p><b>Acute Toxicity:</b><br/>EC50 (72 h) 0.73 mg/L (non-neutralized) Chlorella vulgaris (freshwater algae).<br/>LC50 (48 h) 0.44 mg/L (non-neutralized) Daphnia magna (freshwater invertebrate).<br/>LC50 (96 h) 20.5 mg/L (non-neutralized) Lepomis macrochirus (freshwater fish)<br/>LD50 (oral) 238 – 277 mg/kg (Non-neutralized) Rat</p> <p><b>Chronic Toxicity:</b><br/>No known carcinogenic, chronic, mutagenic or reproductive effects for this product.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Not applicable to inorganic compounds<br/>Constituent 2 as an ingredient 68%</p> <p>Water</p>   | Yes           |
| Acetic acid       | Halliburton      | Chelating agent     | Contingency, ~0.003%  | <p><b>Acute Toxicity:</b><br/>EC50 (72h) 55.22 mg/L <i>Anabaena</i> (algae)<br/>LC50 (96h) 75 mg/L <i>Lepomis macrochirus</i> (fish)<br/>LC50 (96h) 251 mg/L <i>Gambusia affinis</i> (fish)<br/>EC50 (48h) 65 mg/L <i>Daphnia magna</i> (freshwater invertebrate)</p> <p><b>Chronic Toxicity:</b><br/>No known carcinogenic, chronic, mutagenic or reproductive effects for this product.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Readily biodegradable (99% @ 7d).<br/>Log Kow -0.17<br/>The product is not known to be Bioaccumulative.</p>   | Yes           |
| Rodine 85         | Henkel           | Acid inhibitor      | Contingency, <0.0005% | <p><b>Toxicology Data:</b><br/><b>Component 1 (&lt;10%)</b><br/>LC50 (96h) 4.6 mg/L <i>Leuciscus idus</i> (fish)<br/>EC50 (24h) 11 mg/L <i>Daphnia magna</i> (freshwater invertebrate)<br/>EC50 (8d) &gt;18 mg/L <i>Scenedesmus quadricauda</i> (algae)</p> <p><b>Component 2 (&lt;5%)</b><br/>EC50 (48h) 56 mg/L <i>Daphnia magna</i> (freshwater invertebrate)</p>  | Yes           |

| Trade name  | Supplier    | Purpose                   | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|-------------|-------------|---------------------------|-----------------------|---|---------------|
|             |             |                           |                       | <p><b>Component 3 (&lt;30%)</b><br/>           No data available. Data presented for a similar compound<br/>           LC50 (96h) <i>P. promelas</i> 24 mg/L (fish)<br/>           LC50 (96h) <i>B. rerio</i> 41 mg/L (fish)<br/>           EC50 (48h) <i>Daphnia magna</i> ~2 mg/L (freshwater invertebrate)</p> <p><b>Component 4 (60%) Water</b><br/> <b>Biodegradation/bioaccumulation:</b><br/>           Degradability: Component 1 37%, Component 2 3%, Component 3 97%<br/>           Bioaccumulative potential: Comp. 1 Log Kow -0.35, Comp. 2 LogKow 0.57, Comp. 3 LogPow &lt;1</p>   |               |
| Kwikseal    | Halliburton | Loss Circulation Material | Contingency, 1.12%    | <p><b>Product Data</b><br/>           This product is not expected to pose an ecological hazard as a result of its intended use<br/>           96h LC50 mysid shrimp, in standard drilling mud: &gt;1,000,000 ppm suspended particulate phase<br/>           Source: Kwik Sel NS Fine</p> <p><b>Substance Ecotoxicity Data</b><br/> <b>Woodfibre (30-60%)</b><br/>           Natural product – exempt from chemical disclosure requirements.<br/>           This component is an organic substance, ecotoxicity information is not known. However, environmental risks are expected to be low because: Component is derived from a naturally occurring substance</p> <p><b>Cellophane (30-60%)</b><br/>           No data available. Cellophane is composed of Cellulose (CAS#: 9004-34-6). Data for Cellulose:<br/>           Natural product – exempt from chemical disclosure requirements.<br/>           Has "no known toxicity". Acute Fish Toxicity LC50 &gt;100 mg/L; Acute Crustacean Toxicity EC50: &gt;100 mg/L; Acute Algae Toxicity EC50: &gt;100 mg/L Source IUCLID 2000</p> <p><b>Walnut hulls (30-60%)</b><br/>           Natural product – exempt from chemical disclosure requirements.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           Composed of natural products that are readily biodegradable.</p> | Yes           |
| Frac-Attack | Rheochem    | Loss Circulation Material | Contingency, 1.1%     | <p><b>Constituent 1 as an ingredient (&lt;10%)</b><br/> <b>Acute Toxicity:</b><br/>           LD50: 3059 mg/kg (Mouse/Rat)<br/>           LC50 (96 h): 1070 mg/L (Freshwater fish)</p> <p><b>Chronic Toxicity:</b><br/>           Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           Reacts with water. Persistence is unlikely based on information available.</p> <p><b>Constituent 2 as an ingredient (&lt;5%)</b><br/> <b>Acute Toxicity:</b><br/>           LD50 (ingestion) 7300 mg/kg (mouse)</p> <p><b>Chronic Toxicity:</b><br/>           Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation and ingestion may cause effects similar to those of acute inhalation and ingestion.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>           The product is not known/not expected to be Bioaccumulative.</p> <p><b>Constituent 3 as an ingredient (&lt;5%)</b><br/> <b>Acute Toxicity:</b><br/>           Concentration-based toxicity values were not available. Silica is a naturally occurring, insoluble component of soil.<br/>           TLo (inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis)</p> <p><b>Chronic Toxicity:</b></p>   | Yes           |

| Trade name | Supplier | Purpose | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|----------|---------|-----------------------|---|---------------|
|            |          |         |                       | <p>Product contains crystalline silica in the form of quartz or cristobalite which IARC has determined can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A – possible carcinogen to humans), only by exposure through inhalation.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Biodegradation is not applicable to inorganic compounds.</p> <p><b>Constituent 4 as an ingredient (&lt;3%)</b></p> <p><b>Acute Toxicity:</b><br/>Concentration-based toxicity values were not available. Silica is a naturally occurring, insoluble component of soil.<br/>LCLo (inhalation) 300 ug/m<sup>3</sup>/10 years (human)<br/>TCLo (inhalation) 16 000 000 particles/ft<sup>3</sup>/8 hours/17.9 years (human-fibrosis)</p> <p><b>Chronic Toxicity:</b><br/>Product contains crystalline silica in the form of quartz or cristobalite which IARC has determined can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A – possible carcinogen to humans), only by exposure through inhalation.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Biodegradation is not applicable to inorganic compounds.</p> <p><b>Constituent 5 as an ingredient (&lt;50%)</b></p> <p><b>Acute Toxicity:</b><br/>LC50 (96 h): &gt;100 mg/L (Oncorhynchus mykiss)<br/>LC50 (48 h): &gt;100 mg/L (Daphnia Magna)<br/>LC50 (48 h): &gt;100 mg/L (Scenedesmus quadricauda)<br/>Chronic Toxicity and Biodegradation/bioaccumulation:<br/>Natural product which is not anticipated to cause adverse environmental effects.</p> <p><b>Constituent 6 as an ingredient (&lt;50%)</b></p> <p><b>Acute Toxicity:</b><br/>LD50: &gt;2,000 mg/kg (Rat, LIR-30)<br/>Dermal Irritation (Rabbit): Negative ( LIR-30 )</p> <p><b>Chronic Toxicity and Biodegradation/bioaccumulation:</b><br/>General-purpose rubber used to replace natural rubber. The toxicological properties have not been fully investigated.</p> <p><b>Constituent 7 as an ingredient (&lt;50%)</b></p> <p><b>Acute Toxicity:</b><br/>LD50 (Oral) &gt;5000 mg/kg (rat)<br/>LD50 (skin) &gt;20000 mg/kg (rat)<br/>LD50 (inhalation) &gt;20000 mg/kg (rat)</p> <p><b>Chronic Toxicity and Biodegradation/bioaccumulation:</b><br/>General-purpose rubber used to replace natural rubber. The toxicological properties have not been fully investigated.</p> <p><b>Constituent 8 as an ingredient is a natural product (&lt;30%)</b></p> <p><b>Acute Toxicity:</b><br/>LC50 (inhalation) &gt; 5800 mg/m<sup>3</sup>/4 hours (rat)<br/>LD50 (ingestion) &gt; 5000 mg/kg (rat)<br/>LD50 (intraperitoneal) &gt; 31600 mg/kg (rat)<br/>LD50 (skin) &gt; 2000 mg/kg (rabbit).</p> <p><b>Chronic Toxicity and Biodegradation/bioaccumulation:</b><br/>Natural product which is not anticipated to cause adverse environmental effects.</p> <p><b>Constituent 9 as an ingredient (&lt;15%)</b></p> <p><b>Acute Toxicity:</b></p> |               |

| Trade name      | Supplier | Purpose                   | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|-----------------|----------|---------------------------|-----------------------|---|---------------|
|                 |          |                           |                       | <p>LCLo (inhalation) 300 ug/m<sup>3</sup>/10 years (human)<br/>           TClO (inhalation) 16 000 000 particles/ft<sup>3</sup>/8 hours/17.9 years (human-fibrosis).<br/> <b>Chronic Toxicity:</b><br/>           Product contains crystalline silica in the form of quartz or cristobalite which IARC has determined can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A – possible carcinogen to humans), only by exposure through inhalation.<br/> <b>Biodegradation/Bioaccumulation:</b><br/>           Not applicable to inorganic compounds.<br/> <b>Constituent 10 as an ingredient (&lt;10%)</b><br/> <b>Acute Toxicity:</b><br/>           Fish Toxicity 96h LC50: 8-19 g/L (Salmo gairdneri).<br/> <b>Chronic Toxicity:</b><br/>           Product contains crystalline silica in the form of quartz or cristobalite which IARC has determined can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A – possible carcinogen to humans), only by exposure through inhalation.<br/> <b>Biodegradation/Bioaccumulation:</b><br/>           Not applicable to inorganic compounds.<br/> <b>Constituent 11 as an ingredient (&lt;2%)</b><br/>           LD50 (oral) 3870 mg/kg (Rats).<br/>           TClO (inhalation) 400 mg/kg (human).<br/> <b>Chronic Toxicity:</b><br/>           Not listed as a carcinogen by ACGIH, IARC, NTP or OSHA.<br/> <b>Biodegradation/Bioaccumulation:</b><br/>           The high pH of this material makes it harmful to aquatic life.</p> |               |
| Strata-Vanguard | Newpark  | Loss Circulation Material | Contingency, 1.38%    | <p><b>Acute Toxicity:</b><br/>           This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.<br/> <b>Cristobalite as an ingredient (&lt;5%)</b><br/>           TClO (inhalation) 16 mppcf/8hours/17.9 years (humanfibrosis).<br/>           Quartz (Silica Crystalline) (14808-60-7) as an ingredient (&lt;2%)<br/>           LCLo (inhalation) 300 ug/m<sup>3</sup>/10 years (human)<br/>           TClO (inhalation) 16 000 000 particles/ft<sup>3</sup>/8 hours/17.9 years (human-fibrosis).<br/> <b>2-Propenenitrile-1,3- Butadiene Rubber as an ingredient (&lt;50%)</b><br/>           LC50 (96 h): &gt;100 mg/L (Oncorhynchus mykiss)<br/>           LC50 (48 h): &gt;100 mg/L (Daphnia Magna)<br/>           LC50 (48 h): &gt;100 mg/L (Scenedesmus quadricauda)<br/> <b>Natural Rubber as an ingredient is a natural product (&lt;50%)</b><br/>           It is not anticipated to cause adverse environmental effects.<br/> <b>Polyisoprene as an ingredient (&lt;50%)</b><br/>           General-purpose rubber used to replace natural rubber<br/>           Acute Oral LD50 : &gt;2000mg/kg (Rat, LIR-30)<br/>           Acute Dermal Irritation ( Rabbit ) : Negative ( LIR-30 )<br/>           Acute Inhalation LC50 : Not Available<br/>           SBR Elastomers as an ingredient (&lt;50%)<br/>           LD50 (Oral) &gt;5000 mg/kg (rat)<br/>           LD50 (skin) &gt;20000 mg/kg (rat)<br/>           LD50 (inhalation) &gt;20000 mg/kg (rat)<br/> <b>Cellulose (9004-34-6) as an ingredient is a natural product (&lt;30%)</b><br/>           LC50 (inhalation) &gt; 5800 mg/m<sup>3</sup>/4 hours (rat)</p>   | Yes           |

| Trade name | Supplier | Purpose | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|----------|---------|-----------------------|---|---------------|
|            |          |         |                       | LD50 (ingestion) > 5000 mg/kg (rat)<br>LD50 (intraperitoneal) > 31600 mg/kg (rat)<br>LD50 (skin) > 2000 mg/kg (rabbit).<br><b>Diatomaceous earth, Flux calcined as an ingredient (&lt;15%)</b><br>LCLo (inhalation) 300 ug/m <sup>3</sup> /10 years (human)<br>TCLo (inhalation) 16 000 000 particles/ft <sup>3</sup> /8 hours/17.9 years (human-fibrosis).<br><b>Fullers earth (Bentonite) as an ingredient (&lt;10%)</b><br>Fish Toxicity 96h LC50: 8-19 g/L (Salmo gairdneri).<br><b>Limestone as an ingredient (&lt;10%)</b><br>Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.<br>Polyethylene (9002-88-4) as an ingredient (<5%)<br>LDLo (ingestion) 3000 mg/kg (rat)<br>Magnesium Oxide (1309-48-4) as an ingredient (<1%)<br>TCLo (inhalation) 400 mg/kg (human)<br><b>Biodegradation/bioaccumulation:</b><br>This product is not expected to bioaccumulate.<br>This product has low mobility in soil. |               |

### C. CHEMICAL LIST

| Chemicals within products in Part B     | CAS #                | Maximum Mass fraction in System (%) |
|---|----------------------|-------------------------------------|
| water                                   | N/A                  | 57.924286%                          |
| sodium Chloride                         | 7647-14-5            | 15.880000%                          |
| Calcium Carbonate                       | 471-34-1             | 6.086857%                           |
| Barium Sulfate                          | 7727-43-7            | 4.875000%                           |
| Potassium Chloride                      | 7447-40-7            | 4.280000%                           |
| Polyalkylene                            | 9038-95-3            | 1.640000%                           |
| Polyethylene glycol butyl ether         | 9004-77-7            | 1.640000%                           |
| Plant Material                          | Organic material N/A | 0.700000%                           |
| Crystalline silica, quartz              | 14808-60-7           | 0.781094%                           |
| Calcined petroleum coke                 | 64743-05-1           | 0.600000%                           |
| Xanthan gum                             | 11138-66-2           | 0.470000%                           |
| Sodium carboxymethyl cellulose          | 9004-32-4            | 0.465300%                           |
| fatty acid ester                        | 10024-47-2           | 0.444338%                           |
| Glycerine                               | 56-81-5              | 0.444338%                           |
| Polyacrylamide / polyacrylate copolymer | 25085-02-3           | 0.315000%                           |
| Ethylene glycol monobutyl ether         | 111-76-2             | 0.210094%                           |
| Sodium Bicarbonate                      | 144-55-8             | 0.120000%                           |
| Glutaraldehyde                          | 111-30-8             | 0.118800%                           |
| Polyamine                               | 42751-79-1           | 0.100000%                           |
| water in product                        | 7732-18-5            | 0.194594%                           |
| Polypropylene glycol                    | 25322-69-4           | 0.080000%                           |
| Sodium Hydroxide                        | 1310-72-2            | 0.070000%                           |
| Wood fibre                              | Mixture (1757)       | 0.066667%                           |
| Cellulose                               | 9005-81-6            | 0.066667%                           |
| Guar Gum                                | Mixture (1756)       | 0.066667%                           |
| Mixture of C9-C11 alcohol ethoxylate    | 68439-46-3           | 0.059500%                           |
| Citric Acid                             | 77-92-9              | 0.067500%                           |

| Chemicals within products in Part B  | CAS #          | Maximum Mass fraction in System (%) |
|--|----------------|-------------------------------------|
| Sodium Carbonate   | 497-19-8       | 0.050000%                           |
| Modified bentonite   | 71011-24-0     | 0.047000%                           |
| Methyloxirane polymer with oxirane, ether with 1,2,3-propanetriol  | 9082-00-2      | 0.010000%                           |
| Methyloxirane polymer with oxirane, ether with 1,2-propanediol   | 53637-25-5     | 0.010000%                           |
| Glyoxal  | 107-22-2       | 0.004700%                           |
| Aluminium Sulphate   | 10043-01-3     | 0.003500%                           |
| Methanol   | 67-56-1        | 0.001200%                           |
| Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil fatty acid ester | 61790-12-3     | 0.000940%                           |
| Soybean oil  | 135800-37-2    | 0.000940%                           |
| Lecithins  | 8001-22-7      | 0.000940%                           |
| Isopropanol  | 8002-43-5      | 0.000940%                           |
| Diethylene glycol monobutyl ether  | 67-63-0        | 0.000094%                           |
| Quaternary Ammonium Compounds  | 112-34-5       | 0.000094%                           |
| Starch   | 61788-63-4     | 0.000094%                           |
| Vegetable Fibre  | 9005-25-8      | 0.091428%                           |
|  | Mixture        | 2.011428%                           |
|  | <b>Total</b>   | <b>100%</b>                         |
| Hydrochloric acid  | 7647-01-0      | Contingency, ~0.02                  |
| Acetic acid  | 64-19-7        | Contingency, ~0.003                 |
| Prop-2-yn-1-ol   | 107-19-7       | Contingency, <0.00005               |
| 1,3-diethyl-2-thiourea   | 105-55-5       | Contingency, <0.000025              |
| Formaldehyde reaction products with o-toluidine  | 68411-63-2     | Contingency, <0.00015               |
| Wood fibre   | Mixture (1757) | Contingency, <0.4                   |
| Cellophane   | 9005-81-6      | Contingency, <0.4                   |
| Walnut Hulls   | Mixture (1756) | Contingency, <0.4                   |
| Bentonite clay   | 1302-78-9      | Contingency, <0.0285                |
| Crystalline silica – quartz  | 14808-60-7     | Contingency, ~0.1286                |
| Calcium oxide  | 1305-78-8      | Contingency, <0.0285                |
| Calcium hydroxide  | 1305-62-0      | Contingency, <0.0143                |
| Cristobalite   | 14464-46-1     | Contingency, <0.0143                |
| Magnesium oxide  | 1309-48-4      | Contingency, <0.057                 |
| Cellulose, wood fibre, nut hulls   | 9004-34-6      | Contingency, ~0.3705                |
| 1,3-Butadienewith 2-Propenenitrile (Rubber)  | 9003-18-3      | Contingency, <0.1425                |
| Polyisoprene   | 9003-31-0      | Contingency, <0.1425                |
| Elastomers   | 308079-71-2    | Contingency, <0.1425                |
| Flux calcined Diatomaceous earth   | 68855-54-9     | Contingency, <0.0428                |
| Cristobalite   | 14464-46-1     | Contingency, <0.0007                |
| Quartz (crystalline silica)  | 14808-60-7     | Contingency, <0.0003                |
| 2-propenenitrile-1,3-butadiene rubber  | 9003-18-3      | Contingency, <0.0069                |
| Natural rubber   | 9006-04-6      | Contingency, <0.0069                |
| Polyisoprene   | 9003-31-0      | Contingency, <0.0069                |
| Sbr elastomers   | 9003-55-8      | Contingency, <0.0069                |
| Cellulose  | 9004-34-6      | Contingency, <0.0041                |
| Diatomaceous earth, flux calcined  | 68855-54-9     | Contingency, <0.0021                |
| Fullers earth  | 8031-18-3      | Contingency, <0.0014                |
| Limestone (calcium carbonate)  | 1317-65-3      | Contingency, <0.0014                |
| Polyethylene   | 9002-88-4      | Contingency, <0.0004                |
| Magnesium oxide  | 1309-48-4      | Contingency, <0.0001                |

| A. SYSTEM DETAILS                         |  |
|---|--|
| OPERATOR:                                 | Buru Energy                                  |
| PROJECT / WELL:                           | 2018 Drilling and Workover Campaign          |
| SYSTEM:                                   | Tuned Spacer and Tuned Light Cement          |
| TOTAL VOLUME OF SYSTEM (m <sup>3</sup> ): | Approximately 172 m <sup>3</sup> (1080 bbls) |

## B. PRODUCT LIST

| Trade name        | Supplier    | Purpose                      | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|-------------------|-------------|------------------------------|-----------------------|---|---------------|
| Cement - Class G  | Halliburton | Cement                       | 42.2%                 | <p><u>CONSTITUENT 1 (≤100%):</u><br/>           LD50 Oral: &gt;2000 mg/kg (Rat); LD50 Dermal: &gt;2000 mg/kg; LC50 Inhalation: &gt;1.0 mg/L (4h) (Rat)<br/>           After hardening with water or moisture, cement presents no ecotoxicity risks. (Source: IUCLID 2000)<br/>           Static Acute Aquatic Toxicity- Freshwater and Marine Fish:- 96 hour LC50: &gt;1,500 mg/L; Static Acute Aquatic Toxicity -Freshwater and Marine Invertebrates:- 48 hour LC50: &gt;1,000 mg/L; Static Acute Aquatic Toxicity - Freshwater and Marine Algae:- 72 hour EC50: &gt;1,000 mg/L<br/>           Partition Coefficient, n-Octanol/Water: Not Applicable for inorganics<br/>           Oxygen Demand, Chemical Oxygen Demand: Not Applicable for inorganics<br/>           Biodegradability, Seawater – Indigenous microbes: Not Applicable for inorganics</p> <p><u>CONSTITUENT 2 (≤10%):</u><br/>           LD50 Oral: &gt;15000 mg/kg (human); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance); Freshwater Acute Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/>           Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p> | Yes           |
| Water             | Onsite bore | Mix water                    | 34.5%                 | N/A   | N/A           |
| Silicalite Liquid | Halliburton | Light weight cement additive | 8.7%                  | <p>PRODUCT CEFAS LISTED<br/>           100% PLONOR</p> <p><u>CONSTITUENT 1 (≤60%):</u><br/>           SiO<sub>2</sub> is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface. Biodegradability is not applicable for silica since it is inorganic. Additionally, bioaccumulation is not expected.<br/>           Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum);<br/>           Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia);<br/>           Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio); Source: IUCLID 2000</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>           No Hazard</p> <p><u>CONSTITUENT 3 (≤1%):</u><br/>           LC50(96h): &gt; 1000 mg/L (Brachydanio rerio)<br/>           LC50(24h): &gt;1000 mg/L (Daphnia magna)<br/>           LC50(10d): 50566 mg/kg (Corophium volutator)</p>  | Yes           |
| Barite            | Halliburton | Weighting Agent              | 5.1%                  | <p>PRODUCT CEFAS LISTED<br/>           100% PLONOR</p>  | Yes           |

| Trade name | Supplier    | Purpose                      | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|-------------|------------------------------|-----------------------|---|---------------|
|            |             |                              |                       | <p><u>CONSTITUENT 1 (≤100%):</u><br/> Oral LD50: &gt;5000 mg/kg (Rat), Oral LD50: &gt;3000 mg/kg (Mouse), Inhalation LC50: &gt;1.1 mg/L (Rat, Aerosal, 4h) (similar substance)<br/> Freshwater Algae Toxicity 72h EC50: &gt; 61.1 mg/L (Pseudokirchneriella subcapitata) [ECHA];<br/> Freshwater Crustacean Toxicity 48h LC50: 14.5 mg/L (Daphnia magna) [ECHA] (similar substance);<br/> Freshwater Fish Toxicity 96h LC50: &gt; 3.5 mg/L (Danio rerio) [ECHA];<br/> No Marine Data<br/> Marine sub-chronic Crustacean Toxicity NOEC (7d) 100 mg/L (Cancer anthonyi)<br/> Bioaccumulation Fish BCF: 1.2-74.4 (Lepomis macrochirus) [ECHA];<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤5%):</u><br/> LD50 Oral: &gt;15000 mg/kg (human)<br/> Freshwater Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance);<br/> Freshwater Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/> Marine Water Algae Toxicity 72h EC50: 4717 mg/L (Skeletonema costatum)<br/> Marine Water Crustacean Toxicity 48h LC50: 7713 mg/L (Acartia tonsa)<br/> Marine Water Fish Toxicity 96h LC50: &gt; 4200 mg/L (Scophthalmus maximus) [Halliburton Sponsored Study];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p> |               |
| HGS-4K28   | Halliburton | Light weight cement additive | 2.75%                 | <p><u>CONSTITUENT 1 (≤100%):</u><br/> Oral LD50: &gt;2000 mg/kg estimated;<br/> Freshwater Algae Toxicity 96h EC50: &gt;1000 mg/L (Pseudokirchnerella subcapitata);<br/> Freshwater Crustacean Toxicity 96h EC50: &gt;1000 mg/L (Daphnia magna);<br/> Freshwater Fish Toxicity 96h LC50: &gt;1000 mg/L (Danio rerio);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤10%):</u><br/> Freshwater Algae Toxicity 72h EC50: 440 mg/L (Pseudokirchneriella subcapitata);<br/> Freshwater Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia);<br/> Freshwater Fish Toxicity 96h LC50: 5000 mg/L (Danio rerio);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable</p>  | Yes           |
| Microbond  | Halliburton | Expander                     | 2.61%                 | <p><u>CONSTITUENT 1 (≤ 100%):</u><br/> Oral LD50: 3000 mg/kg, Inhalation LD50: &gt;3.26 mg/L (4h), Dermal LD50: &gt;2500 mg/kg (Rabbit)<br/> Freshwater Algae Toxicity 72h EC50: &gt; 100 mg/L (Selenastrum capricornutum) [OECD SIDS];<br/> Freshwater Crustacean Toxicity 48h EC50: &gt; 100 mg/L (Daphnia magna) [OECD SIDS];<br/> Freshwater Fish Toxicity 96h EC50: &gt; 100 mg/L (Oryzias latipes) [OECD SIDS];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤ 30%):</u><br/> Oral LD50: &gt;2000 mg/kg (Rat) (Similar Substance), Dermal LD50: &gt;2000 mg/kg (Rat) (Similar</p>   | Yes           |

| Trade name      | Supplier    | Purpose           | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|-----------------|-------------|-------------------|-----------------------|--|---------------|
|                 |             |                   |                       | <p>Substance), Inhalation LC50: 1.9 mg/L air (Rat) 4h (Similar substance)<br/> Freshwater Algae Toxicity 72h EC50: 3.6 mg/L (Desmodesmus subspicatus) [ECHA];<br/> Freshwater Crustacean Toxicity 48h EC50: 5.4 mg/L (Daphnia magna) [ECHA];<br/> Freshwater Fish Toxicity 96h EC50: &gt; 100 mg/L (Danio rerio) [ECHA];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 3 (≤ 10%):</u><br/> Oral LD50: 7340 mg/kg (Rat), Dermal LD50: &gt;2500 mg/kg (Rabbit), Effect concentrations in the aquatic environment are attributable to a change in pH value.<br/> Freshwater Crustacean Toxicity 48h EC50: 49.1 mg/L (Daphnia magna) [ECHA];<br/> Marine Water Crustacean Toxicity 96h LC50: 158 mg/L (Crangon septemspinosa) [ECHA];<br/> Freshwater Fish Toxicity 96h LC50: 50.6 mg/L (Oncorhynchus mykiss) [ECHA];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 4 (≤ 5%):</u><br/> LD50 Oral: 4220 mg/kg (Rat), Inhalation LD50: &gt;4.74 mg/L (4h) (Rat)<br/> Freshwater Algae Toxicity 96h EC50: 650 mg/L (Navicula seminulum) [US EPA ECOTOX];<br/> Freshwater Crustacean Toxicity 48h EC50: 1020 mg/L (Ceriodaphnia dubia) [ECHA];<br/> Freshwater Fish Toxicity 96h LC50: 7100 mg/L (Lepomis macrochirus) [ECHA];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> |               |
| TUNED SPACER E+ | Halliburton | Mud/Cement Spacer | 2.00%                 | <p><u>CONSTITUENT 1 (≤100%):</u><br/> Component is naturally occurring and not intrinsically hazardous.<br/> <u>CONSTITUENT 2 (≤10%):</u><br/> Oral LD50: &gt;15000 mg/kg (Human)<br/> Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance);<br/> Freshwater Acute Fish Toxicity 96h LLO: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 3 (≤1%):</u><br/> Oral LD50: &gt;15000 mg/kg (Human) (Similar Substance); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance);<br/> Freshwater Acute Fish Toxicity 96h LLO: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 4 (≤1%):</u><br/> Oral LD50: &gt;15000 mg/kg (Human) (Similar Substance); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Environment Canada] (similar substance);<br/> Freshwater Acute Fish Toxicity 96h LLO: 10000 mg/L (Danio rerio) [Environment Canada] (similar substance);</p>  | Yes           |

| Trade name       | Supplier    | Purpose                    | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|------------------|-------------|----------------------------|-----------------------|--|---------------|
|                  |             |                            |                       | <p>Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 5 (≤30%):</u><br/>           Component is PLONOR listed<br/>           Oral LC50: &gt;5000 mg/L; Inhalation LC50: &gt; 480 mg/m3; Freshwater Acute Crustacean Toxicity 48h NOELr: 1000 mg/L (Daphnia magna) [US EPA HPVIS] (similar substance); Freshwater Acute Fish Toxicity 48h LC50: 7300 mg/L (Oncorhynchus mykiss) [US EPA ECOTOX];<br/>           Bioaccumulation Log Kow: -3.45 [EPISUITE] (similar substance);<br/>           Freshwater Biodegradation 10d: 29 % [US EPA HPV Haz. Char. Doc.] (similar substance);<br/> <u>CONSTITUENT 6 (≤10%):</u><br/>           Component is naturally occurring and not intrinsically hazardous.<br/>           Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p>    |               |
| Halad-413L       | Halliburton | Fluid Loss Additive        | 1.41%                 | <p><u>CONSTITUENT 1 (≤30%):</u><br/>           Oral LD50: &gt;2000 mg/kg (Rat)<br/> <u>CONSTITUENT 2 (≤100%):</u><br/>           Product is naturally occurring and not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards<br/> <u>PRODUCT DATA</u><br/>           Marine Water Acute Algae Toxicity 72h EC50: 1102 mg/L (Skeletonema costatum) [OSPAR];<br/>           Marine Water Acute Crustacean Toxicity 48h LC50: &gt; 2000 mg/L (Acartia tonsa) [OSPAR];<br/>           Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [OSPAR];<br/>           Bioaccumulation Log Kow: &lt; 3.5 [Halliburton Funded Study];<br/>           Marine Water Biodegradation 28d: 6 % [Halliburton Funded Study];</p>   | Yes           |
| Econolite Liquid | Halliburton | Cement Additive Stabiliser | 0.865%                | <p><u>CONSTITUENT 1 (≤60%):</u><br/>           LD50 Oral: 800 mg/kg (Rat); LD50 Oral: 770 mg/kg (Mouse); LD50 Dermal: &gt; 5000 mg/kg (Rat) (Similar substance); LC50 Inhalation &gt;2.06 mg/L (Rat) 4h (Similar substance); Freshwater Acute Algae Toxicity 72h EC50: &gt; 345 mg/L (Scenedesmus subspicatus) [ECHA]; Freshwater Acute Crustacean Toxicity 48h EC50: 1700 mg/L (Daphnia magna) [OECD SIDS]; Freshwater Acute Fish Toxicity 96h LC50: 1108 mg/L (Danio rerio) [OECD SIDS];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 2 (≤60%):</u><br/>           Component is naturally occurring and is not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p> | Yes           |
| Gascon 469       | Halliburton | Cement Additive Stabiliser | 0.680%                | <p><u>CONSTITUENT 1 (≤1%):</u><br/>           Effect concentrations in the aquatic environment are attributable to a change in pH value<br/>           Freshwater Acute Crustacean Toxicity 48h EC50: 40.4 mg/L (Ceriodaphnia sp.) [ECHA];<br/>           Freshwater Acute Fish Toxicity 96h LC50: 125 mg/L (Gambusia affinis) [OECD SIDS];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 2 (≤60%):</u></p>  | Yes           |

| Trade name | Supplier    | Purpose                                  | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|-------------|--|-----------------------|---|---------------|
|            |             |  |                       | <p>Freshwater Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum) [IUCLID; LOLI];<br/>           Freshwater Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia) [IUCLID; LOLI];<br/>           Freshwater Acute Fish Toxicity 96h LC50: 5000 mg/L (Brachydanio rerio) [IUCLID; LOLI];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 3 (≤100%):</u><br/>           No Hazard. Product is naturally occurring</p>  |               |
| HR-6L      | Halliburton | Cement Retarder                          | 0.626%                | <p><u>CONSTITUENT 1 (≤100%):</u><br/>           Component is naturally occurring and is not intrinsically hazardous<br/> <u>CONSTITUENT 2 (≤60%):</u><br/>           Product is PLONOR listed<br/>           Oral LC50: &gt;5000 mg/L; Inhalation LC50: &gt; 480 mg/m3<br/>           Marine Water Acute Algae Toxicity 72h EC50: 301 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: 1261 mg/L (Acartia tonsa) [Halliburton Funded Study];<br/>           Bioaccumulation Log Pow: -3.45 (Calculated) [Halliburton Funded Study];<br/>           Biodegradation: No data - expected to be inherently biodegradable<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p>                                     | Yes           |
| Halad-344  | Halliburton | Fluid Loss Additive for high temperature | 0.193%                | <p><u>PRODUCT DATA</u><br/>           Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study];<br/>           Bioaccumulation Log Pow: &lt;0 [Halliburton Funded Study];<br/>           Marine Water Biodegradation 28d: 0% [Halliburton Funded Study];</p>   | Yes           |
| CFR-8L     | Halliburton | Friction Reducer                         | 0.0732%               | <p><u>PRODUCT CEFAS LISTED</u><br/> <u>CONSTITUENT 1 (≤60%):</u><br/>           Oral LD50: &gt;5000 mg/kg (Rat)<br/>           Marine Water Algae Toxicity 72h EC50: 7631.73 mg/L (Skeletonema costatum);<br/>           Marine Water Crustacean Toxicity 48h LC50: 2200 mg/L (Acartia tonsa);<br/>           Marine Water Fish Toxicity 96h LC50: 1006 mg/L (Scophthalmus maximus);<br/>           Fresh Water Crustacean Toxicity 48h LC50: &gt;100 mg/L (Daphnia magna);<br/>           Bioaccumulation Log Pow: &lt; 0;<br/>           Inherently biodegradable: Biodegradation 28d: 38%;<br/> <u>CONSTITUENT 2 (≤100%):</u><br/>           Component is naturally occurring and not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p> | Yes           |
| CFR-3L     | Halliburton | Friction Reducer                         | 0.723%                | <p><u>PRODUCT CEFAS LISTED</u><br/> <u>CONSTITUENT 1 (≤60%):</u><br/>           Oral LD50: &gt;5000 mg/kg (Rat); Marine Water Acute Algae Toxicity 72h EC50: &gt; 3300 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: 1687 mg/L (Acartia tonsa) [Halliburton Funded Study]; Freshwater Acute Fish Toxicity 48h LC50: 7478 mg/L (Aphyosemion bivittatum) [SKW Trostberg]; Bioaccumulation Log Pow: &lt; 0 [Halliburton Funded Study]; Marine Water Biodegradation 28d: 0% [Halliburton Funded Study];</p>  | Yes           |

| Trade name  | Supplier    | Purpose                                    | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|-------------|-------------|--|-----------------------|--|---------------|
|             |             |  |                       | <p><u>CONSTITUENT 2 (≤60%):</u><br/>Component is naturally occurring and not intrinsically hazardous. No data available to indicate product or components present at greater than 0.1% are chronic health hazards.</p>   |               |
| NF-6        | Halliburton | Reduces air entrainment into cement slurry | 0.0575%               | <p><u>CONSTITUENT 1 (≤10%):</u><br/>Acute Fish Toxicity 96h LC50: &gt;3200 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: 2500 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 991.02 mg/L (Skeletonema costatum)<br/>Bioaccumulation: Calculated Log Pow: 7.45</p> <p><u>CONSTITUENT 2 (≤5%):</u><br/>Oral LD50: &gt;15900 mg/kg (Mouse); Inhalation LC50: &gt;5 mg/L (4h) (Rat); Acute Fish Toxicity 96h LC50: &gt;1800 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: &gt;10000 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 41 mg/L (Skeletonema costatum)<br/>Bioaccumulation: Calculated Log Pow: 4.28</p> <p><u>CONSTITUENT 3 (≤5%):</u><br/>Oral LD50: &gt; 5000 mg/kg (Rat); Dermal LD50: &gt;5000 mg/kg (Guinea Pig); Acute Fish Toxicity 96h LC50: &gt;5600 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: 5085.71 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 6488.87 mg/L (Skeletonema costatum)<br/>Bioaccumulation: Calculated Log Pow: 22.69 (MW&gt;700)</p> <p><u>CONSTITUENT 4 (≤10%):</u><br/>No Hazard. Product is naturally occurring</p> <p><u>CONSTITUENT 5 (≤100%):</u><br/>Oral LD50: 90 mg/kg (Mouse) (Similar Substance); Acute Fish Toxicity 96h LC50: &gt;5600 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: &gt;10000 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: &gt;3200 mg/L (Skeletonema costatum)<br/>Bioaccumulation: Calculated Log Pow: 7.09</p> <p><u>PRODUCT DATA</u><br/>Marine Water Acute Algae Toxicity 72h EC50: 1100 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: &gt; 1000 mg/L (Acartia tonsa) [Halliburton Funded Study]; Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study]; Marine Water Biodegradation 28d: 70% [Halliburton Funded Study];<br/>No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p> | Yes           |
| D-AIR 3000L | Halliburton | Defoamer                                   | 0.0568%               | <p><u>CONSTITUENT 1 (≤100%):</u><br/>LD50 Oral: &gt;5000 mg/kg (Rat) (Similar Substance); LD50 Dermal: &gt;2000 mg/kg (Rat) (Similar Substance); LC 50 Inhalation &gt;2.1 mg/L (Rat); Acute Algae Toxicity 96h EC50 : 22 mg/L (Pseudokirchneriella subcapitata); Acute Fish Toxicity Data 96h LC50 : &gt;1000 mg/L (Salmo gairdneri)<br/>Acute Crustacean Toxicity 48h EC50: 480 mg/L (Daphnia magna); Readily Biodegradable (77-81% @28d)<br/>Bioaccumulation: Log Pow &gt;7</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>LD50 Oral: &gt;2000 mg/kg (Rat); LD50 Dermal: &gt;8000 mg/kg (Rat); LC50 Inhalation: &gt;0.17 mg/L (4h)<br/>Marine Water Acute Algae Toxicity 72h EC50: 426 mg/L (Skeletonema costatum) [OSPAR];</p>   | Yes           |

| Trade name | Supplier    | Purpose          | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|------------|-------------|------------------|-----------------------|--|---------------|
|            |             |                  |                       | <p>Marine Water Acute Crustacean Toxicity 48h EC50: 433.2 mg/L (Acartia tonsa) [OSPAR];<br/> Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study];<br/> Bioaccumulation Log Pow: 5.06 [Halliburton Funded Study];<br/> <u>CONSTITUENT 3 (≤1%):</u><br/> Component is a synthetic surface modified Amorphous Silica (CAS #: 7631-86-9); Fish and Invertebrate toxicity testing with Amorphous Silica have shown low hazard for this component.<br/> Source: OECD SIDS<br/> No data available to indicate product or components present at greater than 1% are chronic health hazards</p> |               |
| SA-1015    | Halliburton | Suspension Agent | 0.0176%               | <p>PRODUCT DATA<br/> Freshwater Algae Toxicity 72h EC50: &gt;100 mg/L (Scenedesmus subspicatus);<br/> Freshwater Crustacean Toxicity 48h EC50: &gt;100 mg/L (Daphnia magna);<br/> Freshwater Fish Toxicity 96h LC50: &gt;100 mg/L (Oncorhynchus mykiss);<br/> Marine Water Algae Toxicity 72h EC50: &gt; 5600 mg/L (Skeletonema costatum);<br/> Marine Water Crustacean Toxicity 48h LC50: 234.22 mg/L (Acartia tonsa);<br/> Marine Water Fishn Toxicity 96h LC50: &gt; 234.22 mg/L (Cyprinodon variegatus);<br/> Readily biodegradable (95% at 28 days);<br/> Bioaccumulation Log Pow: 0</p>  | Yes           |
| Total      |             |                  | 100%                  |  |               |

### C. CHEMICAL LIST

| Chemicals within products  | CAS #          | Maximum fraction in System (%) |
|--|----------------|--------------------------------|
| Portland cement  | 65997-15-1     | 38.2%                          |
| Customer Supplied Mix Water  | Not Applicable | 34.5%                          |
| Water in Products  | 7732-18-5      | 5.8%                           |
| Silica, amorphous - fumed  | 7631-86-9      | 5.5%                           |
| Barium Sulfate   | 7727-43-7      | 4.85%                          |
| Soda Lime Borosilicate Glass   | 65997-17-3     | 2.67%                          |
| Crystalline silica, quartz   | 14808-60-7     | 2.33%                          |
| Calcium sulphate - Gypsum  | 10101-41-4     | 1.87%                          |
| Bentonite  | 1302-78-9      | 1.20%                          |
| Sodium Lignosulfonate  | 8061-51-6      | 0.850%                         |
| Calcium aluminate  | 12042-68-1     | 0.455%                         |
| Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated | 473268-27-8    | 0.423%                         |
| Sodium silicate  | 1344-09-8      | 0.346%                         |
| Calcium hydroxide  | 1305-62-0      | 0.271%                         |
| N,N-dimethylacrylamide copolymer with calcium AMPS   | 103115-52-2    | 0.164%                         |
| Welan gum  | 72121-88-1     | 0.100%                         |
| Synthetic Crystalline-Free Silica Gel (Flow Agent)   | 112926-00-8    | 0.0826%                        |
| Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone   | 40104-76-5     | 0.0521%                        |

| Chemicals within products        | CAS #       | Maximum fraction in System (%) |
|----------------------------------|-------------|--------------------------------|
| Rape Oil                         | 8002-13-9   | 0.0506%                        |
| Alkenes, C15-C18                 | 93762-80-2  | 0.0341%                        |
| Sodium bicarbonate               | 144-55-8    | 0.0314%                        |
| Sulfonated organic polymer       | 526203-62-3 | 0.0256%                        |
| Crystalline silica, cristobalite | 14464-46-1  | 0.0200%                        |
| Crystalline silica, tridymite    | 15468-32-3  | 0.0200%                        |
| Dilutan Gum                      | 125005-87-0 | 0.0176%                        |
| Polypropylene glycol             | 25322-69-4  | 0.0171%                        |
| Lecithins                        | 8002-43-5   | 0.00963%                       |
| Sodium sulfate                   | 7757-82-6   | 0.00963%                       |
| Sodium hydroxide                 | 1310-73-2   | 0.00680%                       |
| Silica, amorphous precipitated   | 67762-90-7  | 0.00568%                       |
| Monopropylene glycol monooleate  | 1330-80-9   | 0.00287%                       |
| Aluminium stearate               | 637-12-7    | 0.000575%                      |
| Sorbitan, monopalmitate          | 26266-57-9  | 0.000575%                      |
|                                  | Total       | ~100%                          |

## A. System Details

|                        |                                     |
|------------------------|-------------------------------------|
| Operator               | Buru Energy                         |
| Project/Well           | 2018 Drilling and Workover Campaign |
| System                 | Inhibited water                     |
| Total Volume of System | Approximately 50,000 L per well     |

## B. Product List

| Product Name       | Supplier    | Purpose                             | Product in System Fluid (%) | Toxicity and Ecotoxicity Information   | MSDS attached |
|--------------------|-------------|-------------------------------------|-----------------------------|--|---------------|
| ALDACIDE G         | Halliburton | Biocide                             | 0.06%                       | <p><u>Component 1 (10-30% as an ingredient)</u></p> <p><b>Acute Toxicity</b><br/>                     Algae – EC50 (72h) 0.61 mg/L<br/>                     Fish – NOEC (97d) 1.6 mg/L, LC50 (96h) 3.5 mg/L<br/>                     Microorganisms – EC50 (17h) 6.65 mg/L<br/>                     Invertebrates – EC50 (48h) 0.35 mg/L, NOEC (21d) 0.13 mg/L</p> <p><b>Chronic Toxicity</b><br/>                     Can cause skin, eye etc. irritation.</p> <p><b>Biodegradation/Bioaccumulation</b><br/>                     Ready biodegradable (75% @ 28d)<br/>                     Log Pow -0.36</p> <p><u>Component 2 (&lt;1% as an ingredient)</u></p> <p><b>Acute Toxicity</b><br/>                     Algae – EC50 (96h) 22,000 mg/L, NOEC (8d) 8,000 mg/L<br/>                     Fish – LC50 (96h) 15,400 mg/L, EC50 (200h) 14,536 mg/L<br/>                     Microorganisms – IC50 (3h) &gt;1,000 mg/L<br/>                     Invertebrates – EC50 (96h) 18,260 mg/L, NOEC (21d) 208 mg/L</p> <p><b>Chronic Toxicity</b><br/>                     No information on chronic toxicity available for this ingredient.</p> <p><b>Biodegradation/Bioaccumulation</b><br/>                     Readily biodegradable (95-97% @ 28d). Log Pow -0.77</p> <p><u>Component 3 (≥70% as an ingredient)</u><br/>                     Water</p> | Yes           |
| Potassium Chloride | Halliburton | Clay & Shale Stabilizer / Weighting | 4.45%                       | <p><b>Acute Toxicity:</b><br/>                     Oral – LD50: 2,600 mg/kg (Rat).<br/>                     Fish – LC50 (48 hr): 720 mg/L (<i>Lctalurus punctulus</i>).<br/>                     Crustacean – LC50 (48 hr): 177 mg/L (<i>Daphnia magna</i>).<br/>                     Algae – EC50 (120 hr): 1,337 mg/L (<i>Nitzschia linearis</i>).</p>   | Yes           |

| Product Name | Supplier    | Purpose             | Product in System Fluid (%) | Toxicity and Ecotoxicity Information  | MSDS attached |
|--------------|-------------|---------------------|-----------------------------|---|---------------|
|              |             |                     |                             | <p><b>Chronic Toxicity:</b><br/>Prolonged or repeated skin contact may cause drying with irritation etc. A chronic reproductive test with invertebrate (<i>D. magna</i>) gave LOEC of 101 mg/L.</p> <p><b>Biodegradation/bioaccumulation:</b><br/>Potassium Chloride is an inorganic salt, naturally occurring. KCl is fully soluble and highly mobile in soil. The product is not known to be bioaccumulative.</p>   |               |
| BARACOR 100  | Halliburton | Corrosion Inhibitor | 0.98%                       | <p><u>Component 1 (10-30% as an ingredient)</u></p> <p><b>Acute Toxicity</b><br/>Algae – EC50 (72h) &gt;120 mg/L, NOEC (72h) &gt;120 mg/L<br/>Fish – LC50 (96h) &gt;100 mg/L<br/>Microorganisms – EC50 (3h) &gt;1,000 mg/L<br/>Invertebrates – LC50 (48h) 287.2 mg/L, EC50 (48h) &gt;120 mg/L</p> <p><b>Chronic Toxicity</b><br/>Can cause skin, eye etc. irritation.</p> <p><b>Biodegradation/Bioaccumulation</b><br/>No information available on biodegradation. Low Pow &lt;1</p> <p><u>Component 2 (10-30% as an ingredient)</u></p> <p><b>Acute Toxicity</b><br/>Algae – EC50 (96h) 22,000 mg/L, NOEC (8d) 8,000 mg/L<br/>Fish – LC50 (96h) 15,400 mg/L, EC50 (200h) 14,536 mg/L<br/>Microorganisms – IC50 (3h) &gt;1,000 mg/L<br/>Invertebrates – EC50 (96h) 18,260 mg/L, NOEC (21d) 208 mg/L</p> <p><b>Chronic Toxicity</b><br/>No information on chronic toxicity available for this ingredient.</p> <p><b>Biodegradation/Bioaccumulation</b><br/>Readily biodegradable (95-97% @ 28d). Log Pow -0.77</p> <p><u>Component 3 (1-5% as an ingredient)</u></p> <p><b>Acute Toxicity</b><br/>Algae – EC50 (72h) &gt;91.5 mg/L<br/>Fish – TL50 (96h) 103 mg/L, NOEC (229d) &gt;54 mg/L<br/>Microorganisms – NOEC (90d) &gt;200 mg/L<br/>Invertebrates – TL50 (96h) 115 mg/L, NOEC (147d) 9.3 mg/L</p> <p><b>Chronic Toxicity</b><br/>Suspected carcinogen</p> <p><b>Biodegradation/Bioaccumulation</b><br/>Readily biodegradable (100% @ 14d). Low Pow -2.62</p> <p><u>Component 4 (≥35% as an ingredient)</u></p> | Yes           |

| Product Name    | Supplier    | Purpose           | Product in System Fluid (%) | Toxicity and Ecotoxicity Information   | MSDS attached |
|-----------------|-------------|-------------------|-----------------------------|--|---------------|
|                 |             |                   |                             | Water  |               |
| OXYGON          | Halliburton | Oxygen Scavenger  | 0.0800%                     | <p><b>Acute Toxicity:</b><br/> Fish Toxicity 96h NOEC: &gt;32 mg/L (<i>Scophthalmus maximus</i>)<br/> Crustacean Toxicity 48h LC50: 738.75 mg/L (<i>Acartia tonsa</i>)<br/> Algae Toxicity 72h EC50: 1,661 mg/L (<i>Skeletonema costatum</i>)</p> <p><b>Chronic Toxicity:</b><br/> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><b>Biodegradation/bioaccumulation:</b><br/> Readily biodegradable</p>   | Yes           |
| Water           | Onsite Bore | Base Fluid        | 94.43%                      | Not Applicable   | No            |
| <b>Total</b>    |             |                   | <b>100%</b>                 |  |               |
| Sodium Chloride | Halliburton | Weighing Material | Contingency, 4.45%          | <p><b>Acute Toxicity:</b><br/> Oral (rat) LD50: 3,000 mg/kg</p> <p><b>Chronic Toxicity:</b><br/> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><b>Biodegradation/bioaccumulation:</b><br/> Sodium Chloride is an inorganic, naturally occurring salt and Biodegradation does not apply due to being inorganic (does not contain any Carbon or Hydrogen). Sodium Chloride is fully water soluble, abundant in nature and highly mobile in soil. The product is not known to be Bioaccumulative.</p> | Yes           |

### C. Chemical List

| Chemicals  | CAS number | Mass fraction (%)  |
|--|------------|--------------------|
| Gluteraldehyde   | 111-30-8   | 0.0594             |
| Methanol   | 67-56-1    | 0.2456             |
| Potassium Chloride   | 7447-40-7  | 4.45               |
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | 0.2842             |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | 0.0098             |
| Organic acid salt  | 6381-77-7  | 0.08               |
| Water  | 7732-18-5  | 94.871             |
| <b>Total</b>   |            | <b>100%</b>        |
| Sodium Chloride  | 7647-14-5  | Contingency, ~4.45 |

| A. SYSTEM DETAILS                         |   |
|---|---|
| OPERATOR:                                 | Buru Energy                             |
| PROJECT / WELL:                           | 2018 Drilling and Workover Campaign     |
| SYSTEM:                                   | Cement Plugs                            |
| TOTAL VOLUME OF SYSTEM (m <sup>3</sup> ): | Approximately 4 m <sup>3</sup> per well |

## B. PRODUCT LIST

| Trade name       | Supplier    | Purpose                    | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------------|-------------|----------------------------|-----------------------|---|---------------|
| Water            | Onsite bore | Mix water                  | 28.5818%              | N/A   | N/A           |
| Cement - Class G | Halliburton | Cement                     | 25.1998%              | <p><u>CONSTITUENT 1 (≤100%):</u><br/>           LD50 Oral: &gt;2000 mg/kg (Rat); LD50 Dermal: &gt;2000 mg/kg; LC50 Inhalation: &gt;1.0 mg/L (4h) (Rat)<br/>           After hardening with water or moisture, cement presents no ecotoxicity risks. (Source: IUCLID 2000)<br/>           Static Acute Aquatic Toxicity- Freshwater and Marine Fish:- 96 hour LC50: &gt;1,500 mg/L; Static Acute Aquatic Toxicity -Freshwater and Marine Invertebrates:- 48 hour LC50: &gt;1,000 mg/L; Static Acute Aquatic Toxicity - Freshwater and Marine Algae:- 72 hour EC50: &gt;1,000 mg/L<br/>           Partition Coefficient, n-Octanol/Water: Not Applicable for inorganics<br/>           Oxygen Demand, Chemical Oxygen Demand: Not Applicable for inorganics<br/>           Biodegradability, Seawater – Indigenous microbes: Not Applicable for inorganics</p> <p><u>CONSTITUENT 2 (≤10%):</u><br/>           LD50 Oral: &gt;15000 mg/kg (human); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance); Freshwater Acute Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/>           Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p> | Yes           |
| Econolite Liquid | Halliburton | Cement Additive Stabiliser | 1.9992%               | <p><u>CONSTITUENT 1 (≤60%):</u><br/>           LD50 Oral: 800 mg/kg (Rat); LD50 Oral: 770 mg/kg (Mouse); LD50 Dermal: &gt; 5000 mg/kg (Rat) (Similar substance); LC50 Inhalation &gt;2.06 mg/L (Rat) 4h (Similar substance); Freshwater Acute Algae Toxicity 72h EC50: &gt; 345 mg/L (Scenedesmus subspicatus) [ECHA]; Freshwater Acute Crustacean Toxicity 48h EC50: 1700 mg/L (Daphnia magna) [OECD SIDS]; Freshwater Acute Fish Toxicity 96h LC50: 1108 mg/L (Danio rerio) [OECD SIDS];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>           Component is naturally occurring and is not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p>  | Yes           |
| Gascon 469       | Halliburton | Cement Additive Stabiliser | 3.6918%               | <p><u>CONSTITUENT 1 (≤1%):</u><br/>           Effect concentrations in the aquatic environment are attributable to a change in pH value<br/>           Freshwater Acute Crustacean Toxicity 48h EC50: 40.4 mg/L (Ceriodaphnia sp.) [ECHA];<br/>           Freshwater Acute Fish Toxicity 96h LC50: 125 mg/L (Gambusia affinis) [OECD SIDS];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p>   | Yes           |

| Trade name | Supplier    | Purpose             | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|------------|-------------|---------------------|-----------------------|--|---------------|
|            |             |                     |                       | <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>           Freshwater Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum) [IUCLID; LOLI];<br/>           Freshwater Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia) [IUCLID; LOLI];<br/>           Freshwater Acute Fish Toxicity 96h LC50: 5000 mg/L (Brachydanio rerio) [IUCLID; LOLI];<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p> <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 3 (≤100%):</u><br/>           No Hazard. Product is naturally occurring</p>   |               |
| HR-6L      | Halliburton | Cement Retarder     | 0.8130%               | <p><u>CONSTITUENT 1 (≤100%):</u><br/>           Component is naturally occurring and is not intrinsically hazardous</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>           Product is PLONOR listed<br/>           Oral LC50: &gt;5000 mg/L; Inhalation LC50: &gt; 480 mg/m3<br/>           Marine Water Acute Algae Toxicity 72h EC50: 301 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: 1261 mg/L (Acartia tonsa) [Halliburton Funded Study];<br/>           Bioaccumulation Log Pow: -3.45 (Calculated) [Halliburton Funded Study];<br/>           Biodegradation: No data - expected to be inherently biodegradable<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p>                                  | Yes           |
| CFR-3L     | Halliburton | Friction Reducer    | 0.7851%               | <p><u>CONSTITUENT 1 (≤60%):</u><br/>           Oral LD50: &gt;5000 mg/kg (Rat); Marine Water Acute Algae Toxicity 72h EC50: &gt; 3300 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: 1687 mg/L (Acartia tonsa) [Halliburton Funded Study]; Freshwater Acute Fish Toxicity 48h LC50: 7478 mg/L (Aphyosemion bivittatum) [SKW Trostberg]; Bioaccumulation Log Pow: &lt; 0 [Halliburton Funded Study]; Marine Water Biodegradation 28d: 0% [Halliburton Funded Study];</p> <p><u>CONSTITUENT 2 (≤60%):</u><br/>           Component is naturally occurring and not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p>   | Yes           |
| Halad-413L | Halliburton | Fluid Loss Additive | 2.4823%               | <p><u>CONSTITUENT 1 (≤30%):</u><br/>           Oral LD50: &gt;2000 mg/kg (Rat)</p> <p><u>CONSTITUENT 2 (≤100%):</u><br/>           Product is naturally occurring and not intrinsically hazardous<br/>           No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p> <p><u>PRODUCT DATA</u><br/>           Marine Water Acute Algae Toxicity 72h EC50: 1102 mg/L (Skeletonema costatum) [OSPAR];<br/>           Marine Water Acute Crustacean Toxicity 48h LC50: &gt; 2000 mg/L (Acartia tonsa) [OSPAR];<br/>           Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [OSPAR];<br/>           Bioaccumulation Log Kow: &lt; 3.5 [Halliburton Funded Study];<br/>           Marine Water Biodegradation 28d: 6 % [Halliburton Funded Study];</p> | Yes           |
| SCR-100L   | Halliburton | Cement Retarder     | 0.7774%               | <u>PRODUCT DATA</u>  | Yes           |

| Trade name | Supplier    | Purpose                                    | Product in system (%) | Toxicity & Ecotoxicity Info   | MSDS Attached |
|------------|-------------|--|-----------------------|---|---------------|
|            |             |  |                       | <p>Oral Toxicity LD50: &gt;5000 mg/kg (Rat); Dermal LD50 : &gt;2000 mg/kg (Rabbit); 96 hr Fish LC50: 4900 mg/L (Oncorhynchus mykiss); 48 hr Crustacean LC50: 2800 mg/L (Daphnia magna)</p> <p>Marine Water Acute Algae Toxicity 72h EC50: &gt; 3300 mg/L (Skeletonema costatum) [Halliburton Funded Study];</p> <p>Marine Water Acute Crustacean Toxicity 48h LC50: &gt; 2000 mg/L (Acartia tonsa) [Halliburton Funded Study];</p> <p>Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study];</p> <p>Marine Water Biodegradation 28d: 14% [Halliburton Funded Study];</p> <p>Product was tested using OECD 117 no peaks detected MW&gt;700Da. Product is not expected to be bioaccumulating</p> <p>No data available to indicate product or components present at greater than 0.1% are chronic health hazards</p>   |               |
| Halad-344  | Halliburton | Fluid Loss Additive for high temperature   | 0.6303%               | <p><u>PRODUCT DATA</u></p> <p>Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study];</p> <p>Bioaccumulation Log Pow: &lt;0 [Halliburton Funded Study];</p> <p>Marine Water Biodegradation 28d: 0% [Halliburton Funded Study];</p>   | Yes           |
| NF-6       | Halliburton | Reduces air entrainment into cement slurry | 0.1115%               | <p><u>CONSTITUENT 1 (≤10%)</u></p> <p>Acute Fish Toxicity 96h LC50: &gt;3200 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: 2500 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 991.02 mg/L (Skeletonema costatum)</p> <p>Bioaccumulation: Calculated Log Pow: 7.45</p> <p><u>CONSTITUENT 2 (≤5%):</u></p> <p>Oral LD50: &gt;15900 mg/kg (Mouse); Inhalation LC50: &gt;5 mg/L (4h) (Rat); Acute Fish Toxicity 96h LC50: &gt;1800 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: &gt;10000 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 41 mg/L (Skeletonema costatum)</p> <p>Bioaccumulation: Calculated Log Pow: 4.28</p> <p><u>CONSTITUENT 3 (≤5%)</u></p> <p>Oral LD50: &gt; 5000 mg/kg (Rat); Dermal LD50: &gt;5000 mg/kg (Guinea Pig); Acute Fish Toxicity 96h LC50: &gt;5600 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: 5085.71 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: 6488.87 mg/L (Skeletonema costatum)</p> <p>Bioaccumulation: Calculated Log Pow: 22.69 (MW&gt;700)</p> <p><u>CONSTITUENT 4 (≤10%)</u></p> <p>No Hazard. Product is naturally occurring</p> <p><u>CONSTITUENT 5 (≤100%)</u></p> <p>Oral LD50: 90 mg/kg (Mouse) (Similar Substance); Acute Fish Toxicity 96h LC50: &gt;5600 mg/L (Scophthalmus maximus); Acute Crustacean Toxicity 48h LC50: &gt;10000 mg/L (Acartia tonsa); Acute Algae Toxicity 72h EC50: &gt;3200 mg/L (Skeletonema costatum)</p> <p>Bioaccumulation: Calculated Log Pow: 7.09</p> <p><u>PRODUCT DATA</u></p> <p>Marine Water Acute Algae Toxicity 72h EC50: 1100 mg/L (Skeletonema costatum) [Halliburton Funded Study]; Marine Water Acute Crustacean Toxicity 48h LC50: &gt; 1000 mg/L (Acartia tonsa) [Halliburton Funded Study]; Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus)</p> | Yes           |

| Trade name       | Supplier    | Purpose           | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|------------------|-------------|-------------------|-----------------------|--|---------------|
|                  |             |                   |                       | [Halliburton Funded Study]; Marine Water Biodegradation 28d: 70% [Halliburton Funded Study]; No data available to indicate product or components present at greater than 0.1% are chronic health hazards   |               |
| Barite           | Halliburton | Weighting Agent   | 32.7056%              | <p><u>CONSTITUENT 1 (≤100%):</u><br/> Oral LD50: &gt;5000 mg/kg (Rat); Oral LD50: &gt;3000 mg/kg (Mouse); Inhalation LC50: &gt;1.1 mg/L (Rat, Aerosal, 4h) (similar substance); Freshwater Acute Algae Toxicity 72h EC50: &gt; 61.1 mg/L (Pseudokirchneriella subcapitata) [ECHA]; Freshwater Acute Crustacean Toxicity 48h LC50: 14.5 mg/L (Daphnia magna) [ECHA] (similar substance); Freshwater Acute Fish Toxicity 96h LC50: &gt; 3.5 mg/L (Danio rerio) [ECHA];<br/> Bioaccumulation Fish BCF: 1.2-74.4 (Lepomis macrochirus) [ECHA];<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤5%):</u><br/> LD50 Oral: &gt;15000 mg/kg (human); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance); Freshwater Acute Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p> | Yes           |
| Calcium Chloride | Halliburton | Excellerator      | 0.2524%               | <p><u>CONSTITUENT 1 (≤10%):</u><br/> Freshwater Acute Algae Toxicity 72h EC50: 2900 mg/L (Pseudokirchneriella subcapitata) [ECHA];<br/> Freshwater Acute Crustacean Toxicity 48h LC50: 1285 mg/L (Daphnia magna) [ECHA];<br/> Freshwater Acute Fish Toxicity 96h LC50: 4630 mg/L (Pimephales promelas) [ECHA];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 2 (≤100%):</u><br/> Freshwater Acute Algae Toxicity 96h EC50: 2430 mg/L (Navicula seminulum) [US EPA ECOTOX];<br/> Freshwater Acute Crustacean Toxicity 48h EC50: 402.6 mg/L (Daphnia magna) [US EPA ECOTOX];<br/> Freshwater Acute Fish Toxicity 96h LC50: 9675 mg/L (Lepomis macrochirus) [IUCLID];<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p>   | Yes           |
| TUNED SPACER E+  | Halliburton | Mud/Cement Spacer | 1.8583%               | <p><u>CONSTITUENT 1 (≤100%):</u><br/> Component is naturally occurring and not intrinsically hazardous.</p> <p><u>CONSTITUENT 2 (≤10%):</u><br/> Oral LD50: &gt;15000 mg/kg (Human)<br/> Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance);<br/> Freshwater Acute Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/> Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/> Biodegradation: Substance is inorganic - biodegradation is not applicable.</p> <p><u>CONSTITUENT 3 (≤1%):</u><br/> Oral LD50: &gt;15000 mg/kg (Human) (Similar Substance); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Health Canada] (similar substance); Freshwater Acute</p>   | Yes           |

| Trade name  | Supplier    | Purpose  | Product in system (%) | Toxicity & Ecotoxicity Info  | MSDS Attached |
|-------------|-------------|----------|-----------------------|--|---------------|
|             |             |          |                       | <p>Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Health Canada] (similar substance);<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 4 (≤1%):</u><br/>           Oral LD50: &gt;15000 mg/kg (Human) (Similar Substance); Freshwater Acute Crustacean Toxicity 24h LL50: &gt; 10000 mg/L (Daphnia magna) [Environment Canada] (similar substance);<br/>           Freshwater Acute Fish Toxicity 96h LL0: 10000 mg/L (Danio rerio) [Environment Canada] (similar substance);<br/>           Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.<br/>           Biodegradation: Substance is inorganic - biodegradation is not applicable.<br/> <u>CONSTITUENT 5 (≤30%):</u><br/>           Component is PLONOR listed<br/>           Oral LC50: &gt;5000 mg/L; Inhalation LC50: &gt; 480 mg/m3; Freshwater Acute Crustacean Toxicity 48h NOELr: 1000 mg/L (Daphnia magna) [US EPA HPVIS] (similar substance); Freshwater Acute Fish Toxicity 48h LC50: 7300 mg/L (Oncorhynchus mykiss) [US EPA ECOTOX];<br/>           Bioaccumulation Log Kow: -3.45 [EPISUITE] (similar substance);<br/>           Freshwater Biodegradation 10d: 29 % [US EPA HPV Haz. Char. Doc.] (similar substance);<br/> <u>CONSTITUENT 6 (≤10%):</u><br/>           Component is naturally occurring and not intrinsically hazardous.<br/>           Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p> |               |
| D-AIR 3000L | Halliburton | Defoamer | 0.1115%               | <p><u>CONSTITUENT 1 (≤100%):</u><br/>           LD50 Oral: &gt;5000 mg/kg (Rat) (Similar Substance); LD50 Dermal: &gt;2000 mg/kg (Rat) (Similar Substance); LC 50 Inhalation &gt;2.1 mg/L (Rat); Acute Algae Toxicity 96h EC50 : 22 mg/L (Pseudokirchneriella subcapitata); Acute Fish Toxicity Data 96h LC50 : &gt;1000 mg/L (Salmo gairdneri) Acute Crustacean Toxicity 48h EC50: 480 mg/L (Daphnia magna); Readily Biodegradable (77-81% @28d)<br/>           Bioaccumulation: Log Pow &gt;7<br/> <u>CONSTITUENT 2 (≤60%):</u><br/>           LD50 Oral: &gt;2000 mg/kg (Rat); LD50 Dermal: &gt;8000 mg/kg (Rat); LC50 Inhalation: &gt;0.17 mg/L (4h) Marine Water Acute Algae Toxicity 72h EC50: 426 mg/L (Skeletonema costatum) [OSPAR]; Marine Water Acute Crustacean Toxicity 48h EC50: 433.2 mg/L (Acartia tonsa) [OSPAR]; Marine Water Acute Fish Toxicity 96h LC50: &gt; 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study];<br/>           Bioaccumulation Log Pow: 5.06 [Halliburton Funded Study];<br/> <u>CONSTITUENT 3 (≤1%):</u><br/>           Component is a synthetic surface modified Amorphous Silica (CAS #: 7631-86-9); Fish and Invertebrate toxicity testing with Amorphous Silica have shown low hazard for this component.<br/>           Source: OECD SIDS<br/>           No data available to indicate product or components present at greater than 1% are chronic health hazards</p>   | Yes           |
| Total       |             |          | 100%                  |  |               |

### C. CHEMICAL LIST

| Chemicals within products in Part B  | CAS #       | Maximum fraction in System (%) |
|--|-------------|--------------------------------|
| Barium Sulfate   | 7727-43-7   | 31.0704%                       |
| Mix Water  | NA          | 28.5818%                       |
| Portland cement  | 65997-15-1  | 23.9398%                       |
| Water in Products  | 7732-18-5   | 6.3892%                        |
| Crystalline silica, quartz   | 14808-60-7  | 2.9510%                        |
| Silica, amorphous - fumed  | 7631-86-9   | 1.4767%                        |
| Bentonite  | 1302-78-9   | 1.1150%                        |
| Sodium Lignosulfonate  | 8061-51-6   | 0.8827%                        |
| Sodium silicate  | 1344-09-8   | 0.7997%                        |
| Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamido, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated | 473268-27-8 | 0.7447%                        |
| N,N-dimethylacrylamide copolymer calcium salt  | 103115-52-2 | 0.5357%                        |
| Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone   | 40104-76-5  | 0.4711%                        |
| Acrylic acid polymer with sodium AMPS, sodium salt   | 37350-42-8  | 0.3094%                        |
| Calcium Chloride, dihydrate  | 10035-04-8  | 0.2398%                        |
| Rape Oil   | 8002-13-9   | 0.0981%                        |
| Welan gum  | 72121-88-1  | 0.0929%                        |
| Alkenes, C15-C18   | 93762-80-2  | 0.0669%                        |
| Sodium hydroxide   | 1310-73-2   | 0.0369%                        |
| Polypropylene glycol   | 25322-69-4  | 0.0334%                        |
| Lecithins  | 8002-43-5   | 0.0315%                        |
| Sodium sulfate   | 7757-82-6   | 0.0315%                        |
| Calcium hydroxide  | 1305-62-0   | 0.0315%                        |
| Crystalline silica, cristobalite   | 14464-46-1  | 0.0186%                        |
| Crystalline silica, tridymite  | 15468-32-3  | 0.0186%                        |
| Sodium Chloride  | 7647-14-5   | 0.0126%                        |
| Silica, amorphous precipitated   | 67762-90-7  | 0.0111%                        |
| Monopropylene glycol monooleate  | 1330-80-9   | 0.0056%                        |
| Sorbitan, monopalmitate  | 26266-57-9  | 0.0011%                        |
| Aluminium stearate   | 637-12-7    | 0.0011%                        |
| 2-Bromo-2-(bromomethyl)pentanedinitrile  | 35691-65-7  | 0.0008%                        |
|  | Total       | 100%                           |

## **Appendix B – Chemical SDSs**

## SAFETY DATA SHEET

### SODIUM CHLORIDE

Revision Date: 08-Sep-2015

Revision Number: 23

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** SODIUM CHLORIDE

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM001682

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

**Recommended Use** Additive  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Sodium chloride

**CAS Number**

7647-14-5

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances      | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|-----------------|------------|---------------|--------------------------------|
| Sodium chloride | 7647-14-5  | 60 - 100%     |                                |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

Causes mild eye irritation.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

None anticipated

**Special protective equipment and precautions for fire fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage****7.1. Precautions for Safe Handling****Handling Precautions**

Avoid creating or inhaling dust.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store in a cool, dry location.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection****Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances      | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|-----------------|------------|-----------------|----------------|
| Sodium chloride | 7647-14-5  | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)****Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

**9. Physical and Chemical Properties****9.1. Information on basic physical and chemical properties**

**Physical State:** Solid  
**Odor:** Odorless  
**Color:** White  
**Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | 801 °C / 1473.8 °F       |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 2.16                     |
| <b>Water Solubility</b>                       | Very soluble             |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**VOC Content (%)** No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

None known.

**10.6. Hazardous Decomposition Products**

None known.

## 11. Toxicological Information

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes mild eye irritation.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances      | CAS Number | LD50 Oral                            | LD50 Dermal           | LC50 Inhalation  |
|-----------------|------------|--------------------------------------|-----------------------|------------------|
| Sodium chloride | 7647-14-5  | 3000 mg/kg (Rat)<br>3550 mg/kg (Rat) | >10000 mg/kg (Rabbit) | 42 mg/L (Rat) 1h |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.

**Eye Contact** Causes mild eye irritation.

**Skin Contact** May cause mild skin irritation.

**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances      | CAS Number | Skin corrosion/irritation           |
|-----------------|------------|-------------------------------------|
| Sodium chloride | 7647-14-5  | Non-irritating to the skin (Rabbit) |

| Substances      | CAS Number | Eye damage/irritation                   |
|-----------------|------------|---|
| Sodium chloride | 7647-14-5  | May cause mild eye irritation. (Rabbit) |

| Substances      | CAS Number | Skin Sensitization       |
|-----------------|------------|--------------------------|
| Sodium chloride | 7647-14-5  | No information available |

| Substances      | CAS Number | Respiratory Sensitization |
|-----------------|------------|---------------------------|
| Sodium chloride | 7647-14-5  | No information available  |

| Substances      | CAS Number | Mutagenic Effects        |
|-----------------|------------|--------------------------|
| Sodium chloride | 7647-14-5  | No information available |

| Substances      | CAS Number | Carcinogenic Effects                                    |
|-----------------|------------|---|
| Sodium chloride | 7647-14-5  | Did not show carcinogenic effects in animal experiments |

| Substances      | CAS Number | Reproductive toxicity   |
|-----------------|------------|---|
| Sodium chloride | 7647-14-5  | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. |

| Substances      | CAS Number | STOT - single exposure   |
|-----------------|------------|--------------------------|
| Sodium chloride | 7647-14-5  | No information available |

| Substances      | CAS Number | STOT - repeated exposure  |
|-----------------|------------|---|
| Sodium chloride | 7647-14-5  | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances      | CAS Number | Aspiration hazard |
|-----------------|------------|-------------------|
| Sodium chloride | 7647-14-5  | Not applicable    |

## 12. Ecological Information

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances      | CAS Number | Toxicity to Algae                     | Toxicity to Fish   | Toxicity to Microorganisms   | Toxicity to Invertebrates   |
|-----------------|------------|---------------------------------------|--|--|---|
| Sodium chloride | 7647-14-5  | EC50 (120h) 2430 mg/L (Nitzschia sp.) | TLM96 > 1000 mg/L (Oncorhynchus mykiss)<br>LC50 (96h) 5840 mg/L (Lepomis macrochirus)<br>NOEC (33d) 252 mg/L (Pimephales promelas) | NOEC 5000 – 8000 mg/L (activated sludge)<br>NOEC 292-584 mg/L (Escherichia coli) | TLM96 > 1,000,000 ppm (Mysidopsis bahia)<br>LC50 (48h) 874-4136 mg/L (Daphnia magna)<br>NOEC (21d) 314 mg/L (Daphnia pulex) |

**12.2. Persistence and degradability**

| Substances      | CAS Number | Persistence and Degradability |
|-----------------|------------|-------------------------------|
| Sodium chloride | 7647-14-5  | No information available      |

**12.3. Bioaccumulative potential**

| Substances      | CAS Number | Log Pow                  |
|-----------------|------------|--------------------------|
| Sodium chloride | 7647-14-5  | No information available |

**12.4. Mobility in soil**

| Substances      | CAS Number | Mobility                 |
|-----------------|------------|--------------------------|
| Sodium chloride | 7647-14-5  | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

## 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

## 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.

**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.

**EINECS Inventory** This product, and all its components, complies with EINECS

**US TSCA Inventory** All components listed on inventory or are exempt.

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

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None Allocated

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review****Revision Date:** 08-Sep-2015**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARACARB

Revision Date: 27-Jun-2016

Revision Number: 34

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARACARB

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM004943

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

**Recommended Use** Bridging Agent  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Carcinogenicity

Category 2 - H351

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Warning

**Hazard Statements:**

H351 - Suspected of causing cancer if inhaled

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P281 - Use personal protective equipment as required

**Response**

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

**Storage**

P405 - Store locked up

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains****Substances**

Crystalline silica, quartz

**CAS Number**

14808-60-7

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

|  |
|--|
| <b>3. Composition/information on Ingredients</b> |
|--|

| Substances                 | CAS Number | PERCENT (w/w) | GHS Classification - Australia     |
|----------------------------|------------|---------------|------------------------------------|
| Crystalline silica, quartz | 14808-60-7 | 0.1 - 1%      | Carc. 2 (H351)<br>STOT RE 1 (H372) |

|                              |
|------------------------------|
| <b>4. First aid measures</b> |
|------------------------------|

**Description of necessary first aid measures****Inhalation**

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

**Eyes**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin**

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

**Ingestion**

Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also

been associated with scleroderma and kidney disease.

### **Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## **5. Fire Fighting Measures**

### **Suitable extinguishing equipment**

#### **Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

### **Specific hazards arising from the chemical**

#### **Special exposure hazards in a fire**

Not applicable

### **Special protective equipment and precautions for fire fighters**

#### **Special protective equipment for firefighters**

Not applicable

## **6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Evacuate all persons from the area.

### **6.2. Environmental precautions**

None known.

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

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

## **7. Handling and storage**

### **7.1. Precautions for safe handling**

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing. This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from acids. Store in a cool, dry location. Store locked up. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Product has a shelf life of 60 months.

#### **Other Guidelines**

No information available

## **8. Exposure Controls/Personal Protection**

### **Control parameters - exposure standards, biological monitoring**

#### **Exposure Limits**

| Substances                 | CAS Number | Australia NOHSC            | ACGIH TLV-TWA                |
|----------------------------|------------|----------------------------|------------------------------|
| Crystalline silica, quartz | 14808-60-7 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.025 mg/m <sup>3</sup> |

**Appropriate engineering controls****Engineering Controls**

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Solid Powder

**Odor:** Odorless

**Color:** White

**Odor Threshold:** No information available

**Property**

Remarks/ - Method

**Values****pH:**

8-9

**Freezing Point / Range**

No data available

**Melting Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

2.7

**Water Solubility**

Insoluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information****VOC Content (%)**

No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong acids.

#### **10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide. Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

## **11. Toxicological Information**

### **Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

### **Symptoms related to exposure**

#### **Most Important Symptoms/Effects**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

### **Numerical measures of toxicity**

### **Toxicology data for the components**

| Substances                 | CAS Number | LD50 Oral             | LD50 Dermal              | LC50 Inhalation   |
|----------------------------|------------|-----------------------|--------------------------|-------------------|
| Crystalline silica, quartz | 14808-60-7 | > 15000 mg/kg (human) | No information available | No data available |

### **Immediate, delayed and chronic health effects from exposure**

#### **Inhalation**

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

#### **Eye Contact**

May cause mechanical irritation to eye.

#### **Skin Contact**

None known.

#### **Ingestion**

None known.

### **Chronic Effects/Carcinogenicity**

**Silicosis:** Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

**Cancer Status:** The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

**Exposure Levels**

No data available

**Interactive effects**

Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

**Data limitations**

No data available

| Substances                 | CAS Number | Skin corrosion/irritation  |
|----------------------------|------------|----------------------------|
| Crystalline silica, quartz | 14808-60-7 | Non-irritating to the skin |

| Substances                 | CAS Number | Serious eye damage/irritation   |
|----------------------------|------------|---|
| Crystalline silica, quartz | 14808-60-7 | Mechanical irritation of the eyes is possible. No information available |

| Substances                 | CAS Number | Skin Sensitization        |
|----------------------------|------------|---------------------------|
| Crystalline silica, quartz | 14808-60-7 | No information available. |

| Substances                 | CAS Number | Respiratory Sensitization |
|----------------------------|------------|---------------------------|
| Crystalline silica, quartz | 14808-60-7 | No information available  |

| Substances                 | CAS Number | Mutagenic Effects          |
|----------------------------|------------|----------------------------|
| Crystalline silica, quartz | 14808-60-7 | Not regarded as mutagenic. |

| Substances                 | CAS Number | Carcinogenic Effects   |
|----------------------------|------------|--|
| Crystalline silica, quartz | 14808-60-7 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |

| Substances                 | CAS Number | Reproductive toxicity    |
|----------------------------|------------|--------------------------|
| Crystalline silica, quartz | 14808-60-7 | No information available |

| Substances                 | CAS Number | STOT - single exposure  |
|----------------------------|------------|---|
| Crystalline silica, quartz | 14808-60-7 | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances                 | CAS Number | STOT - repeated exposure   |
|----------------------------|------------|--|
| Crystalline silica, quartz | 14808-60-7 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |

| Substances                 | CAS Number | Aspiration hazard |
|----------------------------|------------|-------------------|
| Crystalline silica, quartz | 14808-60-7 | Not applicable    |

## 12. Ecological Information

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances                 | CAS Number | Toxicity to Algae                                    | Toxicity to Fish                        | Toxicity to Microorganisms | Toxicity to Invertebrates                  |
|----------------------------|------------|--|---|----------------------------|--|
| Crystalline silica, quartz | 14808-60-7 | EC50 (72 h) =440 mg/L<br>(Selenastrum capricornutum) | LL0 (96 h) =10000 mg/L<br>(Danio rerio) | No information available   | LL50 (24 h) >10000 mg/L<br>(Daphnia magna) |

**12.2. Persistence and degradability**

The methods for determining biodegradability are not applicable to inorganic substances.

| Substances                 | CAS Number | Persistence and Degradability  |
|----------------------------|------------|--|
| Crystalline silica, quartz | 14808-60-7 | The methods for determining biodegradability are not applicable to inorganic substances. |

**12.3. Bioaccumulative potential**

Does not bioaccumulate.

| Substances                 | CAS Number | Log Pow                  |
|----------------------------|------------|--------------------------|
| Crystalline silica, quartz | 14808-60-7 | No information available |

**12.4. Mobility in soil**

| Substances                 | CAS Number | Mobility                 |
|----------------------------|------------|--------------------------|
| Crystalline silica, quartz | 14808-60-7 | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

None Allocated

**International Agreements**

|  |                |
|--|----------------|
| Montreal Protocol - Ozone Depleting Substances:      | Does not apply |
| Stolkhom Convention - Persistent Organic Pollutants: | Does not apply |
| Rotterdam Convention - Prior Informed Consent:       | Does not apply |
| Basel Convention - Hazardous Waste:                  | Does not apply |

**16. Other information****Date of preparation or review**

Revision Date: 27-Jun-2016

**Revision Note**

SDS sections updated: 2

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

H351 - Suspected of causing cancer if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARITE

Revision Date: 09-Oct-2015

Revision Number: 44

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARITE

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM000105

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

**Recommended Use** Weight Additive  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                   |
|--|-------------------|
| Carcinogenicity                                      | Category 2 - H351 |
| Specific Target Organ Toxicity - (Repeated Exposure) | Category 2 - H373 |

##### Label elements, including precautionary statements

##### **Hazard Pictograms**



|                                 |   |
|---------------------------------|---|
| <b>Signal Word</b>              | Warning   |
| <b>Hazard Statements</b>        | H351 - Suspected of causing cancer if inhaled<br>H373 - May cause damage to organs through prolonged or repeated exposure if inhaled  |
| <b>Precautionary Statements</b> |   |
| <b>Prevention</b>               | P201 - Obtain special instructions before use<br>P202 - Do not handle until all safety precautions have been read and understood<br>P260 - Do not breathe dust/fume/gas/mist/vapors/spray<br>P281 - Use personal protective equipment as required |
| <b>Response</b>                 | P308 + P313 - IF exposed or concerned: Get medical advice/attention<br>P314 - Get medical attention/advice if you feel unwell   |
| <b>Storage</b>                  | P405 - Store locked up  |
| <b>Disposal</b>                 | P501 - Dispose of contents/container in accordance with local/regional/national/international regulations   |
| <b>Contains Substances</b>      | <b>CAS Number</b>   |
| Barium sulfate                  | 7727-43-7   |
| Crystalline silica, quartz      | 14808-60-7  |

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).  
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification** T - Toxic.

**Risk Phrases** R49 May cause cancer by inhalation.  
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

### 3. Composition/information on Ingredients

| Substances                 | CAS Number | PERCENT (w/w) | GHS Classification - Australia     |
|----------------------------|------------|---------------|------------------------------------|
| Barium sulfate             | 7727-43-7  | 60 - 100%     |                                    |
| Crystalline silica, quartz | 14808-60-7 | 1 - 5%        | Carc. 2 (H351)<br>STOT RE 1 (H372) |

### 4. First aid measures

**Description of necessary first aid measures**

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory

---

|                  |   |
|------------------|---|
| <b>Eyes</b>      | irritation develops or if breathing becomes difficult.<br>In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists. |
| <b>Skin</b>      | Wash with soap and water. Get medical attention if irritation persists.   |
| <b>Ingestion</b> | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.  |

**Symptoms caused by exposure**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical****Special Exposure Hazards**

None anticipated

**Special protective equipment and precautions for fire fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

## 7. Handling and storage

**7.1. Precautions for Safe Handling****Handling Precautions**

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store in a well ventilated area. Keep container closed when not in use. Store locked up. Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances                 | CAS Number | Australia NOHSC            | ACGIH TLV-TWA                |
|----------------------------|------------|----------------------------|------------------------------|
| Barium sulfate             | 7727-43-7  | TWA: 10 mg/m <sup>3</sup>  | TWA: 10 mg/m <sup>3</sup>    |
| Crystalline silica, quartz | 14808-60-7 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.025 mg/m <sup>3</sup> |

**Appropriate engineering controls**

**Engineering Controls**

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

**Personal protective equipment (PPE)**

**Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Solid  
**Odor:** Odorless

**Color:** Pink to tan to gray  
**Odor Threshold:** No information available

Property

Values

Remarks/ - Method

**pH:**

No data available

**Freezing Point/Range**

No data available

**Melting Point/Range**

No data available

**Boiling Point/Range**

No data available

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

4.23

**Water Solubility**

Insoluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information**

**Molecular Weight**

233.4

**VOC Content (%)**

No data available

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

None known.

### 10.6. Hazardous Decomposition Products

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances                 | CAS Number | LD50 Oral                                 | LD50 Dermal       | LC50 Inhalation                                      |
|----------------------------|------------|---|-------------------|--|
| Barium sulfate             | 7727-43-7  | > 5000 mg/kg (Rat)<br>> 3000mg/kg (Mouse) | No data available | >1.1 mg/L (rat, aerosol, 4hr)<br>(similar substance) |
| Crystalline silica, quartz | 14808-60-7 | >15,000 mg/kg (Human)                     | No data available | No data available                                    |

### Immediate, delayed and chronic health effects from exposure

#### **Product Information**

##### **Inhalation**

Under certain conditions of use, some of the product ingredients may cause the following:  
Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages.  
Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

##### **Eye Contact**

May cause mechanical irritation to eye.

##### **Skin Contact**

None known.

##### **Ingestion**

May produce nervous system effects such as feeling of weakness, unsteady walk, and dilation of blood vessels. May affect the heart and cardiovascular system.

#### **Chronic Effects/Carcinogenicity**

**Silicosis:** Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

**Cancer Status:** The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to

humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Prolonged inhalation of fine barium sulfate dusts form harmless nodular granules in lung, an affliction called baritosis. Baritosis produces no symptoms of bronchitis or emphysema, and lung functioning is not affected although dyspnea, upon exertion, may occur. The nodulation disappears if exposure is stopped.

#### **Exposure Levels**

No data available

#### **Interactive effects**

Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

#### **Data limitations**

No data available

| Substances                 | CAS Number | Skin corrosion/irritation                                  |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | Non-irritating to the skin (in vitro) (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Non-irritating to the skin                                 |

| Substances                 | CAS Number | Eye damage/irritation                          |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | Non-irritating to the eye (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Mechanical irritation of the eyes is possible. |

| Substances                 | CAS Number | Skin Sensitization   |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | Did not cause sensitization on laboratory animals (mouse) (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | No information available.  |

| Substances                 | CAS Number | Respiratory Sensitization |
|----------------------------|------------|---------------------------|
| Barium sulfate             | 7727-43-7  | No information available  |
| Crystalline silica, quartz | 14808-60-7 | No information available  |

| Substances                 | CAS Number | Mutagenic Effects  |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | In vitro tests did not show mutagenic effects (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Not regarded as mutagenic.   |

| Substances                 | CAS Number | Carcinogenic Effects   |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | Did not show carcinogenic effects in animal experiments (similar substances)   |
| Crystalline silica, quartz | 14808-60-7 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |

| Substances                 | CAS Number | Reproductive toxicity    |
|----------------------------|------------|--------------------------|
| Barium sulfate             | 7727-43-7  | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

| Substances                 | CAS Number | STOT - single exposure   |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | No significant toxicity observed in animal studies at concentration requiring classification.                      |

| Substances                 | CAS Number | STOT - repeated exposure   |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)                                 |

| Substances                 | CAS Number | Aspiration hazard |
|----------------------------|------------|-------------------|
| Barium sulfate             | 7727-43-7  | Not applicable    |
| Crystalline silica, quartz | 14808-60-7 | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### **Product Ecotoxicity Data**

No data available

#### **Substance Ecotoxicity Data**

| Substances                 | CAS Number | Toxicity to Algae        | Toxicity to Fish   | Toxicity to Microorganisms | Toxicity to Invertebrates                                    |
|----------------------------|------------|--------------------------|--|----------------------------|--|
| Barium sulfate             | 7727-43-7  | No information available | LC50 (96h) 3.5 mg/L (Danio rerio)<br>BCF 1.2-74.4 L/kg (Lepomis macrochirus) | No information available   | NOEC (7d) 100 mg/L (Cancer anthonyi)                         |
| Crystalline silica, quartz | 14808-60-7 | No information available | LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)                      | No information available   | LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance) |

### 12.2. Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

| Substances                 | CAS Number | Persistence and Degradability  |
|----------------------------|------------|--|
| Barium sulfate             | 7727-43-7  | The methods for determining biodegradability are not applicable to inorganic substances. |
| Crystalline silica, quartz | 14808-60-7 | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

Does not bioaccumulate

| Substances                 | CAS Number | Log Pow                  |
|----------------------------|------------|--------------------------|
| Barium sulfate             | 7727-43-7  | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

### 12.4. Mobility in soil

| Substances                 | CAS Number | Mobility                 |
|----------------------------|------------|--------------------------|
| Barium sulfate             | 7727-43-7  | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

### 12.6. Other adverse effects

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.  
**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review****Revision Date:** 09-Oct-2015**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.  
R49 May cause cancer by inhalation.

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

H351 - Suspected of causing cancer if inhaled  
H372 - Causes damage to organs through prolonged or repeated exposure  
H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### POTASSIUM CHLORIDE

Revision Date: 04-Sep-2015

Revision Number: 22

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** POTASSIUM CHLORIDE

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM001200

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

**Recommended Use** Brine  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).  
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures**

**Description of necessary first aid measures**

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

**Eyes** In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Not applicable.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store in a cool, dry location. Product has a shelf life of 60 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection**

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Dust proof goggles.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

**9. Physical and Chemical Properties**

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

**Physical State:** Solid      **Color:** White to gray  
**Odor:** Odorless      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | ~7                       |
| <b>Freezing Point/Range</b>                   | 771 °C                   |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.99                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**Molecular Weight** 74.55  
**VOC Content (%)** No data available

**10. Stability and Reactivity**

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

None known.

**10.6. Hazardous Decomposition Products**

None known.

**11. Toxicological Information**

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity**

**Toxicology data for the components**

| <b>Substances</b>   | <b>CAS Number</b> | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|---|-------------------|-------------------|--------------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according | NA                | No data available | No data available  | No data available      |

|                            |  |  |  |  |
|----------------------------|--|--|--|--|
| to the competent authority |  |  |  |  |
|----------------------------|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.  
**Eye Contact** May cause mild eye irritation.  
**Skin Contact** May cause mild skin irritation.  
**Ingestion** May cause abdominal pain, vomiting, nausea, and diarrhea. Irritation of the mouth, throat, and stomach.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

Skin disorders.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances | CAS Number | Reproductive toxicity |
|------------|------------|-----------------------|
|            |            |                       |

|  |    |                |
|--|----|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA | Not applicable |
|--|----|----------------|

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>Canadian DSL Inventory</b>             | All components listed on inventory or are exempt.          |

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

**Revision Date:** 04-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### GEM™ CP

Revision Date: 27-Jun-2016

Revision Number: 19

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** GEM™ CP

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003659

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

**Recommended Use** Shale stabilizer  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Acute inhalation toxicity - vapor

Category 2 - H330

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Danger

**Hazard Statements:**

H330 - Fatal if inhaled

**Precautionary Statements****Prevention**

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

P271 - Use only outdoors or in a well-ventilated area

P284 - In case of inadequate ventilation wear respiratory protection

**Response**

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P310 - Immediately call a POISON CENTRE or doctor/physician

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

P405 - Store locked up

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains****Substances**

Methyloxirane polymer with oxirane, monbutyl ether

**CAS Number**

9038-95-3

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | 60 - 100%     | Acute Tox. 2 (H330)            |

### 4. First aid measures

**Description of necessary first aid measures****Inhalation**

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

**Eyes**

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

**Skin**

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

**Ingestion**

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

May be fatal if inhaled.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Evacuate all persons from the area.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Avoid breathing vapors. Avoid breathing mist. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Use appropriate protective equipment. Wash hands after use. Launder contaminated clothing before reuse.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Store away from acids. Store away from alkalis. Keep container closed when not in use. Product has a shelf life of 60 months.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Organic vapor respirator with a dust/mist filter. (A2P2/P3)

**Hand Protection**

Impervious rubber gloves. Polyvinylchloride gloves. Neoprene gloves.

**Skin Protection**

Rubber apron.

**Eye Protection**

Chemical goggles; also wear a face shield if splashing hazard exists.

**Other Precautions**

None known.

**Environmental Exposure Controls**

Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

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

**Physical State:** Liquid

**Color:** Clear light yellow

**Odor:** Mild

**Odor Threshold:** No information available

PropertyValues

Remarks/ - Method

**pH:**

5-7.5 (10%)

**Freezing Point / Range**

No data available

**Melting Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

> 93 °C / > 200 °F PMCC

**Evaporation rate**

< 0.1

**Vapor Pressure**

< 0.01 mmHg

**Vapor Density**

> 1

**Specific Gravity**

1.02

**Water Solubility**

Soluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

370 °C / 698 °F

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No information available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information****Molecular Weight**

405

**VOC Content (%)**

No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong oxidizers. Strong acids. Strong alkalis.

**10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

May be fatal if inhaled.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral             | LD50 Dermal              | LC50 Inhalation               |
|--|------------|-----------------------|--------------------------|-------------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | >47248 mg/kg-bw (rat) | >21140 mg/kg-bw (rabbit) | 0.26 mg/L (rat, 4 h, aerosol) |

### Immediate, delayed and chronic health effects from exposure

**Inhalation** Fatal if inhaled.  
**Eye Contact** Non-irritating to rabbit's eye  
**Skin Contact** Not irritating to skin in rabbits.  
**Ingestion** Irritation of the mouth, throat, and stomach.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

### Exposure Levels

No data available

### Interactive effects

Skin disorders. Eye ailments.

### Data limitations

No data available

| Substances   | CAS Number | Skin corrosion/irritation                        |
|--|------------|--|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | Not a dermal irritant Non-irritating to the skin |

| Substances   | CAS Number | Serious eye damage/irritation |
|--|------------|-------------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | Non-irritating to the eye     |

| Substances   | CAS Number | Skin Sensitization  |
|--|------------|---|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | No sensitization responses were observed (similar substances) |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | No information available  |

| Substances   | CAS Number | Mutagenic Effects        |
|--|------------|--------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | No information available |

| Substances   | CAS Number | Carcinogenic Effects                                    |
|--|------------|---|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | Did not show carcinogenic effects in animal experiments |

| Substances   | CAS Number | Reproductive toxicity    |
|--|------------|--------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | No information available |

|  |                   |  |
|--|-------------------|--|
| oxirane, monbutyl ether                            |                   |  |
| <b>Substances</b>                                  | <b>CAS Number</b> | <b>STOT - single exposure</b>                |
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3         | No data of sufficient quality are available. |
| <b>Substances</b>                                  | <b>CAS Number</b> | <b>STOT - repeated exposure</b>              |
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3         | No data of sufficient quality are available. |
| <b>Substances</b>                                  | <b>CAS Number</b> | <b>Aspiration hazard</b>                     |
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3         | Not applicable                               |

## 12. Ecological Information

### Ecotoxicity

#### **Product Ecotoxicity Data**

No data available

#### **Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae                            | Toxicity to Fish  | Toxicity to Microorganisms | Toxicity to Invertebrates  |
|--|------------|--|---|----------------------------|--|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | EC50 (72 h) =465 mg/L (Skeletonema costatum) | LC50 () =3170 mg/L (Pimephales promelas)<br>LC50 (96 h) >1800 mg/L (Scophthalmus maximus) | No information available   | EC50 () =17000 mg/L (Daphnia magna)<br>LC50 (48 h) =356 mg/L (Acartia tonsa) |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | (24% @ 20d)                   |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow        |
|--|------------|----------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | Log Pow =0.353 |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Methyloxirane polymer with oxirane, monbutyl ether | 9038-95-3  | No information available |

### 12.6. Other adverse effects

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

### Environmental regulations

Not applicable

## 14. Transport Information

**Transportation Information**

**UN Number** UN2810  
**UN proper shipping name:** Toxic Liquid, Organic, N.O.S. (Polyalkylene glycol)  
**Transport Hazard Class(es):** 6.1  
**Packing Group:** II  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals** All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)** This product, and all its components, complies with EINECS

**US TSCA Inventory** All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

**16. Other information****Date of preparation or review**

**Revision Date:** 27-Jun-2016

**Revision Note**

SDS sections updated: 2

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

H330 - Fatal if inhaled

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### GEM™ GP

Revision Date: 27-Jun-2016

Revision Number: 43

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** GEM™ GP

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003660

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

**Recommended Use** Shale stabilizer  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Serious Eye Damage/Irritation

Category 1 - H318

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Danger

**Hazard Statements:**

H318 - Causes serious eye damage

**Precautionary Statements****Prevention  
Response**

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

**Storage  
Disposal**

None  
 None

**Contains  
Substances**

Polyethylene glycol butyl ether

**CAS Number**  
 9004-77-7

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).  
 This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances                      | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|---------------------------------|------------|---------------|--------------------------------|
| Polyethylene glycol butyl ether | 9004-77-7  | 60 - 100%     | Eye Corr. 1 (H318)             |

### 4. First aid measures

**Description of necessary first aid measures****Inhalation**

If inhaled, move victim to fresh air and seek medical attention.

**Eyes**

Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.

**Skin**

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

**Ingestion**

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue.

**Medical Attention and Special Treatment**

**Notes to Physician**

Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse. Ensure adequate ventilation. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Store away from acids. Keep container closed when not in use.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances                      | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|---------------------------------|------------|-----------------|----------------|
| Polyethylene glycol butyl ether | 9004-77-7  | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the

|  |   |
|--|---|
|  | selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.  |
| <b>Respiratory Protection</b>          | If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.<br>Organic vapor respirator.  |
| <b>Hand Protection</b>                 | Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.35 mm thickness)<br>This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types. |
| <b>Skin Protection</b>                 | Rubber apron.   |
| <b>Eye Protection</b>                  | Chemical goggles; also wear a face shield if splashing hazard exists.   |
| <b>Other Precautions</b>               | Eyewash fountains and safety showers must be easily accessible.   |
| <b>Environmental Exposure Controls</b> | No information available  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |        |                        |                          |
|------------------------|--------|------------------------|--------------------------|
| <b>Physical State:</b> | Liquid | <b>Color</b>           | Yellow to brown          |
| <b>Odor:</b>           | Mild   | <b>Odor Threshold:</b> | No information available |

| Property                                      | Values                   |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 6.5 - 9                  |
| <b>Freezing Point / Range</b>                 | -45 °C                   |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 126 °C / 260 °F          |
| <b>Flash Point</b>                            | 166 °C / 330 °F PMCC     |
| <b>Upper flammability limit</b>               | 3.8 %                    |
| <b>Lower flammability limit</b>               | 0.8 %                    |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | 0.002 mmHg               |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.012                    |
| <b>Water Solubility</b>                       | Miscible with water      |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 203 °C / 397.4 °F        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | 10-11 cP @ 20°C          |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

Keep away from heat, sparks and flame.

**10.5. Incompatible materials**

Strong oxidizers. Mineral acids.

**10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

**Information on routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances                      | CAS Number | LD50 Oral                                | LD50 Dermal   | LC50 Inhalation   |
|---------------------------------|------------|--|---|---|
| Polyethylene glycol butyl ether | 9004-77-7  | > 5000 mg/kg (Rat)<br>> 2000 mg/kg (Rat) | 6540 mg/kg (Rat)<br>3540 mg/kg (Rabbit) (similar substance)<br>> 2000 mg/kg (Rat) (similar substance) | > 2.6 mg/L (Rat) 4h (similar substance)<br>> 2000 mg/L (Rat) 1h (similar substance) |

**Immediate, delayed and chronic health effects from exposure****Inhalation**

May cause mild respiratory irritation.

**Eye Contact**

Causes serious eye damage.

**Skin Contact**

Not irritating to skin in rabbits.

**Ingestion**

Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

Lung disorders. Skin disorders.

**Data limitations**

No data available

| Substances                      | CAS Number | Skin corrosion/irritation           |
|---------------------------------|------------|-------------------------------------|
| Polyethylene glycol butyl ether | 9004-77-7  | Non-irritating to the skin (Rabbit) |

| Substances                      | CAS Number | Serious eye damage/irritation                                      |
|---------------------------------|------------|--|
| Polyethylene glycol butyl ether | 9004-77-7  | Eye, rabbit: Causes severe eye irritation which may damage tissue. |

| Substances                      | CAS Number | Skin Sensitization  |
|---------------------------------|------------|---|
| Polyethylene glycol butyl ether | 9004-77-7  | Did not cause sensitization on laboratory animals (guinea pig) (similar substances) |

| Substances | CAS Number | Mutagenic Effects |
|------------|------------|-------------------|
|------------|------------|-------------------|

|                                 |                   |   |
|---------------------------------|-------------------|---|
| Polyethylene glycol butyl ether | 9004-77-7         | In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects. (similar substances)                       |
| <b>Substances</b>               | <b>CAS Number</b> | <b>Carcinogenic Effects</b>   |
| Polyethylene glycol butyl ether | 9004-77-7         | No information available  |
| <b>Substances</b>               | <b>CAS Number</b> | <b>Reproductive toxicity</b>  |
| Polyethylene glycol butyl ether | 9004-77-7         | Not regarded as a reproductive and developmental toxicant. Did not show teratogenic effects in animal experiments. (similar substances) |
| <b>Substances</b>               | <b>CAS Number</b> | <b>STOT - single exposure</b>   |
| Polyethylene glycol butyl ether | 9004-77-7         | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)                      |
| <b>Substances</b>               | <b>CAS Number</b> | <b>STOT - repeated exposure</b>   |
| Polyethylene glycol butyl ether | 9004-77-7         | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)                      |
| <b>Substances</b>               | <b>CAS Number</b> | <b>Aspiration hazard</b>  |
| Polyethylene glycol butyl ether | 9004-77-7         | Not applicable  |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances                      | CAS Number | Toxicity to Algae  | Toxicity to Fish  | Toxicity to Microorganisms  | Toxicity to Invertebrates  |
|---------------------------------|------------|--|---|---|--|
| Polyethylene glycol butyl ether | 9004-77-7  | EC50(72h): 391 mg/L (growth rate) (Skeletonema costatum) | EC50: 475 ppm (Abra alba)<br>LC50(96h): >1800 mg/L (Scophthalmus maximus) | IC50(16h): > 5000 mg/L (Growth inhibition, Activated sludge) (similar substance – 2-(2-(2-butoxyethoxy)ethoxy)ethanol)<br>EC10(30m): > 1995 mg/L (respiration rate, activated sludge) (similar substance – 2-(2-(2-butoxyethoxy)ethoxy)ethanol) | TLM48: 310 mg/l (Acartia tonsa)<br>EC50(48h): > 3200 mg/L (Daphnia magna) (similar substance – ethanol, 2-butoxy-, manufacture of, by-products from) |

### 12.2. Persistence and degradability

| Substances                      | CAS Number | Persistence and Degradability     |
|---------------------------------|------------|-----------------------------------|
| Polyethylene glycol butyl ether | 9004-77-7  | Readily biodegradable (68% @ 28d) |

### 12.3. Bioaccumulative potential

Does not bioaccumulate.

| Substances                      | CAS Number | Log Pow |
|---------------------------------|------------|---------|
| Polyethylene glycol butyl ether | 9004-77-7  | 0.436   |

### 12.4. Mobility in soil

| Substances                      | CAS Number | Mobility      |
|---------------------------------|------------|---------------|
| Polyethylene glycol butyl ether | 9004-77-7  | Log Kow < 4.5 |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

### 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

### 15. Regulatory Information

**Safety, health and environmental regulations specific for the product**

**International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

### 16. Other information

**Date of preparation or review**

**Revision Date:** 27-Jun-2016

**Revision Note**

SDS sections updated: 2

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

H318 - Causes serious eye damage

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### QUIK-FREE®

Revision Date: 30-Sep-2015

Revision Number: 17

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** QUIK-FREE®

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM004906

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

**Recommended Use** Spotting fluid  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification** Not Classified

**Risk Phrases** None

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures**

**Description of necessary first aid measures**

**Inhalation** If inhaled, move victim to fresh air and seek medical attention.  
**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.  
**Skin** Wash with soap and water. Get medical attention if irritation persists.  
**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Wash hands after use.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection** Not normally necessary.

**Hand Protection** Impervious rubber gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** No information available

**9. Physical and Chemical Properties**

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

**Physical State:** Liquid  
**Odor:** Fatty acid  
**Color:** Clear light yellow  
**Odor Threshold:** No information available

| <u>Property</u><br><u>Remarks/ - Method</u>   | <u>Values</u>            |
|---|--------------------------|
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 180 °C / > 356 °F PMCC |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 0.98                     |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |
| <b>9.2. Other information</b>                 |                          |
| <b>VOC Content (%)</b>                        | No data available        |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Oxides of sulfur. Acrolein. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

#### Toxicology data for the components

| <b>Substances</b>  | <b>CAS Number</b> | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|--|-------------------|-------------------|--------------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA                | No data available | No data available  | No data available      |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.  
**Eye Contact** May cause mild eye irritation.  
**Skin Contact** May cause mild skin irritation.  
**Ingestion** May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

### 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

### 15. Regulatory Information

**Safety, health and environmental regulations specific for the product**

**International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | Product contains one or more components not listed on inventory.     |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.                    |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS           |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.                    |
| <b>Canadian DSL Inventory</b>             | Product contains one or more components not listed on the inventory. |

**Poisons Schedule number**

None Allocated

### 16. Other information

**Date of preparation or review**

**Revision Date:** 30-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact

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Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BAROFIBRE®

Revision Date: 15-Sep-2015

Revision Number: 26

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BAROFIBRE®

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003539

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

**Recommended Use** Loss Circulation Material  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Not classified

**Label elements, including precautionary statements****Hazard Pictograms****Signal Word** Not Hazardous**Hazard Statements** Not Classified**Precautionary Statements****Prevention** None**Response** None**Storage** None**Disposal** None**Contains****Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification***For the full text of the H-phrases mentioned in this Section, see Section 16***Classification** Not Classified**Risk Phrases** None**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures****Description of necessary first aid measures****Inhalation** Under normal conditions, first aid procedures are not required. Move person to fresh air.**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.**Skin** Under normal conditions, first aid procedures are not required.**Ingestion** Under normal conditions, first aid procedures are not required.**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment****Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid creating and breathing dust. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a dry location. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

|  |   |
|--|---|
| <b>Respiratory Protection</b>          | If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.<br>Dust/mist respirator. (N95, P2/P3) |
| <b>Hand Protection</b>                 | Normal work gloves.   |
| <b>Skin Protection</b>                 | Normal work coveralls.  |
| <b>Eye Protection</b>                  | Safety glasses.   |
| <b>Other Precautions</b>               | None known.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |              |                        |                          |
|------------------------|--------------|------------------------|--------------------------|
| <b>Physical State:</b> | Solid Powder | <b>Color:</b>          | Tan                      |
| <b>Odor:</b>           | Odorless     | <b>Odor Threshold:</b> | No information available |

| Property                                      | Values                   |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 4.9 (1%)                 |
| <b>Freezing Point/Range</b>                   | 190 °C                   |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | 193 °C / 380 °F PMCC     |
| lower flammability limit                      | 0.29                     |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.3                      |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
| <b>Bulk Density</b>    | 24-31 lbs/ft3     |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

None known.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity**

**Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.

**Eye Contact** May cause mild eye irritation.

**Skin Contact** None known.

**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.

**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

## 16. Other information

### Date of preparation or review

**Revision Date:** 15-Sep-2015

### **Revision Note**

SDS sections updated: 2

### **Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

### **Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

### **Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

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

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

### **Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### STEELSEAL®

Revision Date: 22-Sep-2015

Revision Number: 22

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** STEELSEAL®

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003768

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

**Recommended Use** Loss Circulation Material  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Not classified

**Label elements, including precautionary statements****Hazard Pictograms****Signal Word** Not Hazardous**Hazard Statements** Not Classified**Precautionary Statements****Prevention** None**Response** None**Storage** None**Disposal** None**Contains****Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification***For the full text of the H-phrases mentioned in this Section, see Section 16***Classification** Not Classified**Risk Phrases** None**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures****Description of necessary first aid measures****Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.**Skin** Wash with soap and water. Get medical attention if irritation persists.**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

Notes to Physician Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Combustible dust when in finely divided and highly suspended state.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid dust accumulations. Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels and enclosed or confined spaces. Before entering such an area, sampling and dark procedures for low oxygen levels should be taken to ensure ample oxygen availability. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a dry location. Keep from heat, sparks, and open flames. Product has a shelf life of 60 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

A well ventilated area to control dust levels.

**Personal protective equipment (PPE)**

|  |  |
|--|--|
| <b>Respiratory Protection</b>          | Not normally needed. But if significant exposures are possible then the following respirator is recommended:<br>Dust/mist respirator. (N95, P2/P3) |
| <b>Hand Protection</b>                 | Normal work gloves.  |
| <b>Skin Protection</b>                 | Normal work coveralls.   |
| <b>Eye Protection</b>                  | Wear safety glasses or goggles to protect against exposure.  |
| <b>Other Precautions</b>               | None known.  |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system   |

|  |
|--|
| <b>9. Physical and Chemical Properties</b> |
|--|

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

|                        |          |                        |                          |
|------------------------|----------|------------------------|--------------------------|
| <b>Physical State:</b> | Solid    | <b>Color:</b>          | Dark gray                |
| <b>Odor:</b>           | Odorless | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | 4200 °C / 7592 °F        |
| <b>Flash Point</b>                            | > 356 °C / > 673 °F      |
| <b>lower flammability limit</b>               | 0.07-0.12 oz/ft3         |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | 1                        |
| <b>Vapor Density</b>                          | 0.4                      |
| <b>Specific Gravity</b>                       | 1.75                     |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
| <b>Bulk Density</b>    | 38-45 lbs/ft3     |

|                                     |
|-------------------------------------|
| <b>10. Stability and Reactivity</b> |
|-------------------------------------|

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

Strong acids. Strong alkalis.

**10.6. Hazardous Decomposition Products**

Carbon monoxide and carbon dioxide.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure****Inhalation**

May cause mild respiratory irritation.

**Eye Contact**

May cause mechanical irritation to eye.

**Skin Contact**

May cause mild skin irritation.

**Ingestion**

May cause mild gastric distress.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

Skin disorders.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances | CAS Number | Mutagenic Effects |
|------------|------------|-------------------|
|------------|------------|-------------------|

|  |    |                |
|--|----|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA | Not applicable |
|--|----|----------------|

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**  
**Product Ecotoxicity Data**  
 No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

#### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

#### 12.6. Other adverse effects

##### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

#### Safe handling and disposal methods

Bury in a licensed landfill according to federal, state, and local regulations.

#### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

#### Environmental regulations

Not applicable

### 14. Transport Information

#### Transportation Information

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

#### Special precautions during transport

None

#### HazChem Code

None Allocated

### 15. Regulatory Information

#### Safety, health and environmental regulations specific for the product

##### **International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.

**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.

**EINECS Inventory** This product, and all its components, complies with EINECS

**US TSCA Inventory** All components listed on inventory or are exempt.

**Canadian DSL Inventory** All components listed on inventory or are exempt.

#### Poisons Schedule number

None Allocated

### 16. Other information

**Date of preparation or review****Revision Date:** 22-Sep-2015**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARAZAN® D PLUS

Revision Date: 15-Sep-2015

Revision Number: 21

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARAZAN® D PLUS

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003535

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

**Recommended Use** Viscosifier  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Slippery when wet. Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 24 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.  
**Environmental Exposure Controls** Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Powder      **Color:** White to off white  
**Odor:** Slight      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 7 (1%)                   |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.6                      |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 204 °C / 400 °F          |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**Molecular Weight** 1000000  
**VOC Content (%)** No data available  
**Bulk Density** 52.4 lbs/ft3

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |                                |
|---------------------|--------------------------------|
| <b>Inhalation</b>   | May impede respiration.        |
| <b>Eye Contact</b>  | May cause mild eye irritation. |
| <b>Skin Contact</b> | None known.                    |
| <b>Ingestion</b>    | None known.                    |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances                          | CAS Number | Carcinogenic Effects |
|-------------------------------------|------------|----------------------|
| Contains no hazardous substances in | NA         | Not applicable       |

|  |  |  |
|--|--|--|
| concentrations above cut-off values according to the competent authority |  |  |
|--|--|--|

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

## 14. Transport Information

**Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

## 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.  
**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

## 16. Other information

**Date of preparation or review**

**Revision Date:** 15-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

WHO/FAO

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### PAC™-L

Revision Date: 21-Sep-2015

Revision Number: 27

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** PAC™-L

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003724

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

**Recommended Use** Fluid Loss Additive

**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous

Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Not classified

**Label elements, including precautionary statements**

**Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures**

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid dust accumulations. Ensure adequate ventilation. Slippery when wet. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a dry location. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

A well ventilated area to control dust levels. Local exhaust ventilation should be used in

areas without good cross ventilation.

**Personal protective equipment (PPE)**

|  |   |
|--|---|
| <b>Personal Protective Equipment</b>   | If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product. |
| <b>Respiratory Protection</b>          | Not normally needed. But if significant exposures are possible then the following respirator is recommended:<br>Dust/mist respirator. (N95, P2/P3)  |
| <b>Hand Protection</b>                 | Normal work gloves.   |
| <b>Skin Protection</b>                 | Normal work coveralls.  |
| <b>Eye Protection</b>                  | Wear safety glasses or goggles to protect against exposure.   |
| <b>Other Precautions</b>               | None known.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

**9. Physical and Chemical Properties**

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

|                        |          |                        |                          |
|------------------------|----------|------------------------|--------------------------|
| <b>Physical State:</b> | Powder   | <b>Color:</b>          | White to off white       |
| <b>Odor:</b>           | Odorless | <b>Odor Threshold:</b> | No information available |

| Property                                      | Values                   |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 6.5-9 (1%)               |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | 221 °C / 430 °F          |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.6                      |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 400 °C / 752 °F          |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
| <b>Bulk Density</b>    | 40-55 lbs/ft3     |

**10. Stability and Reactivity**

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

Strong oxidizers.

**10.6. Hazardous Decomposition Products**

Carbon monoxide and carbon dioxide.

**11. Toxicological Information**

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity**

**Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.

**Eye Contact** May cause mild eye irritation.

**Skin Contact** May cause mild skin irritation.

**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances                          | CAS Number | Respiratory Sensitization |
|-------------------------------------|------------|---------------------------|
| Contains no hazardous substances in | NA         | Not applicable            |

|  |  |  |
|--|--|--|
| concentrations above cut-off values according to the competent authority |  |  |
|--|--|--|

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances | CAS Number | Persistence and Degradability |
|------------|------------|-------------------------------|
|------------|------------|-------------------------------|

|  |    |                          |
|--|----|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA | No information available |
|--|----|--------------------------|

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations**

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information**

**Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information**

**Safety, health and environmental regulations specific for the product**

**International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.  
**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

---

None Allocated

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review****Revision Date:** 21-Sep-2015**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### EZ-MUD® DP

Revision Date: 03-Mar-2016

Revision Number: 20

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** EZ-MUD® DP

##### Other means of Identification

**Synonyms** None  
**Product Code:** HM003644

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

**Recommended Use** Shale Inhibitor  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Not classified

**Label elements, including precautionary statements****Hazard pictograms****Signal Word** Not Hazardous**Hazard Statements** Not Classified**Precautionary Statements****Prevention** None**Response** None**Storage** None**Disposal** None**Contains****Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification***For the full text of the H-phrases mentioned in this Section, see Section 16***Classification** Not Classified  
**Risk Phrases** None**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures****Description of necessary first aid measures****Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.**Skin** Wash with soap and water. Get medical attention if irritation persists.**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment****Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

### Suitable extinguishing equipment

#### **Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

### Specific hazards arising from the chemical

#### **Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

### Special protective equipment and precautions for fire fighters

#### **Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Slippery when wet.

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

## 7. Handling and storage

### 7.1. Precautions for safe handling

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment. Slippery when wet.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 24 months.

#### **Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

### Control parameters - exposure standards, biological monitoring

#### **Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

### Appropriate engineering controls

#### **Engineering Controls**

Use in a well ventilated area.

### Personal protective equipment (PPE)

#### **Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this

|  |  |
|--|--|
| <b>Respiratory Protection</b>          | product.<br>Not normally needed. But if significant exposures are possible then the following respirator is recommended:<br>Dust/mist respirator. (N95, P2/P3) |
| <b>Hand Protection</b>                 | Normal work gloves.  |
| <b>Skin Protection</b>                 | Normal work coveralls.   |
| <b>Eye Protection</b>                  | Wear safety glasses or goggles to protect against exposure.  |
| <b>Other Precautions</b>               | None known.  |
| <b>Environmental Exposure Controls</b> | No information available   |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |       |                        |                          |
|------------------------|-------|------------------------|--------------------------|
| <b>Physical State:</b> | Solid | <b>Color</b>           | White                    |
| <b>Odor:</b>           | Mild  | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 6-8                      |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 0.8                      |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                        |
|------------------------|------------------------|
| <b>VOC Content (%)</b> | No data available      |
| <b>Bulk Density</b>    | 40 lbs/ft <sup>3</sup> |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

None anticipated

### 10.5. Incompatible materials

Strong oxidizers.

### 10.6. Hazardous decomposition products

Ammonia. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

**Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |                                 |
|---------------------|---------------------------------|
| <b>Inhalation</b>   | None known.                     |
| <b>Eye Contact</b>  | May cause mild eye irritation.  |
| <b>Skin Contact</b> | May cause mild skin irritation. |
| <b>Ingestion</b>    | None known.                     |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

|                                   |
|-----------------------------------|
| <b>12. Ecological Information</b> |
|-----------------------------------|

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

|                                    |
|------------------------------------|
| <b>13. Disposal Considerations</b> |
|------------------------------------|

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information**

|                                   |                |
|-----------------------------------|----------------|
| <b>UN Number</b>                  | Not restricted |
| <b>UN proper shipping name</b>    | Not restricted |
| <b>Transport Hazard Class(es)</b> | Not applicable |
| <b>Packing Group:</b>             | Not applicable |
| <b>Environmental Hazards</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories**

|  |  |
|--|--|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS   |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.  |

**Canadian Domestic Substances List** All components listed on inventory or are exempt.  
(DSL)

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stokholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review****Revision Date:** 03-Mar-2016**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)**Disclaimer Statement**

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from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARAKLEAN® DUAL

Revision Date: 06-Jul-2016

Revision Number: 31

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARAKLEAN® DUAL

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM006480

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

**Recommended Use** Solvent; Cleaning Solution  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

|                               |                   |
|-------------------------------|-------------------|
| Skin Corrosion/Irritation     | Category 2 - H315 |
| Serious Eye Damage/Irritation | Category 1 - H318 |
| Acute Aquatic Toxicity        | Category 2 - H401 |
| Flammable liquids.            | Category 4 - H227 |

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Danger

**Hazard Statements:**

H227 - Combustible liquid  
 H315 - Causes skin irritation  
 H318 - Causes serious eye damage  
 H401 - Toxic to aquatic life

**Precautionary Statements****Prevention**

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 P264 - Wash face, hands and any exposed skin thoroughly after handling  
 P273 - Avoid release to the environment

**Response**

P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
 P332 + P313 - If skin irritation occurs: Get medical advice/attention  
 P362 - Take off contaminated clothing and wash before reuse  
 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 water spray for extinction

**Storage  
Disposal**

P403 + P235 - Store in a well-ventilated place. Keep cool  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains****Substances**

Ethylene glycol monobutyl ether  
 Alcohols, C9-11, ethoxylated

**CAS Number**

111-76-2  
 68439-46-3

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
 This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

**3. Composition/information on Ingredients**

| Substances                      | CAS Number | PERCENT (w/w) | GHS Classification - Australia                                    |
|---------------------------------|------------|---------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | 30 - 60%      | Acute Tox. 4 (H302)<br>Acute Tox. 4 (H312)<br>Acute Tox. 4 (H332) |

|                              |            |          |   |
|------------------------------|------------|----------|---|
|                              |            |          | Skin Irrit. 2 (H315)<br>Eye Irrit. 2A (H319)<br>Flam. Liq. 4 (H227)   |
| Alcohols, C9-11, ethoxylated | 68439-46-3 | 10 - 30% | Acute Tox. 4 (H302)<br>Skin Irrit. 2 (H315)<br>Eye Corr. 1 (H318)<br>Aquatic Acute 1 (H400)<br>Aquatic Chronic 3 (H412) |

**4. First aid measures**

**Description of necessary first aid measures**

**Inhalation** If inhaled, move victim to fresh air and seek medical attention.

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Seek immediate medical attention/advice. Suitable emergency eye wash facility should be immediately available

**Skin** In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce harmful gases. Fight fire from a safe distance and from a protected location.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Remove sources of ignition. Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

### 7.1. Precautions for safe handling

#### Handling Precautions

Remove sources of ignition. Use appropriate protective equipment. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse.

#### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

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

#### Storage Information

Store in a cool well ventilated area. Store away from oxidizers. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 24 months.

#### Other Guidelines

No information available

## 8. Exposure Controls/Personal Protection

### Control parameters - exposure standards, biological monitoring

#### Exposure Limits

| Substances                      | CAS Number | Australia NOHSC   | ACGIH TLV-TWA       |
|---------------------------------|------------|---|---------------------|
| Ethylene glycol monobutyl ether | 111-76-2   | TWA: 20 ppm<br>mg/m <sup>3</sup><br>STEL: 50 ppm<br>mg/m <sup>3</sup> | TWA: 20 ppm<br>Skin |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Not applicable  | Not applicable      |

### Appropriate engineering controls

#### Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

### Personal protective equipment (PPE)

#### Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

#### Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

When the potential exists for heated vapors or fumes of this product to be created, use a respirator with an organic-vapor filter or a supplied-air respirator as needed for adequate protection.

#### Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Butyl rubber gloves. (>= 0.7 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

#### Skin Protection

Rubber apron.

#### Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

#### Other Precautions

Eyewash fountains and safety showers must be easily accessible. Rubber boots

#### Environmental Exposure Controls

Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

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

**Physical State:** Liquid  
**Odor:** Characteristic  
**Color:** Clear  
**Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>                   |
|---|---------------------------------|
| Remarks/ - Method                             |                                 |
| <b>pH:</b>                                    | 4 (10% Solution)                |
| <b>Freezing Point / Range</b>                 | -70 °C                          |
| <b>Melting Point / Range</b>                  | No data available               |
| <b>Boiling Point / Range</b>                  | 168 - 173 °C / 334.4 - 343.4 °F |
| <b>Flash Point</b>                            | 68 °C / 154 °F Closed cup       |
| <b>Evaporation rate</b>                       | No data available               |
| <b>Vapor Pressure</b>                         | 0.968 mmHg                      |
| <b>Vapor Density</b>                          | No data available               |
| <b>Specific Gravity</b>                       | 0.97                            |
| <b>Water Solubility</b>                       | Miscible with water             |
| <b>Solubility in other solvents</b>           | No data available               |
| <b>Partition coefficient: n-octanol/water</b> | No data available               |
| <b>Autoignition Temperature</b>               | 240 °C / 464 °F                 |
| <b>Decomposition Temperature</b>              | No data available               |
| <b>Viscosity</b>                              | No data available               |
| <b>Explosive Properties</b>                   | No information available        |
| <b>Oxidizing Properties</b>                   | No information available        |

**9.2. Other information**

**VOC Content (%)** No data available

|                                     |
|-------------------------------------|
| <b>10. Stability and Reactivity</b> |
|-------------------------------------|

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

Keep away from heat, sparks and flame.

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances                      | CAS Number | LD50 Oral                            | LD50 Dermal           | LC50 Inhalation                                |
|---------------------------------|------------|--------------------------------------|-----------------------|--|
| Ethylene glycol monobutyl ether | 111-76-2   | 1414 mg/kg-bw (guinea pig)           | >2000 mg/kg (Rabbit)  | No data available                              |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | 1400 mg/kg (Rat)<br>1378 mg/kg (Rat) | > 2000 mg/kg (Rabbit) | No toxicity at saturation (similar substances) |

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause respiratory irritation.   |
| <b>Eye Contact</b>  | Causes severe eye irritation which may damage tissue.   |
| <b>Skin Contact</b> | Causes skin irritation.   |
| <b>Ingestion</b>    | Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea. |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

Lung disorders. Skin disorders.

**Data limitations**

No data available

| Substances                      | CAS Number | Skin corrosion/irritation   |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | Causes moderate skin irritation. (Rabbit)                         |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | May cause moderate skin irritation. (Rabbit) (similar substances) |

| Substances                      | CAS Number | Serious eye damage/irritation                           |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | Causes moderate eye irritation (Rabbit)                 |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Causes serious eye damage (Rabbit) (similar substances) |

| Substances                      | CAS Number | Skin Sensitization  |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | Did not cause sensitization on laboratory animals (guinea pig)                      |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Did not cause sensitization on laboratory animals (guinea pig) (similar substances) |

| Substances                      | CAS Number | Respiratory Sensitization |
|---------------------------------|------------|---------------------------|
| Ethylene glycol monobutyl ether | 111-76-2   | No information available  |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No information available  |

| Substances                      | CAS Number | Mutagenic Effects   |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | In vivo tests did not show mutagenic effects.   |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. (similar substances) |

| Substances                      | CAS Number | Carcinogenic Effects   |
|---------------------------------|------------|--|
| Ethylene glycol monobutyl ether | 111-76-2   | Not regarded as carcinogenic.  |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Did not show carcinogenic effects in animal experiments (similar substances) |

| Substances                      | CAS Number | Reproductive toxicity   |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Animal testing did not show any effects on fertility. (similar substances)                                    |

| Substances                      | CAS Number | STOT - single exposure                       |
|---------------------------------|------------|--|
| Ethylene glycol monobutyl ether | 111-76-2   | No data of sufficient quality are available. |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No data of sufficient quality are available. |

| Substances                      | CAS Number | STOT - repeated exposure                     |
|---------------------------------|------------|--|
| Ethylene glycol monobutyl ether | 111-76-2   | No data of sufficient quality are available. |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No data of sufficient quality are available. |

| Substances                      | CAS Number | Aspiration hazard  |
|---------------------------------|------------|--|
| Ethylene glycol monobutyl ether | 111-76-2   | No adverse health effects are expected from swallowing. Not applicable |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No information available   |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances                      | CAS Number | Toxicity to Algae   | Toxicity to Fish   | Toxicity to Microorganisms                         | Toxicity to Invertebrates   |
|---------------------------------|------------|---|--|--|---|
| Ethylene glycol monobutyl ether | 111-76-2   | EC50 (72 h) =1840 mg/L<br>(Pseudokirchneriella subcapitata) | LC50 (96 h) =1474 mg/L<br>(Oncorhynchus mykiss)<br>NOAEC (21 d) >100 mg/L<br>(Danio rerio)                           | No information available                           | EC50 (48 h) =1800 mg/L<br>(Daphnia magna)<br>EC50 (21 d) =297 mg/L<br>(Daphnia magna)                 |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | EC50(96h): 0.26 mg/L<br>(Selenastrum capricornutum)         | LC50(96h): 5.7 mg/L<br>(Oncorhynchus mykiss)<br>NOEC(30d): 0.28 mg/L<br>(Pimephales promelas)<br>(similar substance) | EC50(3h): 140 mg/L<br>(Activated sludge, domestic) | EC50(48h): 2.5 mg/L<br>(Daphnia magna)<br>NOEC(21d): 1.75 mg/L<br>(Daphnia magna) (similar substance) |

### 12.2. Persistence and degradability

| Substances                      | CAS Number | Persistence and Degradability                               |
|---------------------------------|------------|---|
| Ethylene glycol monobutyl ether | 111-76-2   | Readily biodegradable (75-88% @ 28d)                        |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | Readily biodegradable (72 - 89% @ 28d) (similar substances) |

### 12.3. Bioaccumulative potential

| Substances                      | CAS Number | Log Pow                  |
|---------------------------------|------------|--------------------------|
| Ethylene glycol monobutyl ether | 111-76-2   | LogPow 0.81              |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No information available |

### 12.4. Mobility in soil

| Substances                      | CAS Number | Mobility                 |
|---------------------------------|------------|--------------------------|
| Ethylene glycol monobutyl ether | 111-76-2   | No information available |
| Alcohols, C9-11, ethoxylated    | 68439-46-3 | No information available |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

### Environmental regulations

Not applicable

## 14. Transport Information

**Transportation Information****Australia ADG**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IMDG/IMO**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IATA/ICAO**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

**16. Other information****Date of preparation or review**

Revision Date: 06-Jul-2016

**Revision Note**

SDS sections updated: 2

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

H227 - Combustible liquid  
H302 - Harmful if swallowed  
H312 - Harmful in contact with skin  
H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H319 - Causes serious eye irritation  
H332 - Harmful if inhaled  
H400 - Very toxic to aquatic life  
H401 - Toxic to aquatic life  
H412 - Harmful to aquatic life with long lasting effects

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
OSHA  
ECHA C&L  
NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BDF™-427

Revision Date: 11-Mar-2016

Revision Number: 6

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BDF™-427

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM005969

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

**Recommended Use** Additive  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road, Jandakot, WA 6164  
Australia  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951  
Global Incident Response Access Code: 334305  
Contract Number: 14012

##### Australian Poisons Information Centre

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### Hazard Pictograms

**Signal Word** Not Hazardous

**Hazard Statements:** Not Classified

**Precautionary Statements**

**Prevention** None  
**Response** None  
**Storage** None  
**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

None known

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment.

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove. Do NOT spread spilled product with water.

## 7. Handling and storage

### 7.1. Precautions for safe handling

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Material is slippery underfoot.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use. Store at temperatures between 40 and 90 F (5 and 35 C). Product has a shelf life of 12 months.

#### **Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

### Control parameters - exposure standards, biological monitoring

#### **Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

### Appropriate engineering controls

#### **Engineering Controls**

Use in a well ventilated area.

### Personal protective equipment (PPE)

#### **Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

#### **Respiratory Protection**

Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

#### **Hand Protection**

Impervious rubber gloves.

#### **Skin Protection**

Normal work coveralls.

#### **Eye Protection**

Chemical goggles; also wear a face shield if splashing hazard exists.

#### **Other Precautions**

None known.

#### **Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                               |   |
|-------------------------------|---|
| <b>Physical State:</b> Liquid | <b>Color</b> Clear Yellow                       |
| <b>Odor:</b> Slight           | <b>Odor Threshold:</b> No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 5-9                      |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | No data available        |
| <b>Water Solubility</b>                       | Miscible with water      |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Oxides of nitrogen. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

**Information on routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**Symptoms related to exposure****Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | May cause mild respiratory irritation. |
| <b>Eye Contact</b>  | May cause mild eye irritation.         |
| <b>Skin Contact</b> | May cause mild skin irritation.        |
| <b>Ingestion</b>    | None known.                            |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

## 12. Ecological Information

**Ecotoxicity****Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

|                                    |
|------------------------------------|
| <b>13. Disposal Considerations</b> |
|------------------------------------|

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information****Australia ADG**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IMDG/IMO**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IATA/ICAO**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stockholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

**16. Other information****Date of preparation or review****Revision Date:** 11-Mar-2016**Revision Note**

SDS sections updated: 2

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)**Disclaimer Statement**

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### N-SQUEEZE™

Revision Date: 21-Sep-2015

Revision Number: 20

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** N-SQUEEZE™

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003709

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

**Recommended Use** Loss Circulation Material  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store in a cool, dry location. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection**

Not normally needed. But if significant exposures are possible then the following respirator is recommended:  
Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Solid  
**Color:** Light brown  
**Odor:** Woody  
**Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 9-10                     |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 93 °C                  |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 2.6                      |
| <b>Water Solubility</b>                       | Partly soluble           |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**VOC Content (%)** No data available  
**Bulk Density** 22 lbs/ft3

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### Most Important Symptoms/Effects

No significant hazards expected.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances                          | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|-------------------------------------|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in | NA         | No data available | No data available | No data available |

|  |  |  |  |  |
|--|--|--|--|--|
| concentrations above cut-off values according to the competent authority |  |  |  |  |
|--|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause mild respiratory irritation.  |
| <b>Eye Contact</b>  | May cause mechanical irritation to eye. |
| <b>Skin Contact</b> | Can dry skin.                           |
| <b>Ingestion</b>    | None known.                             |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### **Product Ecotoxicity Data**

No data available

#### **Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.

**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.

**EINECS Inventory** This product, and all its components, complies with EINECS

**US TSCA Inventory** All components listed on inventory or are exempt.

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

**Revision Date:** 21-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### SODIUM BICARBONATE

Revision Date: 22-Sep-2015

Revision Number: 26

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** SODIUM BICARBONATE

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM001824

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

**Recommended Use** Buffer  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Not applicable.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from acids. Store in a dry location.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal protective equipment (PPE)**

**Respiratory Protection**

Not normally needed. But if significant exposures are possible then the following respirator is recommended:  
Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

Do not allow material to contaminate ground water system



|   |  |  |  |  |
|---|--|--|--|--|
| cut-off values according to the competent authority |  |  |  |  |
|---|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | May cause mild respiratory irritation. |
| <b>Eye Contact</b>  | May cause mild eye irritation.         |
| <b>Skin Contact</b> | May cause mild skin irritation.        |
| <b>Ingestion</b>    | None known.                            |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances | CAS Number | Reproductive toxicity |
|------------|------------|-----------------------|
|            |            |                       |

|  |    |                |
|--|----|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA | Not applicable |
|--|----|----------------|

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.6. Other adverse effects

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>Canadian DSL Inventory</b>             | All components listed on inventory or are exempt.          |

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

**Revision Date:** 22-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### ALDACIDE® G ANTIMICROBIAL

Revision Date: 09-May-2016

Revision Number: 35

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** ALDACIDE® G ANTIMICROBIAL

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003462

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

**Recommended Use** Biocide  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                    |
|--|--------------------|
| Acute Oral Toxicity                                | Category 4 - H302  |
| Acute inhalation toxicity - vapor                  | Category 3 - H331  |
| Skin Corrosion/Irritation                          | Category 1 - H314  |
| Serious Eye Damage/Irritation                      | Category 1 - H318  |
| Respiratory Sensitization                          | Category 1 - H334  |
| Skin Sensitization                                 | Category 1 - H317  |
| Reproductive Toxicity                              | Category 1B - H360 |
| Specific Target Organ Toxicity - (Single Exposure) | Category 3 - H335  |

|                          |                   |
|--------------------------|-------------------|
| Acute Aquatic Toxicity   | Category 1 - H400 |
| Chronic Aquatic Toxicity | Category 3 - H412 |

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Danger

**Hazard Statements:**

H302 - Harmful if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H331 - Toxic if inhaled  
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H335 - May cause respiratory irritation  
 H360 - May damage fertility or the unborn child  
 H400 - Very toxic to aquatic life  
 H412 - Harmful to aquatic life with long lasting effects

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe 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  
 P273 - Avoid release to the environment  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P281 - Use personal protective equipment as required  
 P285 - In case of inadequate ventilation wear respiratory protection

**Response**

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 P330 - Rinse mouth  
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
 P363 - Wash contaminated clothing before reuse  
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 P310 - Immediately call a POISON CENTER or doctor/physician  
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 P391 - Collect spillage

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
 P405 - Store locked up

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains**

**Substances**  
 Glutaraldehyde  
 Methanol

**CAS Number**  
 111-30-8  
 67-56-1

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

### 3. Composition/information on Ingredients

| Substances     | CAS Number | PERCENT (w/w) | GHS Classification - Australia  |
|----------------|------------|---------------|---|
| Glutaraldehyde | 111-30-8   | 10 - 30%      | Acute Tox. 3 (H301)<br>Acute Tox. 2 (H330)<br>Skin Corr. 1B (H314)<br>Eye Corr. 1 (H318)<br>Resp. Sens. 1 (H334)<br>Skin Sens. 1 (H317)<br>STOT SE 3 (H335)<br>Aquatic Acute 1 (H400)<br>Aquatic Chronic 2 (H411) |
| Methanol       | 67-56-1    | 0.1 - 1%      | Acute Tox. 3 (H301)<br>Acute Tox. 3 (H311)<br>Acute Tox. 3 (H331)<br>Repr. 1B (H360)<br>STOT SE 1 (H370)<br>Flam. Liq. 2 (H225)   |

### 4. First aid measures

**Description of necessary 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>Eyes</b>       | Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.   |
| <b>Skin</b>       | In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately. |
| <b>Ingestion</b>  | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.   |

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Evacuate all persons from the area. Use only competent persons for cleanup.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid breathing mist. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from acids. Store away from alkalis. Store in a well ventilated area. Keep container closed when not in use. Store locked up. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances     | CAS Number | Australia NOHSC  | ACGIH TLV-TWA                 |
|----------------|------------|--|-------------------------------|
| Glutaraldehyde | 111-30-8   | 0.1 ppm  | 0.05 ppm                      |
| Methanol       | 67-56-1    | TWA: 200 ppm<br>TWA: 262 mg/m <sup>3</sup><br>STEL: 250 ppm<br>STEL: 328 mg/m <sup>3</sup> | TWA: 200 ppm<br>STEL: 250 ppm |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation. If vapors are strong enough to be irritating to the nose or eyes, the TLV is probably being exceeded and special ventilation or respiratory protection maybe required.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

|  |   |
|--|---|
| <b>Hand Protection</b>                 | Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.                        |
| <b>Skin Protection</b>                 | Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact. |
| <b>Eye Protection</b>                  | Chemical goggles; also wear a face shield if splashing hazard exists.   |
| <b>Other Precautions</b>               | Eyewash fountains and safety showers must be easily accessible.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |        |                        |                          |
|------------------------|--------|------------------------|--------------------------|
| <b>Physical State:</b> | Liquid | <b>Color</b>           | Clear light yellow       |
| <b>Odor:</b>           | Sharp  | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 3.1-4.5                  |
| <b>Freezing Point / Range</b>                 | (-5) - (-10) °C          |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 100.5 °C / 213 °F        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | 0.9                      |
| <b>Vapor Pressure</b>                         | 0.2 mmHg                 |
| <b>Vapor Density</b>                          | 0.8                      |
| <b>Specific Gravity</b>                       | 1.064                    |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | -0.333                   |
| <b>Autoignition Temperature</b>               | > 275 °C / > 527 °F      |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

Keep away from heat, sparks and flame.

### 10.5. Incompatible materials

Strong acids. Strong alkalis.

### 10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation; Ingestion.

### Symptoms related to exposure

### Most Important Symptoms/Effects

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May

cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances     | CAS Number | LD50 Oral   | LD50 Dermal                                    | LC50 Inhalation            |
|----------------|------------|---|--|----------------------------|
| Glutaraldehyde | 111-30-8   | 50 mg/kg (Guinea Pig)                               | 560 µL/kg (Rabbit)                             | 0.28-0.5 mg/L (Rat) 4h     |
| Methanol       | 67-56-1    | 300 mg/kg-bw (human)<br>< 790 to 13,000 mg/kg (rat) | 1000 mg/kg-bw (human)<br>17,100 mg/kg (rabbit) | 10 mg/L (human, vapor, 4h) |

#### Immediate, delayed and chronic health effects from exposure

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Toxic if inhaled. May cause allergic respiratory reaction. Causes severe respiratory irritation. Inhalation of vapors may result in skin sensitization. |
| <b>Eye Contact</b>  | Causes serious eye damage.  |
| <b>Skin Contact</b> | Causes severe burns. May cause an allergic skin reaction.   |
| <b>Ingestion</b>    | Causes burns of the mouth, throat and stomach. Harmful if swallowed.  |

#### Exposure Levels

No data available

#### Interactive effects

Skin disorders. Lung disorders. Liver disorders.

#### Data limitations

No data available

| Substances     | CAS Number | Skin corrosion/irritation                                       |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | Causes severe skin irritation with tissue destruction. (Rabbit) |
| Methanol       | 67-56-1    | Non-irritating to the skin (Rabbit)                             |

| Substances     | CAS Number | Serious eye damage/irritation                                  |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Causes severe eye irritation which may damage tissue. (Rabbit) |
| Methanol       | 67-56-1    | Non-irritating to the eye (Rabbit)                             |

| Substances     | CAS Number | Skin Sensitization   |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Skin sensitizer in guinea pig.                                 |
| Methanol       | 67-56-1    | Did not cause sensitization on laboratory animals (guinea pig) |

| Substances     | CAS Number | Respiratory Sensitization             |
|----------------|------------|---------------------------------------|
| Glutaraldehyde | 111-30-8   | May cause sensitization by inhalation |
| Methanol       | 67-56-1    | No information available              |

| Substances     | CAS Number | Mutagenic Effects   |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | In vivo tests did not show mutagenic effects.   |
| Methanol       | 67-56-1    | The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic. |

| Substances     | CAS Number | Carcinogenic Effects                                    |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | Did not show carcinogenic effects in animal experiments |
| Methanol       | 67-56-1    | No data of sufficient quality are available.            |

| Substances     | CAS Number | Reproductive toxicity  |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Not a confirmed teratogen or embryotoxin.                                  |
| Methanol       | 67-56-1    | Experiments have shown reproductive toxicity effects on laboratory animals |

| Substances     | CAS Number | STOT - single exposure  |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | No information available  |
| Methanol       | 67-56-1    | May cause disorder and damage to the Central Nervous System (CNS) |

| Substances | CAS Number | STOT - repeated exposure |
|------------|------------|--------------------------|
|------------|------------|--------------------------|

|                |          |   |
|----------------|----------|---|
| Glutaraldehyde | 111-30-8 | May cause disorder and damage to the (Kidney) |
| Methanol       | 67-56-1  | No data of sufficient quality are available.  |

| Substances     | CAS Number | Aspiration hazard |
|----------------|------------|-------------------|
| Glutaraldehyde | 111-30-8   | Not applicable    |
| Methanol       | 67-56-1    | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances     | CAS Number | Toxicity to Algae   | Toxicity to Fish  | Toxicity to Microorganisms                   | Toxicity to Invertebrates  |
|----------------|------------|---|---|--|--|
| Glutaraldehyde | 111-30-8   | EC50 (72h) 0.61 mg/L<br>(Desmodesmus subspicatus)   | LC50 (96h) 10 mg/L<br>(Lepomis macrochirus)<br>NOEC (97d) 1.6 mg/L<br>(Oncorhynchus mykiss)<br>LC50 (96h) 3.5 mg/L<br>(Oncorhynchus mykiss) | EC50 (17h) 6.65 mg/L<br>(Pseudomonas putida) | EC50 (48h) 0.35 mg/L<br>(Daphnia magna)<br>EC50 (48h) 0.7 mg/L<br>(Acartia tonsa)<br>NOEC (21d) 0.13 mg/L<br>(Daphnia magna) |
| Methanol       | 67-56-1    | EC50 (96 h) =22000 mg/L<br>(Pseudokirchnerella subcapitata)<br>NOEC (8 d) =8000 mg/L<br>(Scenedesmus quadricauda) | LC50 (96 h) =15400 mg/L<br>(Lepomis macrochirus)<br>EC50 (200 h) =14536 mg/L<br>(Oryzias latipes)   | IC50 (3h) > 1000 mg/L<br>(activated sludge)  | EC50 (96 h) =18260 mg/L<br>(Daphnia magna)<br>NOEC (21 d) =208 mg/L<br>(Daphnia magna)                                       |

### 12.2. Persistence and degradability

Readily biodegradable

| Substances     | CAS Number | Persistence and Degradability     |
|----------------|------------|-----------------------------------|
| Glutaraldehyde | 111-30-8   | Readily biodegradable (75% @ 28d) |
| Methanol       | 67-56-1    | (95-97% @ 20d)                    |

### 12.3. Bioaccumulative potential

Does not bioaccumulate.

| Substances     | CAS Number | Log Pow   |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | -0.36   |
| Methanol       | 67-56-1    | -0.77<br>BCF = 1.0 – 4.5 (Cyprinus carpio)<br>BCF < 10 (Leuciscus idus melanotus) |

### 12.4. Mobility in soil

| Substances     | CAS Number | Mobility   |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Potential for mobility in soil is high (Koc between 50 and 150). Given its very low Henry's constant (3.3E-08 atm*m3/mole; 25 °C Measured), volatilization from natural bodies of water or moist soil is not expected to be an important fate process. |
| Methanol       | 67-56-1    | No information available   |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information**

|                                    |   |
|------------------------------------|---|
| <b>UN Number</b>                   | UN3265  |
| <b>UN proper shipping name:</b>    | Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde) |
| <b>Transport Hazard Class(es):</b> | 8   |
| <b>Packing Group:</b>              | III   |
| <b>Environmental Hazards:</b>      | Marine Pollutant  |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

S6

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review**

**Revision Date:** 09-May-2016

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

H301 - Toxic if swallowed  
 H302 - Harmful if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H330 - Fatal if inhaled  
 H331 - Toxic if inhaled

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

H400 - Very toxic to aquatic life

H411 - Toxic to aquatic life with long lasting effects

H412 - Harmful to aquatic life with long lasting effects

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARA-DEFOAM® HP

Revision Date: 01-Oct-2015

Revision Number: 16

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARA-DEFOAM® HP

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003504

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

**Recommended Use** Defoamer  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

None known

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification**

Not Classified

**Risk Phrases**

None

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures**

**Description of necessary first aid measures**

**Inhalation**

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

**Eyes**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin**

Wash with soap and water. Get medical attention if irritation persists. Remove contaminated clothing and launder before reuse.

**Ingestion**

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician**

Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Avoid spraying water directly into storage containers due to danger of boilover. Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Keep floors clean of spills.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Not normally necessary.

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** No information available

**9. Physical and Chemical Properties**

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

**Physical State:** Liquid      **Color:** Clear colorless to pale yellow  
**Odor:** Mild sweet      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point/Range</b>                   | -15 °C                   |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 182 °C / > 357 °F PMCC |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | < 0.01 mmHg              |
| <b>Vapor Density</b>                          | > 1                      |
| <b>Specific Gravity</b>                       | 1                        |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**VOC Content (%)**      No data available

**10. Stability and Reactivity**

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

Keep away from heat, sparks and flame.

**10.5. Incompatible Materials**

Strong oxidizers. Isocyanates. Strong acids.

**10.6. Hazardous Decomposition Products**

Aldehydes. Ketones. Organic acid vapors. Hydrocarbons. Carbon monoxide and carbon dioxide.

**11. Toxicological Information**

**Information on routes of exposure**

**Principle Route of Exposure**      Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity**

**Toxicology data for the components**

| Substances                          | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|-------------------------------------|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in | NA         | No data available | No data available | No data available |

|  |  |  |  |  |
|--|--|--|--|--|
| concentrations above cut-off values according to the competent authority |  |  |  |  |
|--|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** Heated vapors may cause respiratory irritation.  
**Eye Contact** May cause mild eye irritation.  
**Skin Contact** Prolonged or repeated contact may cause skin irritation.  
**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to | NA         | No information available |

|                         |  |  |
|-------------------------|--|--|
| the competent authority |  |  |
|-------------------------|--|--|

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations**

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information**

**Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information**

**Safety, health and environmental regulations specific for the product**

**International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.  
**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**16. Other information**

**Date of preparation or review**

Revision Date: 01-Oct-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### CAUSTIC SODA

Revision Date: 22-Jan-2016

Revision Number: 32

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** CAUSTIC SODA

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003599

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

**Recommended Use** pH Control  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

|  |                   |
|--|-------------------|
| Skin Corrosion / irritation                        | Category 1 - H314 |
| Serious Eye Damage / Eye Irritation                | Category 1 - H318 |
| Specific Target Organ Toxicity - (Single Exposure) | Category 3 - H335 |
| Substances/mixtures corrosive to metal.            | Category 1 - H290 |

**Label elements, including precautionary statements****Hazard Pictograms****Signal Word**

Danger

**Hazard Statements**

H290 - May be corrosive to metals  
 H314 - Causes severe skin burns and eye damage  
 H318 - Causes serious eye damage  
 H335 - May cause respiratory irritation

**Precautionary Statements****Prevention**

P234 - Keep only in original container  
 P260 - Do not breathe 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  
 P280 - Wear protective gloves/eye protection/face protection

**Response**

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
 P363 - Wash contaminated clothing before reuse  
 P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing  
 P310 - Immediately call a POISON CENTER or doctor/physician  
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 P390 - Absorb spillage to prevent material damage

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
 P405 - Store locked up  
 P406 - Store in corrosive resistant container with a resistant inner liner.

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains****Substances**

Sodium hydroxide

**CAS Number**

1310-73-2

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).  
 This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification**

C - Corrosive.

**Risk Phrases** R35 Causes severe burns.  
R37 Irritating to respiratory system.

### 3. Composition/information on Ingredients

| Substances       | CAS Number | PERCENT (w/w) | GHS Classification - Australia  |
|------------------|------------|---------------|---|
| Sodium hydroxide | 1310-73-2  | 60 - 100%     | Skin Corr. 1A (H314)<br>Eye Corr. 1 (H318)<br>STOT SE 3 (H335)<br>Met. Corr. 1 (H290) |

### 4. First aid measures

#### Description of necessary first aid measures

**Inhalation** If inhaled, move victim to fresh air and seek medical attention.

**Eyes** Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.

**Skin** In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

#### Symptoms caused by exposure

Causes severe skin irritation with tissue destruction. Causes severe eye irritation which may damage tissue. May cause respiratory irritation.

#### Medical Attention and Special Treatment

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

#### Suitable extinguishing equipment

#### **Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

#### Specific hazards arising from the chemical

#### **Special Exposure Hazards**

May form explosive mixtures with strong acids. Reaction with steel and certain other metals generates flammable hydrogen gas.

#### Special protective equipment and precautions for fire fighters

#### **Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

### 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid creating and breathing dust. Ensure adequate ventilation.

#### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

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

Neutralize to pH of 6-8. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for Safe Handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from acids. Store in a cool, dry location. Store locked up.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances       | CAS Number | Australia NOHSC     | ACGIH TLV-TWA |
|------------------|------------|---------------------|---------------|
| Sodium hydroxide | 1310-73-2  | 2 mg/m <sup>3</sup> | 2 mg/M3       |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area. Localized ventilation should be used to control dust levels.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection**

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. Butyl rubber gloves. (>= 0.7 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

**Skin Protection**

Full protective chemical resistant clothing. Rubber boots

**Eye Protection**

Chemical goggles; also wear a face shield if splashing hazard exists.

**Other Precautions**

Eyewash fountains and safety showers must be easily accessible.

**Environmental Exposure Controls**

Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

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

**Physical State:** Solid

**Color:** White to off white

**Odor:** Odorless

**Odor Threshold:** No information available

Property

Values

Remarks/ - Method

|   |                          |
|---|--------------------------|
| <b>pH:</b>                                    | 14                       |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | 1390 °C / 2535 °F        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 2.13                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |
| <b>9.2. Other information</b>                 |                          |
| <b>Molecular Weight</b>                       | 40                       |
| <b>VOC Content (%)</b>                        | No data available        |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Contact with acids. Peroxides. Halogenated compounds. Prolonged contact with aluminum, lead, or zinc may liberate flammable hydrogen.

### 10.6. Hazardous Decomposition Products

None known.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

Causes severe skin irritation with tissue destruction. Causes severe eye irritation which may damage tissue. May cause respiratory irritation.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances       | CAS Number | LD50 Oral         | LD50 Dermal         | LC50 Inhalation   |
|------------------|------------|-------------------|---------------------|-------------------|
| Sodium hydroxide | 1310-73-2  | No data available | 1350 mg/kg (Rabbit) | No data available |

### Immediate, delayed and chronic health effects from exposure

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Causes severe respiratory irritation.                 |
| <b>Eye Contact</b>  | Causes severe eye irritation which may damage tissue. |
| <b>Skin Contact</b> | Causes severe burns.                                  |
| <b>Ingestion</b>    | Causes burns of the mouth, throat and stomach.        |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1%

are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

Skin disorders.

**Data limitations**

No data available

| Substances       | CAS Number | Skin corrosion/irritation |
|------------------|------------|---------------------------|
| Sodium hydroxide | 1310-73-2  | Causes severe burns       |

| Substances       | CAS Number | Eye damage/irritation            |
|------------------|------------|----------------------------------|
| Sodium hydroxide | 1310-73-2  | Causes severe eye burns (Rabbit) |

| Substances       | CAS Number | Skin Sensitization   |
|------------------|------------|--|
| Sodium hydroxide | 1310-73-2  | Did not cause sensitization on laboratory animals (guinea pig) |

| Substances       | CAS Number | Respiratory Sensitization |
|------------------|------------|---------------------------|
| Sodium hydroxide | 1310-73-2  | No information available  |

| Substances       | CAS Number | Mutagenic Effects   |
|------------------|------------|---|
| Sodium hydroxide | 1310-73-2  | Did not show mutagenic effects in animal experiments In vitro tests did not show mutagenic effects. |

| Substances       | CAS Number | Carcinogenic Effects                         |
|------------------|------------|--|
| Sodium hydroxide | 1310-73-2  | No data of sufficient quality are available. |

| Substances       | CAS Number | Reproductive toxicity    |
|------------------|------------|--------------------------|
| Sodium hydroxide | 1310-73-2  | No information available |

| Substances       | CAS Number | STOT - single exposure            |
|------------------|------------|-----------------------------------|
| Sodium hydroxide | 1310-73-2  | May cause respiratory irritation. |

| Substances       | CAS Number | STOT - repeated exposure  |
|------------------|------------|---|
| Sodium hydroxide | 1310-73-2  | No significant toxicity observed in animal studies at concentration requiring classification. Not applicable due to corrosivity of the substance. |

| Substances       | CAS Number | Aspiration hazard |
|------------------|------------|-------------------|
| Sodium hydroxide | 1310-73-2  | Not applicable    |

## 12. Ecological Information

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances       | CAS Number | Toxicity to Algae        | Toxicity to Fish   | Toxicity to Microorganisms | Toxicity to Invertebrates               |
|------------------|------------|--------------------------|--|----------------------------|---|
| Sodium hydroxide | 1310-73-2  | No information available | LC50 (96h) 125 mg/L (Gambusia affinis)<br>LC50 (48h) 189 mg/L (Leuciscus melanotus)<br>LC50 (24h) 145 mg/L (Poecilia reticulata) | No information available   | EC50 (48h) 40.4 mg/L (Ceriodaphnia sp.) |

**12.2. Persistence and degradability**

| Substances       | CAS Number | Persistence and Degradability                    |
|------------------|------------|--|
| Sodium hydroxide | 1310-73-2  | The methods for determining biodegradability are |

|  |  |   |
|--|--|---|
|  |  | not applicable to inorganic substances. |
|--|--|---|

**12.3. Bioaccumulative potential**

| Substances       | CAS Number | Log Pow                  |
|------------------|------------|--------------------------|
| Sodium hydroxide | 1310-73-2  | No information available |

**12.4. Mobility in soil**

| Substances       | CAS Number | Mobility                 |
|------------------|------------|--------------------------|
| Sodium hydroxide | 1310-73-2  | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

|                                    |
|------------------------------------|
| <b>13. Disposal Considerations</b> |
|------------------------------------|

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information**

**UN Number:** UN1823  
**UN Proper Shipping Name:** Sodium Hydroxide, Solid  
**Transport Hazard Class(es):** 8  
**Packing Group:** II  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

2R

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS Inventory**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian DSL Inventory**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements**

Montreal Protocol - Ozone Depleting Substances:

Does not apply

Stolkhom Convention - Persistent Organic Pollutants:

Does not apply

Rotterdam Convention - Prior Informed Consent:

Does not apply

Basel Convention - Hazardous Waste:

Does not apply

**16. Other information****Date of preparation or review**

Revision Date: 22-Jan-2016

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

R35 Causes severe burns.

R37 Irritating to respiratory system.

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

H290 - May be corrosive to metals

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

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from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

# SAFETY DATA SHEET

## CITRIC ACID ANHYDROUS

Revision Date: 01-Sep-2016

Revision Number: 2

### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

#### 1.1. Product Identifier

**Product Name** CITRIC ACID ANHYDROUS

#### Other means of Identification

**Synonyms** None

**Hazardous Material Number:** MC600116

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

**Recommended Use** Solvent

**Uses advised against** No information available

#### Supplier's name, address and phone number

**Manufacturer/Supplier** Multi-Chem Mintech  
1 Ward Road  
East Rockingham  
WA 6168  
Australia

Telephone Number: 61 (08) 9419 5300  
Fax Number: 61 (08) 9439 1055  
Emergency Telephone Number: + 61 1 800 686 951  
fdunexchem@halliburton.com

#### **E-mail Address**

#### Emergency phone number

+ 61 1 800 686 951

#### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

#### Classification of the hazardous chemical

Serious Eye Damage/Irritation

Category 2 - H319

#### Label elements, including precautionary statements

#### **Hazard pictograms**



|                                 |  |
|---------------------------------|--|
| <b>Signal Word</b>              | Warning  |
| <b>Hazard Statements:</b>       | H319 - Causes serious eye irritation   |
| <b>Precautionary Statements</b> |  |
| <b>Prevention</b>               | P264 - Wash face, hands and any exposed skin thoroughly after handling<br>P280 - Wear eye protection/face protection   |
| <b>Response</b>                 | P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing<br>P337 + P313 - If eye irritation persists: Get medical advice/attention |
| <b>Storage</b>                  | None   |
| <b>Disposal</b>                 | None   |
| <b>Contains Substances</b>      | <b>CAS Number</b>  |
| Citric acid                     | 77-92-9  |

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

None known

For the full text of the H-phrases mentioned in this Section, see Section 16

### 3. Composition/information on Ingredients

| Substances  | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|-------------|------------|---------------|--------------------------------|
| Citric acid | 77-92-9    | 60 - 100%     | Eye Irrit. 2A (H319)           |

### 4. First aid measures

**Description of necessary 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>Eyes</b>       | In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing. |
| <b>Skin</b>       | Wash with soap and water. Get medical attention if irritation persists.   |
| <b>Ingestion</b>  | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.  |

**Symptoms caused by exposure**

Causes eye irritation

**Medical Attention and Special Treatment****Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store in a cool, dry location.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances  | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|-------------|------------|-----------------|----------------|
| Citric acid | 77-92-9    | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Impervious rubber gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Dust proof goggles.

**Other Precautions**

None known.

**Environmental Exposure Controls** No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Solid      **Color:** White  
**Odor:** Odorless      **Odor Threshold:** No information available

| <u>Property</u><br>Remarks/ - Method          | <u>Values</u>            |
|---|--------------------------|
| <b>pH:</b>                                    | 1.8                      |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.66                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 1000 °C / 1832 °F        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**Molecular Weight** 192.12  
**VOC Content (%)** No data available

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

None anticipated

### 10.5. Incompatible materials

Strong oxidizers. Strong alkalis.

### 10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### Most Important Symptoms/Effects

Causes eye irritation

### Numerical measures of toxicity

**LD50 Oral:** 11700 mg/kg; (Rat)

### Toxicology data for the components

| Substances  | CAS Number | LD50 Oral  | LD50 Dermal  | LC50 Inhalation   |
|-------------|------------|--|--------------|-------------------|
| Citric acid | 77-92-9    | 5400 mg/kg (Rat)<br>5790 mg/kg (Mouse)<br>11,700 mg/kg (Rat) | > 2000 mg/kg | No data available |

Test species: Rat

#### Immediate, delayed and chronic health effects from exposure

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause mild respiratory irritation.  |
| <b>Eye Contact</b>  | Causes moderate eye irritation  |
| <b>Skin Contact</b> | Not irritating to skin in rabbits.  |
| <b>Ingestion</b>    | Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea. |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

#### Exposure Levels

No data available

#### Interactive effects

None known.

#### Data limitations

No data available

| Substances  | CAS Number | Skin corrosion/irritation          |
|-------------|------------|------------------------------------|
| Citric acid | 77-92-9    | Not irritating to skin in rabbits. |

| Substances  | CAS Number | Serious eye damage/irritation  |
|-------------|------------|--------------------------------|
| Citric acid | 77-92-9    | Causes moderate eye irritation |

| Substances  | CAS Number | Skin Sensitization  |
|-------------|------------|---|
| Citric acid | 77-92-9    | Patch test on human volunteers did not demonstrate sensitization properties |

| Substances  | CAS Number | Respiratory Sensitization |
|-------------|------------|---------------------------|
| Citric acid | 77-92-9    | No information available  |

| Substances  | CAS Number | Mutagenic Effects                                    |
|-------------|------------|--|
| Citric acid | 77-92-9    | Did not show mutagenic effects in animal experiments |

| Substances  | CAS Number | Carcinogenic Effects                                    |
|-------------|------------|---|
| Citric acid | 77-92-9    | Did not show carcinogenic effects in animal experiments |

| Substances  | CAS Number | Reproductive toxicity   |
|-------------|------------|---|
| Citric acid | 77-92-9    | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. |

| Substances  | CAS Number | STOT - single exposure                       |
|-------------|------------|--|
| Citric acid | 77-92-9    | No data of sufficient quality are available. |

| Substances  | CAS Number | STOT - repeated exposure  |
|-------------|------------|---|
| Citric acid | 77-92-9    | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances  | CAS Number | Aspiration hazard                                       |
|-------------|------------|---|
| Citric acid | 77-92-9    | No adverse health effects are expected from swallowing. |

## 12. Ecological Information

#### Ecotoxicity

##### Product Ecotoxicity Data

No data available

**Substance Ecotoxicity Data**

| Substances  | CAS Number | Toxicity to Algae  | Toxicity to Fish   | Toxicity to Microorganisms              | Toxicity to Invertebrates   |
|-------------|------------|--|--|---|---|
| Citric acid | 77-92-9    | NOEC (8d) 425 mg/L (cell density) (Scenedesmus quadricauda)<br>LOEC (8d) >80 mg/L (Microcystis aeruginosa) | LC50 (96h) 1516 mg/L (Lepomis macrochirus)<br>LC50 (48h) 440 mg/L (Leuciscus idus melanotus)<br>LC50 (96h) >100 mg/L (Pimephales promelas) | TT (72h) 485 mg/L (Entosiphon sulcatum) | TLM96 100-330 ppm (Crangon crangon)<br>EC50 (24h) 1535 mg/L (Daphnia magna)<br>LC50 (48h) 160 mg/L (Daphnia magna)<br>EC50 (48h) >50 mg/L (Daphnia magna) |

**12.2. Persistence and degradability**

Biodegradable.

| Substances  | CAS Number | Persistence and Degradability     |
|-------------|------------|-----------------------------------|
| Citric acid | 77-92-9    | Readily biodegradable (97% @ 28d) |

**12.3. Bioaccumulative potential**

| Substances  | CAS Number | Log Pow        |
|-------------|------------|----------------|
| Citric acid | 77-92-9    | -1.61 to -1.80 |

**12.4. Mobility in soil**

| Substances  | CAS Number | Mobility                 |
|-------------|------------|--------------------------|
| Citric acid | 77-92-9    | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information****Australia ADG**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IMDG/IMO**

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**IATA/ICAO**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stolkhom Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review****Revision Date:** 01-Sep-2016**Revision Note**

SDS sections updated: 2

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

H319 - Causes serious eye irritation

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### SODA ASH F.G.

Revision Date: 27-Jun-2016

Revision Number: 23

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** SODA ASH F.G.

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003760

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

**Recommended Use** pH Control  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

##### **Product Emergency Telephone**

Australia: + 61 1 800 686 951  
Papua New Guinea: + 61 1 800 686 951  
NewZealand: +64 800 451719

##### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

**Classification of the hazardous chemical**

Serious Eye Damage/Irritation

Category 2 - H319

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Warning

**Hazard Statements:**

H319 - Causes serious eye irritation

**Precautionary Statements****Prevention**

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

P280 - Wear eye protection/face protection

**Response**

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing

P337 + P313 - If eye irritation persists: Get medical advice/attention

**Storage**

None

**Disposal**

None

**Contains****Substances**

Sodium carbonate

**CAS Number**

497-19-8

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

|  |
|--|
| <b>3. Composition/information on Ingredients</b> |
|--|

| Substances       | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|------------------|------------|---------------|--------------------------------|
| Sodium carbonate | 497-19-8   | 60 - 100%     | Eye Irrit. 2 (H319)            |

|                              |
|------------------------------|
| <b>4. First aid measures</b> |
|------------------------------|

**Description of necessary first aid measures****Inhalation**

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

**Eyes**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin**

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

**Ingestion**

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

Causes eye irritation

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from acids. Store in a cool, dry location. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances       | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|------------------|------------|-----------------|----------------|
| Sodium carbonate | 497-19-8   | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area. Localized ventilation should be used to control dust levels.

**Personal protective equipment (PPE)**

|  |   |
|--|---|
| <b>Personal Protective Equipment</b>   | If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.   |
| <b>Respiratory Protection</b>          | If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.<br>Dust/mist respirator. (N95, P2/P3) |
| <b>Hand Protection</b>                 | Normal work gloves.   |
| <b>Skin Protection</b>                 | Normal work coveralls.  |
| <b>Eye Protection</b>                  | Dust proof goggles.   |
| <b>Other Precautions</b>               | None known.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

|  |
|--|
| <b>9. Physical and Chemical Properties</b> |
|--|

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

|                        |          |                        |                          |
|------------------------|----------|------------------------|--------------------------|
| <b>Physical State:</b> | Powder   | <b>Color</b>           | White to off white       |
| <b>Odor:</b>           | Odorless | <b>Odor Threshold:</b> | No information available |

| <u>Property</u><br>Remarks/ - Method          | <u>Values</u>            |
|---|--------------------------|
| <b>pH:</b>                                    | 11.5                     |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 2.5                      |
| <b>Water Solubility</b>                       | Partly soluble           |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

|                         |                   |
|-------------------------|-------------------|
| <b>Molecular Weight</b> | 105.99 g/mol      |
| <b>VOC Content (%)</b>  | No data available |

|                                     |
|-------------------------------------|
| <b>10. Stability and Reactivity</b> |
|-------------------------------------|

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong acids.

**10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

Causes eye irritation

### Numerical measures of toxicity

### Toxicology data for the components

| Substances       | CAS Number | LD50 Oral                            | LD50 Dermal                                 | LC50 Inhalation   |
|------------------|------------|--------------------------------------|---|-------------------|
| Sodium carbonate | 497-19-8   | 4090 mg/kg (Rat)<br>2800 mg/kg (Rat) | 2210 mg/kg (Mouse)<br>> 2000 mg/kg (Rabbit) | 2.3 mg/L (Rat) 2h |

### Immediate, delayed and chronic health effects from exposure

**Inhalation** None known.  
**Eye Contact** May cause eye irritation.  
**Skin Contact** None known.  
**Ingestion** Irritation of the mouth, throat, and stomach.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

### Exposure Levels

No data available

### Interactive effects

None known.

### Data limitations

No data available

| Substances       | CAS Number | Skin corrosion/irritation  |
|------------------|------------|----------------------------|
| Sodium carbonate | 497-19-8   | Non-irritating to the skin |

| Substances       | CAS Number | Serious eye damage/irritation |
|------------------|------------|-------------------------------|
| Sodium carbonate | 497-19-8   | Irritating to eyes            |

| Substances       | CAS Number | Skin Sensitization |
|------------------|------------|--------------------|
| Sodium carbonate | 497-19-8   | Not classified     |

| Substances       | CAS Number | Respiratory Sensitization |
|------------------|------------|---------------------------|
| Sodium carbonate | 497-19-8   | No information available  |

| Substances       | CAS Number | Mutagenic Effects                             |
|------------------|------------|---|
| Sodium carbonate | 497-19-8   | In vivo tests did not show mutagenic effects. |

| Substances       | CAS Number | Carcinogenic Effects     |
|------------------|------------|--------------------------|
| Sodium carbonate | 497-19-8   | No information available |

| Substances       | CAS Number | Reproductive toxicity                                   |
|------------------|------------|---|
| Sodium carbonate | 497-19-8   | Did not show teratogenic effects in animal experiments. |

| Substances       | CAS Number | STOT - single exposure  |
|------------------|------------|---|
| Sodium carbonate | 497-19-8   | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances       | CAS Number | STOT - repeated exposure  |
|------------------|------------|---|
| Sodium carbonate | 497-19-8   | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances       | CAS Number | Aspiration hazard |
|------------------|------------|-------------------|
| Sodium carbonate | 497-19-8   | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances       | CAS Number | Toxicity to Algae            | Toxicity to Fish   | Toxicity to Microorganisms | Toxicity to Invertebrates   |
|------------------|------------|------------------------------|--|----------------------------|---|
| Sodium carbonate | 497-19-8   | EC50 242 mg/L<br>(Nitzschia) | TLM24 385 mg/L<br>(Lepomis macrochirus)<br>LC50 310-1220 mg/L<br>(Pimephales promelas)<br>LC50 (96h) 300 mg/L<br>(Lepomis macrochirus) | No information available   | EC50 265 mg/L (Daphnia magna)<br>EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.) |

### 12.2. Persistence and degradability

| Substances       | CAS Number | Persistence and Degradability  |
|------------------|------------|--|
| Sodium carbonate | 497-19-8   | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

| Substances       | CAS Number | Log Pow                  |
|------------------|------------|--------------------------|
| Sodium carbonate | 497-19-8   | No information available |

### 12.4. Mobility in soil

| Substances       | CAS Number | Mobility                 |
|------------------|------------|--------------------------|
| Sodium carbonate | 497-19-8   | No information available |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Bury in a licensed landfill according to federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

### Environmental regulations

Not applicable

## 14. Transport Information

### Transportation Information

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stokholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

**16. Other information****Date of preparation or review****Revision Date:** 27-Jun-2016**Revision Note**

SDS sections updated: 2

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

H319 - Causes serious eye irritation

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

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**End of Safety Data Sheet**

### 1. PRODUCT AND COMPANY IDENTIFICATION

|                                      |   |  |
|--------------------------------------|---|--|
| <b>PRODUCT NAME:</b>                 | STAR SHIELD®  |  |
| <b>Product Use:</b>                  | Wellbore Stabilization, Invasion Control  |  |
| <b>Supplier</b>                      | Impact Fluid Solutions<br>2800 Post Oak Blvd<br>Suite 2000<br>Houston, Texas 77056<br>USA | Impact Fluid Solutions (UK)<br>Ella Court<br>Truro Business Park<br>Threemilestone<br>Cornwall, UK TR4 9NH |
| <b>Telephone:</b>                    | 713-964-7736  | 44 (0) 1872 261613   |
| <b>TELEPHONE: EMERGENCY USE ONLY</b> | 1-800-535-5053  | 1-352-323-3500   |
| <b>E-mail</b>                        | info@impact-fluids.com  |  |

### 2. HAZARDS IDENTIFICATION

|   |  |
|---|--|
| <b>Classification of the substance or mixture</b> | Combustible Dust   |
| <b>Signal word(s)</b>                             | Warning  |
| <b>Hazard statement(s)</b>                        | May form combustible dust concentrations in air.   |
| <b>Precautionary statement(s)</b>                 | P261: Avoid breathing dust.  |
| <b>Other hazards</b>                              | High concentrations of dust, may constitute an explosion hazard if ignition source is present. |

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a proprietary blend of materials.

| CHEMICALS     | CAS No. | %W/W |
|---------------|---------|------|
| Nuisance Dust | Mixture | 100  |

Additional information: Product is a mixture. Exact composition of STAR SHIELD is a trade secret.

Occupational exposure limits - See Section: 8

### 4. FIRST AID MEASURES

#### Description of first aid measures

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Move person to fresh air. Get medical advice/attention if you feel unwell.  |
| <b>Skin Contact</b> | Remove contaminated clothing immediately and wash affected skin with plenty of water or soap and water. If irritation develops and persists, get medical attention. |
| <b>Eye Contact</b>  | If substance has got into the eyes, immediately wash out with plenty of water for at least 15 minutes. If irritation develops and persists, get medical attention.  |
| <b>Ingestion</b>    | Not anticipated route of exposure. Get immediate medical advice/attention.  |

|           |              |                    |
|-----------|--------------|--------------------|
| Revision: | PRODUCT NAME | Date: June 7, 2017 |
| 01        | STAR SHIELD  | Page: 1/5          |

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

Dust may cause irritation to eyes and respiratory system.

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

Unlikely to be required but if necessary treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Extinguishing media**

As appropriate for surrounding fire. Water spray, foam, dry powder or CO2.

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

Fire risk is slight but finely divided dust may create a combustible mixtures with air.

**Fire Fighting Protective Equipment**

Fire Fighting Protective Equipment Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions**

Ensure adequate ventilation. Avoid dust generation. Avoid breathing dust. Wear suitable protective clothing. See Section: 8

**Environmental precautions**

None known

**Methods for cleaning up**

Sweep up spilled substance but avoid breathing dust. Transfer to a container for disposal or recovery.

**Other**

Disposal should be in accordance with local, state or national legislation.

### 7. HANDLING AND STORAGE

**Precautions for safe handling**

Avoid dust generation. Use only with adequate ventilation to keep exposures (airborne levels of dust, fume, vapor etc) below recommended exposure limits.

**Conditions for safe storage, including any incompatibilities**

Avoid build up of dust. Keep containers in a clean, cool and dry area away from heat sources. Keep containers properly sealed when not in use.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### CONTROL PARAMETERS

#### OCCUPATIONAL EXPOSURE LIMITS

| INGREDIENT(S) | CAS No. | OSHA PEL             | ACGIH TLV            |
|---------------|---------|----------------------|----------------------|
| Nuisance Dust | Mixture | 15 mg/m <sup>3</sup> | 10 mg/m <sup>3</sup> |

#### EXPOSURE CONTROLS

**Engineering Controls**

Work in well ventilated zones or use proper respiratory protection.

**Personal protection equipment**

**Eye Protection**

Wear protective eyewear (goggles, face shield, or safety glasses).

**Gloves**

Protective gloves.

|                 |                             |                                 |
|-----------------|-----------------------------|---------------------------------|
| Revision:<br>01 | PRODUCT NAME<br>STAR SHIELD | Date: June 7, 2017<br>Page: 2/5 |
|-----------------|-----------------------------|---------------------------------|

### Respirators

An approved dust mask should be worn if dust is generated during handling.

### Other

Wear protective equipment to comply with good occupational hygiene practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|  |                          |
|--|--------------------------|
| Appearance                                 | Powder                   |
| Color                                      | Light to Dark Brown      |
| Odor                                       | Slight                   |
| Odor threshold (ppm) available             | No information available |
| pH (Value)                                 | Not applicable           |
| Melting point (°C)/Freezing point (°C) i   | No information available |
| Initial boiling point (°C)                 | Not applicable           |
| Flash point                                | Not applicable           |
| Evaporation rate                           | Not applicable           |
| Flammability (solid,gas)                   | Not determined           |
| Upper/Lower Flammable Limits (Upper)(%v/v) | Not determined           |
| Vapor pressure (Pascal)                    | Not applicable           |
| Vapor density                              | Not applicable           |
| Specific Gravity (relative density)        | 1.62                     |
| Solubility (Water)                         | Partially soluble        |
| Partition coefficient                      | No information available |
| Auto ignition point (°C) available         | No information available |
| Decomposition temperature (°C)             | No information available |
| Viscosity (mPa. s)                         | No information available |

## 10. STABILITY AND REACTIVITY

|                                    |   |
|------------------------------------|---|
| Chemical Stability                 | Stable under normal conditions.   |
| Possibility of hazardous reactions | None known  |
| Conditions to Avoid                | None known  |
| Incompatible materials:            | Keep away from heat and sources of ignition. Avoid contact with: Oxidizing agents |
| Hazardous Decomposition Product(s) | None known  |

## 11. TOXICOLOGICAL INFORMATION

|                                   |   |
|-----------------------------------|---|
| Acute toxicity                    | Not classified  |
| Skin corrosion/irritation         | No data   |
| Serious eye damage/irritation     | Dust may have irritant effect on eyes.  |
| Respiratory or skin sensitization | No data   |
| Germ cell mutagenicity            | Based upon the available data, the classification criteria are not met.                                     |
| Carcinogenicity                   | IARC, NTP, OSHA, ACGIH do not list this product or any components thereof as known or suspected carcinogen. |

|           |              |                    |
|-----------|--------------|--------------------|
| Revision: | PRODUCT NAME | Date: June 7, 2017 |
| 01        | STAR SHIELD  | Page: 3/5          |

|   |   |
|---|---|
| <b>Reproductive toxicity</b>                              | Based upon the available data, the classification criteria are not met. |
| <b>Specific target organ toxicity — single exposure</b>   | Not classified  |
| <b>Specific target organ toxicity — repeated exposure</b> | Not classified.   |
| <b>Aspiration hazard</b>                                  | Based upon the available data, the classification criteria are not met. |
| <b>Potential Health Effects</b>                           | Dust may have irritant effect on eyes and air passages.                 |

## 12. ECOLOGICAL INFORMATION

|                                    |   |
|------------------------------------|---|
| <b>Ecotoxicity</b>                 | No ecotoxic effects are known for this product. |
| <b>Persistence and Degradation</b> | No information available                        |
| <b>Bioaccumulative potential</b>   | No information available                        |
| <b>Mobility in soil</b>            | No information available                        |
| <b>Other adverse effects</b>       | No information available                        |

## 13. DISPOSAL CONSIDERATION

|                                |   |
|--------------------------------|---|
| <b>Waste treatment methods</b> | The waste is considered to be non hazardous.                                |
| <b>Recommended: .</b>          | Disposal should be in accordance with local, state or national legislation. |

## 14. TRANSPORT INFORMATION

|                                |  |
|--------------------------------|--|
| <b>UN number</b>               | Not applicable                             |
| <b>UN Proper Shipping Name</b> | Not classified as dangerous for transport. |
| <b>DOT</b>                     | Not classified as dangerous for transport. |
| <b>Additional Information</b>  | No information available                   |
| Land transport                 | Not classified as dangerous for transport. |
| Sea transport.                 | Not classified as dangerous for transport. |
| Air transport                  | Not classified as dangerous for transport. |

## 15. REGULATORY INFORMATION

|   |  |
|---|--|
| <b>US Federal Regulations</b>             |  |
| SARA 302 - Extremely Hazardous Substances | None                                     |
| SARA 311/312 - Hazard Categories          | None                                     |
| SARA 313 - Toxic Chemicals                | None                                     |
| <b>International Inventories</b>          |  |
| TSCA (Toxic Substance Control Act)        | All components listed or polymer exempt. |

|                 |                             |                                 |
|-----------------|-----------------------------|---------------------------------|
| Revision:<br>01 | PRODUCT NAME<br>STAR SHIELD | Date: June 7, 2017<br>Page: 4/5 |
|-----------------|-----------------------------|---------------------------------|

### 16. OTHER INFORMATION

| NFPA        | NFPA Rating | HMIS (Hazardous Material Information System) |   |
|-------------|-------------|--|---|
| Health      | 1           | Health                                       | 1 |
| Fire        | 1           | Flammability                                 | 1 |
| Instability | 0           | Reactivity                                   | 0 |
|             |             | Personal Protection                          | E |

The following sections contain revisions or new statements:

01                                      Section 9                      June 7, 2017

#### GLOSSARY

|                |   |
|----------------|---|
| CERCLA         | (Comprehensive Environmental Response Compensation and Liability Act) |
| COD            | Chemical Oxygen Demand (COD)  |
| LC50           | Lethal Concentration  |
| NFPA           | NFPA (National Fire Protection Association)                           |
| NOS            | Not Otherwise Specified   |
| OSHA           | Occupational Safety and Health Administration                         |
| R              | Respirable Dust   |
| SARA TITLE III | Superfund Amendments and Reauthorization Act                          |
| TLV            | Threshold Limit Value (ACGIH)   |
| TWA            | Time Weighted Average   |

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|           |              |                    |
|-----------|--------------|--------------------|
| Revision: | PRODUCT NAME | Date: June 7, 2017 |
| 01        | STAR SHIELD  | Page: 5/5          |

## SAFETY DATA SHEET

### OXYGON™

Revision Date: 21-Sep-2015

Revision Number: 21

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** OXYGON™

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003723

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

**Recommended Use** Oxygen Scavenger  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases**

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Not applicable.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls** Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Solid Powder      **Color:** White  
**Odor:** Odorless      **Odor Threshold:** No information available

| <u>Property</u><br><u>Remarks/ - Method</u>   | <u>Values</u>            |
|---|--------------------------|
| <b>pH:</b>                                    | 5.5-8 (5%)               |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>upper flammability limit</b>               | 0.5 oz/ft3               |
| <b>lower flammability limit</b>               | 0.28 oz/ft3              |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.2                      |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 640 °C / 1184 °F         |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**VOC Content (%)** No data available  
**Bulk Density** 45-65 lbs/ft3

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** May cause mild respiratory irritation.  
**Eye Contact** May cause mild eye irritation.  
**Skin Contact** None known.  
**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances                          | CAS Number | Carcinogenic Effects |
|-------------------------------------|------------|----------------------|
| Contains no hazardous substances in | NA         | Not applicable       |

|  |  |  |
|--|--|--|
| concentrations above cut-off values according to the competent authority |  |  |
|--|--|--|

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

## 14. Transport Information

**Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

## 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.  
**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.  
**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

## 16. Other information

**Date of preparation or review**

**Revision Date:** 21-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

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**End of Safety Data Sheet**

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Supplier Name** COOGEE CHEMICALS  
**Address** Cnr of Patterson and Kwinana Beach Roads, Kwinana, WA, AUSTRALIA, 6167  
**Telephone** (08) 9439 8200  
**Fax** (08) 9439 8300  
**Emergency** 1800 800 655  
**Email** businessrelations@coogee.com.au  
**Web Site** http://www.coogee.com.au

**Synonym(s)** 9178 - PRODUCT CODE • COOGEE HYDROCHLORIC ACID 32% • HCL • HYDROCHLORIC ACID 32% • HYDROCHLORIC ACID 32% (NUFARM) (FORMERLY) • MURIATIC ACID • SPIRITS OF SALTS

**Use(s)** ACIDIFIER • CHEMICAL INTERMEDIATE • LABORATORY REAGENT • PICKLING AND ANODISING METALS • SCALE REMOVER

## 2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA

### RISK PHRASES

R34 Causes burns.  
R37 Irritating to respiratory system.

### SAFETY PHRASES

S1/2 Keep locked up and out of reach of children.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).  
S9 Keep container in a well ventilated place.

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

|                      |      |                     |    |                           |                |
|----------------------|------|---------------------|----|---------------------------|----------------|
| <b>UN No.</b>        | 1789 | <b>DG Class</b>     | 8  | <b>Subsidiary Risk(s)</b> | None Allocated |
| <b>Packing Group</b> | II   | <b>Hazchem Code</b> | 2R | <b>EPG</b>                | 8A1            |

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

| Ingredient        | Formula          | CAS No.   | Content   |
|-------------------|------------------|-----------|-----------|
| HYDROCHLORIC ACID | H-Cl             | 7647-01-0 | 32%       |
| WATER             | H <sub>2</sub> O | 7732-18-5 | remainder |

## 4. FIRST AID MEASURES

**Eye** If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

**Inhalation** If inhaled, remove from contaminated area. To protect rescuer, use a Full-face Type B (Inorganic and acid gas) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.

**Skin** If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

**Ingestion** For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

**Advice to Doctor** CORROSIVE POISONING TREATMENT: Immediate treatment preferably in a hospital is mandatory. It is also important to attempt to discover the chemical substances ingested. In treating corrosive poisoning, DO NOT INDUCE VOMITING; DO NOT ATTEMPT GASTRIC LAVAGE; and DO NOT ATTEMPT TO NEUTRALISE THE CORROSIVE SUBSTANCE. Vomiting will increase the severity of damage to the oesophagus as the corrosive substance will again come in contact with it. Attempting gastric lavage may result in perforating either the oesophagus or stomach.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

Immediately dilute the corrosive substance by having the patient drink milk or water. If the trachea has been damaged tracheostomy may be required. For oesophageal burns begin broad-spectrum antibiotics and corticosteroid therapy. Intravenous fluids will be required if oesophageal or gastric damage prevents ingestion of liquids. Long-range therapy will be directed toward preventing or treating oesophageal scars and strictures.

**First Aid Facilities** Eye wash facilities and safety shower should be available.

## 5. FIRE FIGHTING MEASURES

|                           |   |
|---------------------------|---|
| <b>Flammability</b>       | Non flammable. May evolve toxic gases (chlorides) when heated to decomposition. May evolve flammable hydrogen gas when in contact with some metals.   |
| <b>Fire and Explosion</b> | Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas. |
| <b>Extinguishing</b>      | Prevent contamination of drains or waterways.   |
| <b>Hazchem Code</b>       | 2R  |

## 6. ACCIDENTAL RELEASE MEASURES

|                 |   |
|-----------------|---|
| <b>Spillage</b> | Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Ventilate area where possible. Contain spillage, then cover / absorb spill with sodium bicarbonate or 50 -50 mixture of sodium carbonate and calcium hydroxide. Collect for complete neutralisation and appropriate disposal. |
|-----------------|---|

## 7. STORAGE AND HANDLING

|                 |   |
|-----------------|---|
| <b>Storage</b>  | Store in secured, cool, dry, well ventilated area, removed from oxidising agents, alkalis, most metals, alcohols, acids, dinitroaniline, cyanides, sulphides, heat or ignition sources and foodstuffs. Ensure containers are labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems. Also store removed from amines. |
| <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.   |

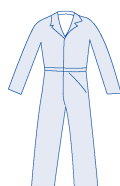
## 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

| Exposure Stds | Ingredient                            | Reference  | TWA |       | STEL |       |
|---------------|---------------------------------------|------------|-----|-------|------|-------|
|               |                                       |            | ppm | mg/m3 | ppm  | mg/m3 |
|               | Hydrogen chloride (Hydrochloric acid) | ASCC (AUS) | 5.0 | 7.5   | --   | --    |

**Biological Limits** No biological limit allocated.

**Engineering Controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

**PPE** Wear splash-proof goggles, a PVC apron, rubber boots, full-length rubber or full-length PVC gloves, a faceshield and coveralls. Wear full-length PVC or full-length rubber gloves, splash-proof goggles, a PVC apron, rubber boots, full PVC coveralls (or better) and a faceshield. Where an inhalation risk exists, wear: a Full-face Type B (Inorganic and Acid gas) or an Air-line respirator.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Product Name**      **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

|                         |                                      |                              |               |
|-------------------------|--------------------------------------|------------------------------|---------------|
| <b>Appearance</b>       | COLOURLESS TO SLIGHTLY YELLOW LIQUID | <b>Solubility (Water)</b>    | SOLUBLE       |
| <b>Odour</b>            | PUNGENT ODOUR                        | <b>Specific Gravity</b>      | 1.161         |
| <b>pH</b>               | < 1                                  | <b>% Volatiles</b>           | 100 %         |
| <b>Vapour Pressure</b>  | 18 mm Hg @ 20°C                      | <b>Flammability</b>          | NON FLAMMABLE |
| <b>Vapour Density</b>   | 1.3 (Air = 1)                        | <b>Flash Point</b>           | NOT RELEVANT  |
| <b>Boiling Point</b>    | 109°C                                | <b>Upper Explosion Limit</b> | NOT RELEVANT  |
| <b>Melting Point</b>    | < -20°C                              | <b>Lower Explosion Limit</b> | NOT RELEVANT  |
| <b>Evaporation Rate</b> | AS FOR WATER                         |                              |               |

**10. STABILITY AND REACTIVITY**

**Chemical Stability** Stable under recommended conditions of storage.

**Conditions to Avoid** Avoid heat, sparks, open flames and other ignition sources.

**Material to Avoid** Incompatible with oxidising agents (eg. hypochlorites), alkalis (eg. hydroxides), most metals, acids (eg. nitric acid), alcohols, dinitroanilines, cyanides, sulphides and heat sources. Corrodes most materials when moist. Also incompatible with amines.

**Decomposition** May evolve toxic gases (chlorides) when heated to decomposition.

**Hazardous Reactions** Polymerization is not expected to occur.

**11. TOXICOLOGICAL INFORMATION**

**Health Hazard Summary** Highly corrosive. This product has the potential to cause serious adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in severe skin, eye and respiratory burns with permanent lung and tissue damage. Upon dilution, the potential for adverse health effects may be reduced.

**Eye** Highly corrosive. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and corneal burns with possible permanent damage.

**Inhalation** Toxic - corrosive. Over exposure may result in irritation of the nose and throat, coughing and bronchitis. High level exposure may result in intense thirst, ulceration, lung tissue damage, chemical pneumonitis and pulmonary oedema. Effects may be delayed.

**Skin** Highly corrosive. Contact may result in irritation, redness, pain, rash, dermatitis, blistering and severe burns. May cause discolouration of the skin. Effects may be delayed.

**Ingestion** Highly corrosive. Ingestion may result in burns to the mouth and throat, nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in ulceration, unconsciousness, convulsions and death.

**Toxicity Data** HYDROCHLORIC ACID (7647-01-0)  
LC50 (Inhalation): 1108ppm/1 hour (human - respiratory irritation)  
LCLo (Inhalation): 1300 ppm/30 minutes (human)  
LD50 (Ingestion): 900 mg/kg (rabbit)  
LDLo (Ingestion): 81 mg/kg (man)  
TCLo (Inhalation): 450 mg/m<sup>3</sup>/1 hour (pregnant rat - teratogenic effects)

**12. ECOLOGICAL INFORMATION**

**Environment** If hydrochloric acid is spilled on soil, it will infiltrate. During its transport through soil, the acid will dissolve some of the soil material, in particular carbonates, and will be neutralised to some degree. However, significant amounts of acid are expected to remain for transport down to groundwater. Toxic to aquatic invertebrates at low levels (LC50: 1.21 ppm/96 hours).

**13. DISPOSAL CONSIDERATIONS**

**Waste Disposal** Wearing the protective equipment detailed above, neutralise to pH 6-8 by SLOW addition to a saturated sodium bicarbonate solution or similar basic solution. Dilute with excess water and flush to drain. Waste disposal should only be undertaken in a well ventilated area.

**Legislation** Dispose of in accordance with relevant local legislation.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

## 14. TRANSPORT INFORMATION



**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

|                      |                   |                     |    |                           |                |
|----------------------|-------------------|---------------------|----|---------------------------|----------------|
| <b>Shipping Name</b> | HYDROCHLORIC ACID |                     |    |                           |                |
| <b>UN No.</b>        | 1789              | <b>DG Class</b>     | 8  | <b>Subsidiary Risk(s)</b> | None Allocated |
| <b>Packing Group</b> | II                | <b>Hazchem Code</b> | 2R | <b>EPG</b>                | 8A1            |

## 15. REGULATORY INFORMATION

**Poison Schedule** Classified as a Schedule 6 (S6) Poison using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

**AICS** All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

**Additional Information** **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.

**ACIDS:** When mixing acids with water (diluting), caution must be taken as heat will be generated which causes violent spattering. Always add a small volume of acid to a large volume of water, NEVER the reverse.

### ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

CNS - Central Nervous System.

EINECS - European INventory of Existing Commercial chemical Substances.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

mg/m<sup>3</sup> - Milligrams per cubic metre.

NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

### 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 a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert 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.

**COLOUR RATING SYSTEM:** RMT has assigned all Chem Alert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users

**Product Name**      **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

**Report Status**      This Chem Alert report has been independently compiled by RMT's scientific department utilising the original Material Safety Data Sheet ('MSDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue.

This Chem Alert report does not constitute the manufacturer's original MSDS and is not intended to be a replacement for same. It is provided to subscribers of Chem Alert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this Chem Alert report, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT 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 Chem Alert report.

**Prepared By**      Risk Management Technologies  
5 Ventnor Ave, West Perth  
Western Australia 6005  
Phone: +61 8 9322 1711  
Fax: +61 8 9322 1794  
Email: info@rmt.com.au  
Web: www.rmt.com.au

**Last Reviewed:** 16 Jul 2010

**Date Printed:** 19 Jul 2010

**End of Report**

## SAFETY DATA SHEET

### ACETIC ACID

Product Trade Name:

Revision Date: 04-Oct-2016

Revision Number: 30

#### 1. Identification

##### 1.1. Product Identifier

Product Trade Name: ACETIC ACID  
Synonyms: None  
Chemical Family: Organic acid  
Internal ID Code: HM001728

##### 1.2 Recommended use and restrictions on use

Application: Acid  
Uses advised against: No information available

##### 1.3 Manufacturer's Name and Contact Details

###### Manufacturer/Supplier

Halliburton Energy Services Inc.  
P.O. Box 1431  
Duncan, Oklahoma 73536-0431  
Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962  
Halliburton Energy Services  
645 - 7th Ave SW Suite 1800  
Calgary, AB  
T2P 4G8  
Canada

###### Prepared By

Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

##### 1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962

#### 2. Hazard Identification

##### 2.1 Classification of the substance or mixture

|  |                   |
|--|-------------------|
| Skin Corrosion / Irritation                        | Category 1 - H314 |
| Serious Eye Damage/Irritation                      | Category 1 - H318 |
| Specific Target Organ Toxicity - (Single Exposure) | Category 3 - H335 |
| Flammable liquids.                                 | Category 3 - H226 |

##### 2.2. Label Elements

###### Hazard Pictograms



**Signal Word:** Danger

**Hazard Statements**  
 H226 - Flammable liquid and vapor  
 H314 - Causes severe skin burns and eye damage  
 H318 - Causes serious eye damage  
 H335 - May cause respiratory irritation

**Precautionary Statements**

**Prevention**  
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 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  
 P260 - Do not breathe 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  
 P280 - Wear protective gloves/eye protection/face protection

**Response**  
 P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
 P363 - Wash contaminated clothing before reuse  
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 P310 - Immediately call a POISON CENTER or doctor/physician  
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 P370 + P378 - In case of fire: Use water spray for extinction

**Storage**  
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
 P403 + P235 - Store in a well-ventilated place. Keep cool  
 P405 - Store locked up

**Disposal**  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**2.3 Other hazards which do not result in classification**

None known

**3. Composition/information on Ingredients**

| Substances  | CAS Number | PERCENT (w/w) | GHS Classification - Canada | HMIRA Registry Number | Filing Date | Decision Granted Date |
|-------------|------------|---------------|-----------------------------|-----------------------|-------------|-----------------------|
| Acetic acid | 64-19-7    | 30 - 40%      | Skin Corr. 1A (H314)        | Not applicable        | Not         | Not                   |

|  |  |  |   |  |            |            |
|--|--|--|---|--|------------|------------|
|  |  |  | Eye Corr. 1 (H318)<br>STOT SE 3 (H335)<br>Flam. Liq. 3 (H226) |  | applicable | applicable |
|--|--|--|---|--|------------|------------|

## 4. First aid measures

### 4.1. Description of 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>Eyes</b>       | Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.  |
| <b>Skin</b>       | In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately. Remove contaminated clothing and launder before reuse. |
| <b>Ingestion</b>  | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.  |

### 4.2 Most important symptoms/effects, acute and delayed

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause respiratory irritation.

### 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, carbon dioxide, foam, dry chemical.

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

None known.

### 5.2 Specific hazards arising from the substance or mixture

#### Special exposure hazards in a fire

Use water spray to cool fire exposed surfaces. Decomposition in fire may produce harmful gases. Do not allow runoff to enter waterways.

### 5.3 Special protective equipment and precautions for fire-fighters

#### Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Remove sources of ignition. Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area. See Section 8 for additional information

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

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

Isolate spill and stop leak where safe. Neutralize with lime slurry, limestone, or soda ash. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and Storage

### 7.1. Precautions for safe handling

#### Handling Precautions

Remove sources of ignition. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

#### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

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

#### Storage Information

Store away from alkalis. Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

## 8. Exposure Controls/Personal Protection

### 8.1 Occupational Exposure Limits

| Substances  | CAS Number | OSHA PEL-TWA | ACGIH TLV-TWA               |
|-------------|------------|--------------|-----------------------------|
| Acetic acid | 64-19-7    | TWA: 10 ppm  | TWA: 10 ppm<br>STEL: 15 ppm |

### 8.2 Appropriate engineering controls

#### Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

### 8.3 Individual protection measures, such as personal protective equipment

#### Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

#### Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

#### Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.35 mm thickness)  
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

#### Skin Protection

Full protective chemical resistant clothing.

#### Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

#### Other Precautions

Eyewash fountains and safety showers must be easily accessible.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                               |                   |                          |
|-------------------------------|-------------------|--------------------------|
| <b>Physical State:</b> Liquid | <b>Color</b>      | Clear                    |
| <b>Odor:</b> Acrid            | <b>Odor</b>       | No information available |
|                               | <b>Threshold:</b> |                          |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 2.9                      |
| <b>Freezing Point / Range</b>                 | 16 °C / 62 °F            |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 117 °C / 244 °F          |
| <b>Flash Point</b>                            | 42 °C / 109 °F PMCC      |
| <b>Flammability (solid, gas)</b>              | No data available        |
| Upper flammability limit                      | 16%                      |
| Lower flammability limit                      | 5.4%                     |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | 11.7 mmHg @ 20 C         |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.05                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

|                         |                   |
|-------------------------|-------------------|
| <b>Molecular Weight</b> | 60.6 (g/mole)     |
| <b>VOC Content (%)</b>  | No data available |

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

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

Keep away from heat, sparks and flame.

**10.5. Incompatible materials**

Strong alkalis.

**10.6. Hazardous decomposition products**

Toxic fumes. Carbon monoxide and carbon dioxide.

**11. Toxicological Information****11.1 Information on likely routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | Causes severe respiratory irritation.          |
| <b>Eye Contact</b>  | Causes severe eye burns.                       |
| <b>Skin Contact</b> | Causes severe burns.                           |
| <b>Ingestion</b>    | Causes burns of the mouth, throat and stomach. |

**Chronic Effects/Carcinogenicity** Prolonged, excessive exposure may cause erosion of the teeth.

### 11.3 Toxicity data

#### Toxicology data for the components

| Substances  | CAS Number | LD50 Oral         | LD50 Dermal            | LC50 Inhalation             |
|-------------|------------|-------------------|------------------------|-----------------------------|
| Acetic acid | 64-19-7    | No data available | 1060 mg/kg-bw (rabbit) | 11.4 mg/L (rat, 4 h, vapor) |

| Substances  | CAS Number | Skin corrosion/irritation   |
|-------------|------------|---|
| Acetic acid | 64-19-7    | Corrosive to skin Extremely corrosive and destructive to tissue Skin, rabbit: |

| Substances  | CAS Number | Serious eye damage/irritation                            |
|-------------|------------|--|
| Acetic acid | 64-19-7    | Corrosive to eyes Eye, rabbit: Causes serious eye damage |

| Substances  | CAS Number | Skin Sensitization            |
|-------------|------------|-------------------------------|
| Acetic acid | 64-19-7    | Not regarded as a sensitizer. |

| Substances  | CAS Number | Respiratory Sensitization |
|-------------|------------|---------------------------|
| Acetic acid | 64-19-7    | No information available  |

| Substances  | CAS Number | Mutagenic Effects  |
|-------------|------------|--|
| Acetic acid | 64-19-7    | In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects. |

| Substances  | CAS Number | Carcinogenic Effects                                    |
|-------------|------------|---|
| Acetic acid | 64-19-7    | Did not show carcinogenic effects in animal experiments |

| Substances  | CAS Number | Reproductive toxicity   |
|-------------|------------|---|
| Acetic acid | 64-19-7    | Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility. |

| Substances  | CAS Number | STOT - single exposure            |
|-------------|------------|-----------------------------------|
| Acetic acid | 64-19-7    | May cause respiratory irritation. |

| Substances  | CAS Number | STOT - repeated exposure                            |
|-------------|------------|---|
| Acetic acid | 64-19-7    | Not applicable due to corrosivity of the substance. |

| Substances  | CAS Number | Aspiration hazard |
|-------------|------------|-------------------|
| Acetic acid | 64-19-7    | Not applicable    |

## 12. Ecological Information

### 12.1. Toxicity

#### Ecotoxicity effects

Product is not classified as hazardous to the environment.

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances  | CAS Number | Toxicity to Algae   | Toxicity to Fish  | Toxicity to Microorganisms                   | Toxicity to Invertebrates   |
|-------------|------------|---|---|--|---|
| Acetic acid | 64-19-7    | EC50 (72 h) =55.22 mg/L (Anabaena)<br>(Effect concentrations in the aquatic environment are attributable to a | LC50 (96 h) =75 mg/L (Lepomis macrochirus)<br>LC50 (96 h) =251 mg/L (Gambusia affinis)<br>(Effect concentrations in | NOAEC (16 h) =1150 mg/L (Pseudomonas putida) | EC50 (48 h) =65 mg/L (Daphnia magna)<br>(Effect concentrations in the aquatic environment are attributable to a |

|  |  |                      |  |  |                      |
|--|--|----------------------|--|--|----------------------|
|  |  | change in pH value.) | the aquatic environment are attributable to a change in pH value.) |  | change in pH value.) |
|--|--|----------------------|--|--|----------------------|

**12.2. Persistence and degradability**

| Substances  | CAS Number | Persistence and Degradability    |
|-------------|------------|----------------------------------|
| Acetic acid | 64-19-7    | Readily biodegradable (99% @ 7d) |

**12.3. Bioaccumulative potential**

| Substances  | CAS Number | Log Pow        |
|-------------|------------|----------------|
| Acetic acid | 64-19-7    | Log Kow =-0.17 |

**12.4. Mobility in soil**

| Substances  | CAS Number | Mobility                 |
|-------------|------------|--------------------------|
| Acetic acid | 64-19-7    | No information available |

**12.5 Other adverse effects**

No information available

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

**Disposal methods** Disposal should be made in accordance with federal, state, and local regulations.  
**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****Canadian TDG**

**UN Number** UN2790  
**UN proper shipping name:** Acetic Acid Solution  
**Transport Hazard Class(es):** 8 (3)  
**Packing Group:** III  
**Environmental Hazards:** Not applicable

**US DOT**

**UN Number** UN2790  
**UN proper shipping name:** Acetic Acid Solution  
**Transport Hazard Class(es):** 8 (3)  
**Packing Group:** III  
**Environmental Hazards:** Not applicable  
**Reportable Quantity:** RQ (Acetic Acid - 5683 kg.)  
**NAERG:** NAERG 153

**IMDG/IMO**

**UN Number** UN2790  
**UN proper shipping name:** Acetic Acid Solution  
**Transport Hazard Class(es):** 8 (3)  
**Packing Group:** III  
**Environmental Hazards:** Not applicable  
**Reportable Quantity:** RQ (Acetic Acid - 5683 kg.)  
**EMS:** EmS F-A, S-B

**IATA/ICAO**

**UN Number** UN2790

**UN proper shipping name:** Acetic Acid Solution  
**Transport Hazard Class(es):** 8 (3)  
**Packing Group:** III  
**Environmental Hazards:** Not applicable  
**Reportable Quantity:** RQ (Acetic Acid - 5683 kg.)

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable  
**Special Precautions for User** None

## 15. Regulatory Information

### Canadian Regulations

**Canadian Domestic Substances List (DSL)** All components listed on inventory or are exempt.

### US Regulations

**US TSCA Inventory** All components listed on inventory or are exempt.

### TSCA Significant New Use Rules - S5A2

| Substances  | CAS Number | TSCA Significant New Use Rules - S5A2 |
|-------------|------------|---------------------------------------|
| Acetic acid | 64-19-7    | Not applicable                        |

### EPA SARA Title III Extremely Hazardous Substances

| Substances  | CAS Number | EPA SARA Title III Extremely Hazardous Substances |
|-------------|------------|---|
| Acetic acid | 64-19-7    | Not applicable                                    |

### EPA SARA (311,312) Hazard Class

Acute Health Hazard  
 Fire Hazard

### EPA SARA (313) Chemicals

| Substances  | CAS Number | Toxic Release Inventory (TRI) - Group I | Toxic Release Inventory (TRI) - Group II |
|-------------|------------|---|--|
| Acetic acid | 64-19-7    | Not applicable                          | Not applicable                           |

### EPA CERCLA/Superfund Reportable Spill Quantity

| Substances  | CAS Number | CERCLA RQ          |
|-------------|------------|--------------------|
| Acetic acid | 64-19-7    | 5000 lb<br>2270 kg |

### EPA RCRA Hazardous Waste Classification

If product becomes a waste, it does meet the criteria of a hazardous waste as defined by the US EPA, because of:

Ignitability D001

**NFPA Ratings:** Health 2, Flammability 2, Reactivity 0  
**HMIS Ratings:** Health 2, Flammability 2, Reactivity 0

## 16. Other information

### Preparation Information

**Prepared By** Chemical Stewardship  
 Telephone: 1-281-871-6107  
 e-mail: fdunexchem@halliburton.com

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**Revision Date:** 04-Oct-2016

**Reason for Revision** SDS sections updated:  
2

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
ErC50 – Effective Concentration growth rate 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NIOSH – National Institute for Occupational Safety and Health  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
PEL – Permissible Exposure Limit  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
UN – United Nations  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**



## Safety Data Sheet

BONDERITE S-AD 85 ACID INHIBITOR ADDITIVE known as  
RODINE 85 20LT

Page 1 of 7

MSDS-No. : 319615

V001.4

Date of issue: 07.07.2015

### Section 1. Identification of the substance/preparation and of the company/undertaking

**Product name:** BONDERITE S-AD 85 ACID INHIBITOR ADDITIVE known as RODINE 85  
20LT

**Intended use:** Acid inhibitor additive

**Supplier:**  
Henkel Australia Pty Ltd  
135-141 Canterbury Road  
Kilsyth, Victoria, 3137  
Australia

Phone: +61 (3) 9724 6444

**Emergency information:** 24 HOUR EMERGENCY CONTACT NUMBER: 1800 032 379

### Section 2. Hazards identification

#### Classification of the substance or mixture

Hazardous according to the criteria of Safe Work Australia.

#### GHS Classification:

| <u>Hazard Class</u>                        | <u>Hazard Category</u> | <u>Route of Exposure</u> |
|--|------------------------|--------------------------|
| Acute toxicity                             | Category 4             | Oral                     |
| Skin corrosion                             | Category 1             |                          |
| Serious eye damage/eye irritation          | Category 1             |                          |
| Skin sensitizer                            | Category 1             |                          |
| Carcinogenicity                            | Category 2             |                          |
| Chronic hazards to the aquatic environment | Category 3             |                          |

#### Hazard pictogram:



#### Signal word:

Danger

---

|                                    |  |
|------------------------------------|--|
| <b>Hazard statement(s):</b>        | H302 Harmful if swallowed.<br>H314 Causes severe skin burns and eye damage.<br>H317 May cause an allergic skin reaction.<br>H351 Suspected of causing cancer.<br>H412 Harmful to aquatic life with long lasting effects.   |
| <b>Precautionary Statement(s):</b> |  |
| <b>Prevention:</b>                 | P280 Wear eye protection/face protection.<br>P280 Wear protective gloves.<br>P261 Avoid breathing dust/fume/gas/mist/vapours/spray.<br>P264 Wash hands thoroughly after handling.<br>P272 Contaminated work clothing should not be allowed out of the workplace.<br>P202 Do not handle until all safety precautions have been read and understood.<br>P281 Use personal protective equipment as required.<br>P201 Obtain special instructions before use.  |
| <b>Response:</b>                   | P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.<br>P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.<br>P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.<br>Rinse skin with water/shower.<br>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.<br>P305+P351+P338+P315 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Get immediate medical advice/attention.<br>P308+P313 IF exposed or concerned: Get medical advice/attention.<br>P333+P313 If skin irritation or rash occurs: Get medical advice/attention.<br>P363 Wash contaminated clothing before reuse. |
| <b>Storage:</b>                    | P405 Store locked up.  |
| <b>Disposal:</b>                   | P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations.   |

Classification of material C - Corrosive Xi - Irritant Xn - Harmful

**Risk phrases:**

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.  
R40 Limited evidence of a carcinogenic effect.  
R41 Risk of serious damage to eyes.  
R34 Causes burns.  
R43 May cause sensitisation by skin contact.

**Safety phrases:**

S23 Do not breathe vapour.  
S24/25 Avoid contact with skin and eyes.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S27/28 After contact with skin, take off immediately all contaminated clothing, and wash the skin immediately with plenty of water and soap.  
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
S60 This material and its container must be disposed of as hazardous waste.  
S7/9 Keep container tightly closed and in a well-ventilated place.

**Dangerous Goods information:**

Classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

**Signal word:**

HAZARDOUS

**Section 3. Composition / information on ingredients****General chemical description:** Mixture**Identity of ingredients:**

| Chemical ingredients                     | CAS-No.    | Proportion  |
|--|------------|-------------|
| Prop-2-yn-1-ol                           | 107-19-7   | < 10 %      |
| 1,3-Diethyl-2-thiourea                   | 105-55-5   | < 5 %       |
|  | 68411-63-2 | 10- <= 30 % |
| Remainder not hazardous including water~ |            | 60 %        |

**Section 4. First aid measures**

**Ingestion:** Do not induce vomiting.  
Call a physician immediately.

**Skin:** In case of contact, immediately remove contaminated clothing and flush skin with copious amounts of water.  
Seek medical advice.

**Eyes:** Immediately flush eyes with water for at least 15 minutes, while holding eyelids open.  
Seek medical attention at once.

**Inhalation:** Move to fresh air, consult doctor if complaint persists.

**First Aid facilities:** Eye wash and safety shower

**Medical attention and special treatment:** Treat symptomatically.

**Section 5. Fire fighting measures**

**Suitable extinguishing media:** Water fog.  
Dry chemical.  
Carbon dioxide.

**Decomposition products in case of fire::** In case of fire toxic gases can be released.  
Chlorine.  
Oxides of nitrogen.  
Oxides of sulfur.

**Special protective equipment for fire-fighters:** Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

**Hazchem code:** 2X

**Section 6. Accidental release measures**

**Personal precautions:** See advice in section 8  
Avoid skin and eye contact.

**Environmental precautions:** Do not empty into drains / surface water / ground water.

**Clean-up methods:** Remove with liquid-absorbing material (sand, peat, sawdust).  
Scrape up spilled material and place in a closed container for disposal.

Dispose of contaminated material as waste according to Section 13.

**Section 7. Handling and storage**

**Precautions for safe handling:** See advice in section 8  
Ensure that workrooms are adequately ventilated.  
Avoid breathing vapors or mists of this product.

**Conditions for safe storage:** Store in a cool, dry, well-ventilated area.  
Keep away from heat and direct sunlight.  
Must be stored in the facility for the dangerous goods

**Section 8. Exposure controls / personal protection**

**National exposure standards:**

| Ingredient [Regulated substance] | form of exposure | TWA (ppm) | TWA (mg/m3) | Peak Limit. (ppm) | Peak Limit. (mg/m3) | STEL (ppm) | STEL (mg/m3) |
|----------------------------------|------------------|-----------|-------------|-------------------|---------------------|------------|--------------|
| PROPARGYL ALCOHOL<br>107-19-7    |                  | 1         | 2.3         | -                 | -                   | -          | -            |

**Engineering controls:** Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

**Eye protection:** Wear chemical goggles and face shield.

**Skin protection:** Use of protective coveralls and long sleeves is recommended.  
Recommended gloves include butyl rubber and neoprene.

**Respiratory protection:** If inhalation risk exists, wear a respirator or air supplied mask complying with the requirements of AS/NZS 1715 and AS/NZS 1716.

**Section 9. Physical and chemical properties**

**Appearance:** Red-brown  
dark

**Odor:** characteristic

**pH:** 0.3

**Density:** 1.05 - 1.06 g/cm3

**Solubility in water:** Miscible

**Section 10. Stability and reactivity**

**Stability:** Stable under normal conditions of temperature and pressure.

**Conditions to avoid:** Heat, flames, sparks and other sources of ignition.

|  |   |
|--|---|
| <b>Incompatible materials:</b>           | Alkalis.<br>Alkali metals.<br>Fluorine.<br>Organic materials.<br>Oxidizing agents.                        |
| <b>Hazardous decomposition products:</b> | In case of fire toxic gases can be released.<br><br>Chlorine.<br>Oxides of nitrogen.<br>Oxides of sulfur. |

### Section 11. Toxicological information

|                                   |  |
|-----------------------------------|--|
| <b>Health Effects:</b>            |  |
| <b>Ingestion:</b>                 | If ingested, severe burns of the mouth and throat may occur, as well as perforation of the esophagus and the stomach.<br>Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea. |
| <b>Skin:</b>                      | Causes burns.<br>May cause skin sensitization.   |
| <b>Eyes:</b>                      | Contact with the eyes can cause severe burns and permanent eye damage.   |
| <b>Inhalation:</b>                | May cause respiratory tract irritation.<br>Excessive inhalation of this material causes headache, dizziness, nausea and incoordination.  |
| <b>Aggravated med. condition:</b> | Pre-existing skin disorders.   |
| <b>Toxicity data:</b>             | No data available.   |

### Section 12. Ecological information

|  |  |
|--|--|
| <b>General ecological information:</b> | Do not empty into drains / surface water / ground water., Harmful to aquatic organisms., May cause long-term adverse effects in the aquatic environment. |
|--|--|

**Toxicity:**

| Hazardous components CAS-No.       | Value type | Value     | Acute Toxicity Study | Exposure time | Species                 | Method   |
|------------------------------------|------------|-----------|----------------------|---------------|-------------------------|--|
| Prop-2-yn-1-ol<br>107-19-7         | LC50       | 4.6 mg/l  | Fish                 | 96 h          | Leuciscus idus          | DIN 38412-15   |
| Prop-2-yn-1-ol<br>107-19-7         | EC50       | 11 mg/l   | Daphnia              | 24 h          | Daphnia magna           | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Prop-2-yn-1-ol<br>107-19-7         | EC50       | > 18 mg/l | Algae                | 8 d           | Scenedesmus quadricauda | OECD Guideline 201 (Alga, Growth Inhibition Test)          |
| Prop-2-yn-1-ol<br>107-19-7         | EC0        | < 18 mg/l | Algae                | 8 d           | Scenedesmus quadricauda | OECD Guideline 201 (Alga, Growth Inhibition Test)          |
| 1,3-Diethyl-2-thiourea<br>105-55-5 | EC50       | 56 mg/l   | Daphnia              | 48 h          | Daphnia magna           | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |

**Persistence and degradability:**

| Hazardous components<br>CAS-No.    | Result | Route of<br>application | Degradability | Method   |
|------------------------------------|--------|-------------------------|---------------|--|
| Prop-2-yn-1-ol<br>107-19-7         |        | aerobic                 | 37 %          | EU Method C.4-E (Determination of the "Ready" Biodegradability Closed Bottle Test) |
| 1,3-Diethyl-2-thiourea<br>105-55-5 |        | aerobic                 | 3 %           | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)                  |

**Bioaccumulative potential / Mobility in soil:**

| Hazardous components<br>CAS-No.    | LogKow | Bioconcentration<br>factor (BCF) | Exposure<br>time | Species | Temperature | Method   |
|------------------------------------|--------|----------------------------------|------------------|---------|-------------|--|
| Prop-2-yn-1-ol<br>107-19-7         | -0.35  |                                  |                  |         | 25 °C       | OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method) |
| 1,3-Diethyl-2-thiourea<br>105-55-5 | 0.57   |                                  |                  |         |             | OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method) |

**Section 13. Disposal considerations**

- Waste disposal of product:** Collection and delivery to recycling enterprise or other registered elimination institution.
- Recommended cleanser:** Clean the packaging with water.
- Disposal for uncleaned package:** Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

**Section 14. Transport information****Road and Rail Transport:**

Dangerous Goods information: Classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

UN no.: 3265

Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Propargyl alcohol)

Class or division: 8

Packing group: III

Hazchem code: 2X

Emergency information: Refer to the Dangerous Goods - Initial Emergency Response Guide HB 76.

**Marine transport IMDG:**

UN no.: 3265

Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Propargyl alcohol)

Class or division: 8

Packing group: III

EmS: F-A ,S-B

Seawater pollutant: -

**Air transport IATA:**

|                                  |   |
|----------------------------------|---|
| UN no.:                          | 3265  |
| Proper shipping name:            | Corrosive liquid, acidic, organic, n.o.s. (Propargyl alcohol) |
| Class or division:               | 8   |
| Packing group:                   | III   |
| Packing instructions (passenger) | 852   |
| Packing instructions (cargo)     | 856   |

**Section 15. Regulatory information**

**SUSMP Poisons Schedule**                      None

**Section 16. Other information**

**Abbreviations/acronyms:**                      ADGC - Australian Dangerous Goods Code  
STEL - Short term exposure limit  
TWA - Time weighted average

**Reason for issue:**                                      Reviewed MSDS. Reissued with new date. involved chapters: 2,3,9,11,16

**Date of previous issue:**                                      04.07.2014

**Disclaimer:**

The percentage weight (% w/w) of ingredients is not to be taken as a specification guaranteed by Henkel Australia Pty. Limited, but only as an approximate guide to the content of hazardous ingredients in the material. The information contained herein does not constitute a guarantee by Henkel Australia Pty. Limited concerning the properties of the material. The information contained in the Safety Data Sheet is offered in good faith and has been developed from what is believed to be accurate and reliable sources. The information is offered without warranty, representation, inducement or licence and Henkel Australia Pty. Limited assumes no legal responsibility for reliance upon same. Henkel Australia Pty. Limited disclaims any liability for loss, injury or damage incurred in connection with the use of the material or its associated Safety Data Sheet. This information is not to be construed as a representation that the material is suitable for any particular purpose or use except those conditions and warranties implied by either Commonwealth or State statutes. Customers are encouraged to make their own enquiries as to the material's characteristics and, where appropriate, to conduct their own tests in the specific context of the material's intended use.

## SAFETY DATA SHEET

### KWIK SEAL ADDITIVE

Revision Date: 21-Sep-2015

Revision Number: 17

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** KWIK SEAL ADDITIVE

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM000976

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

**Recommended Use** Loss Circulation Material  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid creating or inhaling dust. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Store in a cool, dry location.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection** Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Solid  
**Color:** Brown  
**Odor:** Woody  
**Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 0.3                      |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**VOC Content (%)** No data available

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### Most Important Symptoms/Effects

No significant hazards expected.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above | NA         | No data available | No data available | No data available |

|   |  |  |  |  |
|---|--|--|--|--|
| cut-off values according to the competent authority |  |  |  |  |
|---|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | None known.                             |
| <b>Eye Contact</b>  | May cause mechanical irritation to eye. |
| <b>Skin Contact</b> | None known.                             |
| <b>Ingestion</b>    | None known.                             |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances | CAS Number | Reproductive toxicity |
|------------|------------|-----------------------|
|            |            |                       |

|  |    |                |
|--|----|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA | Not applicable |
|--|----|----------------|

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.6. Other adverse effects

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>Canadian DSL Inventory</b>             | All components listed on inventory or are exempt.          |

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

**Revision Date:** 21-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### CEMENT - PREMIUM - CLASS G

Revision Date: 21-Jun-2016

Revision Number: 14

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** CEMENT - PREMIUM - CLASS G

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM001882

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

**Recommended Use** Cement  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                   |
|--|-------------------|
| Skin Corrosion/Irritation                            | Category 2 - H315 |
| Serious Eye Damage/Irritation                        | Category 1 - H318 |
| Skin Sensitization                                   | Category 1 - H317 |
| Carcinogenicity                                      | Category 2 - H351 |
| Specific Target Organ Toxicity - (Single Exposure)   | Category 3 - H335 |
| Specific Target Organ Toxicity - (Repeated Exposure) | Category 2 - H373 |

##### Label elements, including precautionary statements

**Hazard pictograms****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  
 H351 - Suspected of causing cancer if inhaled  
 H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe 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  
 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  
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention  
 P362 - Take off contaminated clothing and wash before reuse  
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 P312 - Call a POISON CENTER/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  
 P308 + P313 - IF exposed or concerned: Get medical advice/attention  
 P314 - Get medical attention/advice if you feel unwell  
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
 P405 - Store locked up  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Storage****Disposal****Contains****Substances**

Portland cement  
 Crystalline silica, quartz

**CAS Number**

65997-15-1  
 14808-60-7

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

None known

*For the full text of the H-phrases mentioned in this Section, see Section 16*

|  |
|--|
| <b>3. Composition/information on Ingredients</b> |
|--|

| Substances | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|------------|------------|---------------|--------------------------------|
|            |            |               |                                |

|                            |            |           |   |
|----------------------------|------------|-----------|---|
| Portland cement            | 65997-15-1 | 60 - 100% | Skin Irrit. 2 (H315)<br>Eye Corr. 1 (H318)<br>Skin Sens. 1 (H317)<br>STOT SE 3 (H335) |
| Crystalline silica, quartz | 14808-60-7 | 1 - 5%    | Carc. 2 (H351)<br>STOT RE 1 (H372)  |

#### 4. First aid measures

##### Description of necessary 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>Eyes</b>       | In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.  |
| <b>Skin</b>       | In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately. |
| <b>Ingestion</b>  | Under normal conditions, first aid procedures are not required.  |

##### Symptoms caused by exposure

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. May cause respiratory irritation. Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

##### Medical Attention and Special Treatment

**Notes to Physician** Treat symptomatically

#### 5. Fire Fighting Measures

##### Suitable extinguishing equipment

##### **Suitable Extinguishing Media**

None - does not burn.

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

None known.

##### Specific hazards arising from the chemical

##### **Special exposure hazards in a fire**

None anticipated

##### Special protective equipment and precautions for fire fighters

##### **Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

#### 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust.

##### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

#### 7. Handling and storage

##### 7.1. Precautions for safe handling

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Product has a shelf life of 24 months. Store in a cool, dry location.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances                 | CAS Number | Australia NOHSC            | ACGIH TLV-TWA                |
|----------------------------|------------|----------------------------|------------------------------|
| Portland cement            | 65997-15-1 | TWA: 10 mg/m <sup>3</sup>  | TWA: 1 mg/m <sup>3</sup>     |
| Crystalline silica, quartz | 14808-60-7 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.025 mg/m <sup>3</sup> |

**Appropriate engineering controls****Engineering Controls**

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

Eyewash fountains and safety showers must be easily accessible.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Solid

**Color:** Gray

**Odor:** Odorless

**Odor Threshold:** No information available

PropertyValues

Remarks/ - Method

**pH:**

12.4

**Freezing Point / Range**

No data available

**Melting Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

3.15

**Water Solubility**

Insoluble in water

|  |                          |
|--|--------------------------|
| Solubility in other solvents           | No data available        |
| Partition coefficient: n-octanol/water | No data available        |
| Autoignition Temperature               | No data available        |
| Decomposition Temperature              | No data available        |
| Viscosity                              | No data available        |
| Explosive Properties                   | No information available |
| Oxidizing Properties                   | No information available |

**9.2. Other information**

|                 |                   |
|-----------------|-------------------|
| VOC Content (%) | No data available |
|-----------------|-------------------|

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

Keep away from any contact with water.

**10.5. Incompatible materials**

Hydrofluoric acid.

**10.6. Hazardous decomposition products**

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

## 11. Toxicological Information

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. May cause respiratory irritation. Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances                 | CAS Number | LD50 Oral             | LD50 Dermal              | LC50 Inhalation   |
|----------------------------|------------|-----------------------|--------------------------|-------------------|
| Portland cement            | 65997-15-1 | > 2000 mg/kg (Rat)    | > 2000 mg/kg             | > 1 mg/L (Rat) 4h |
| Crystalline silica, quartz | 14808-60-7 | > 15000 mg/kg (human) | No information available | No data available |

**Immediate, delayed and chronic health effects from exposure****Inhalation**

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

Causes severe respiratory irritation.

**Eye Contact**

Causes severe eye irritation which may damage tissue.

**Skin Contact**

Causes skin irritation. Can dry skin. May cause alkali burns with confined contact. May cause an allergic skin reaction.

**Ingestion**

None known.

**Chronic Effects/Carcinogenicity** Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

#### **Exposure Levels**

No data available

#### **Interactive effects**

Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

#### **Data limitations**

No data available

| Substances                 | CAS Number | Skin corrosion/irritation    |
|----------------------------|------------|------------------------------|
| Portland cement            | 65997-15-1 | Irritating to skin. (Rabbit) |
| Crystalline silica, quartz | 14808-60-7 | Non-irritating to the skin   |

| Substances                 | CAS Number | Serious eye damage/irritation   |
|----------------------------|------------|---|
| Portland cement            | 65997-15-1 | Corrosive to eyes   |
| Crystalline silica, quartz | 14808-60-7 | Mechanical irritation of the eyes is possible. No information available |

| Substances                 | CAS Number | Skin Sensitization                      |
|----------------------------|------------|---|
| Portland cement            | 65997-15-1 | May cause sensitization by skin contact |
| Crystalline silica, quartz | 14808-60-7 | No information available.               |

| Substances                 | CAS Number | Respiratory Sensitization |
|----------------------------|------------|---------------------------|
| Portland cement            | 65997-15-1 | No information available  |
| Crystalline silica, quartz | 14808-60-7 | No information available  |

| Substances                 | CAS Number | Mutagenic Effects                            |
|----------------------------|------------|--|
| Portland cement            | 65997-15-1 | No data of sufficient quality are available. |
| Crystalline silica, quartz | 14808-60-7 | Not regarded as mutagenic.                   |

| Substances                 | CAS Number | Carcinogenic Effects   |
|----------------------------|------------|--|
| Portland cement            | 65997-15-1 | No data of sufficient quality are available.   |
| Crystalline silica, quartz | 14808-60-7 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |

| Substances                 | CAS Number | Reproductive toxicity                        |
|----------------------------|------------|--|
| Portland cement            | 65997-15-1 | No data of sufficient quality are available. |
| Crystalline silica, quartz | 14808-60-7 | No information available                     |

| Substances                 | CAS Number | STOT - single exposure  |
|----------------------------|------------|---|
| Portland cement            | 65997-15-1 | May cause respiratory irritation.   |
| Crystalline silica, quartz | 14808-60-7 | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances                 | CAS Number | STOT - repeated exposure   |
|----------------------------|------------|--|
| Portland cement            | 65997-15-1 | No data of sufficient quality are available.                                       |
| Crystalline silica, quartz | 14808-60-7 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |

| Substances                 | CAS Number | Aspiration hazard |
|----------------------------|------------|-------------------|
| Portland cement            | 65997-15-1 | Not applicable    |
| Crystalline silica, quartz | 14808-60-7 | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### **Product Ecotoxicity Data**

No data available

#### **Substance Ecotoxicity Data**

| Substances                 | CAS Number | Toxicity to Algae                                    | Toxicity to Fish                        | Toxicity to Microorganisms | Toxicity to Invertebrates                  |
|----------------------------|------------|--|---|----------------------------|--|
| Portland cement            | 65997-15-1 | No information available                             | No information available                | No information available   | No information available                   |
| Crystalline silica, quartz | 14808-60-7 | EC50 (72 h) =440 mg/L<br>(Selenastrum capricornutum) | LL0 (96 h) =10000 mg/L<br>(Danio rerio) | No information available   | LL50 (24 h) >10000 mg/L<br>(Daphnia magna) |

### 12.2. Persistence and degradability

| Substances                 | CAS Number | Persistence and Degradability  |
|----------------------------|------------|--|
| Portland cement            | 65997-15-1 | The methods for determining biodegradability are not applicable to inorganic substances. |
| Crystalline silica, quartz | 14808-60-7 | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

| Substances                 | CAS Number | Log Pow                  |
|----------------------------|------------|--------------------------|
| Portland cement            | 65997-15-1 | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

### 12.4. Mobility in soil

| Substances                 | CAS Number | Mobility                 |
|----------------------------|------------|--------------------------|
| Portland cement            | 65997-15-1 | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

### 12.6. Other adverse effects

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Bury in a licensed landfill according to federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review**

**Revision Date:** 21-Jun-2016

**Revision Note**

SDS sections updated: 2

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

H315 - Causes skin irritation  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H335 - May cause respiratory irritation  
 H351 - Suspected of causing cancer if inhaled  
 H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

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

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
OSHA  
ECHA C&L

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### SILICALITE LIQUID

Revision Date: 22-Sep-2015

Revision Number: 20

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** SILICALITE LIQUID

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM001274

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

**Recommended Use** Light Weight Cement Additive  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Not applicable.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

None known. Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Keep container closed when not in use. Product has a shelf life of 24 months.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection** Not normally necessary.

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Liquid      **Color:** Dark gray  
**Odor:** Odorless      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 6- 8                     |
| <b>Freezing Point/Range</b>                   | 0 °C                     |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | 100 °C / 212 °F          |
| <b>Flash Point</b>                            | 100 °C / > 212 °F        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | 22.9                     |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.37                     |
| <b>Water Solubility</b>                       | Miscible with water      |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**VOC Content (%)** No data available  
**Liquid Density** 11.64 lbs/gal

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

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

None known.

**10.6. Hazardous Decomposition Products**

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

**11. Toxicological Information****Information on routes of exposure**

**Principle Route of Exposure** Eye and skin contact.

**Symptoms related to exposure****Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity****Toxicology data for the components**

| <b>Substances</b>   | <b>CAS Number</b> | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|---|-------------------|-------------------|--------------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according | NA                | No data available | No data available  | No data available      |

|                            |  |  |  |  |
|----------------------------|--|--|--|--|
| to the competent authority |  |  |  |  |
|----------------------------|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | None known.                             |
| <b>Eye Contact</b>  | May cause mechanical irritation to eye. |
| <b>Skin Contact</b> | Practically Non-toxic by Skin Contact.  |
| <b>Ingestion</b>    | None known.                             |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances            | CAS Number | Reproductive toxicity |
|-----------------------|------------|-----------------------|
| Contains no hazardous | NA         | Not applicable        |

|  |  |  |
|--|--|--|
| substances in concentrations above cut-off values according to the competent authority |  |  |
|--|--|--|

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

#### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

#### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

#### Environmental regulations

Not applicable

### 14. Transport Information

#### Transportation Information

|                             |                |
|-----------------------------|----------------|
| UN Number:                  | Not restricted |
| UN Proper Shipping Name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

#### Special precautions during transport

None

#### HazChem Code

None Allocated

### 15. Regulatory Information

#### Safety, health and environmental regulations specific for the product

#### International Inventories

|                                    |  |
|------------------------------------|--|
| Australian AICS Inventory          | All components listed on inventory or are exempt.          |
| New Zealand Inventory of Chemicals | All components listed on inventory or are exempt.          |
| EINECS Inventory                   | This product, and all its components, complies with EINECS |
| US TSCA Inventory                  | All components listed on inventory or are exempt.          |
| Canadian DSL Inventory             | All components listed on inventory or are exempt.          |

#### Poisons Schedule number

None Allocated

### 16. Other information

#### Date of preparation or review

Revision Date: 22-Sep-2015

#### Revision Note

SDS sections updated: 2

#### Full text of R-phrases referred to under Sections 2 and 3

None

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

None

#### Additional information

For additional information on the use of this product, contact your local Halliburton

representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**End of Safety Data Sheet**



## Safety Data Sheet

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|                        |            |                         |            |
|------------------------|------------|-------------------------|------------|
| <b>Document group:</b> | 16-2219-0  | <b>Version number:</b>  | 4.00       |
| <b>Issue Date:</b>     | 27/09/2017 | <b>Supersedes date:</b> | 06/10/2014 |

This Safety Data Sheet has been prepared in accordance with the Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice (Safe Work Australia, December 2011)

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

#### Product Identification Numbers

|                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|
| 98-0212-2986-3 | 98-0212-2988-9 | 98-0212-3010-1 | 98-0212-3011-9 | 98-0212-3012-7 |
| 98-0212-3014-3 | 98-0212-3015-0 | 98-0212-3016-8 | 98-0212-3018-4 | 98-0212-3038-2 |
| 98-0212-3086-1 | 98-0212-3302-2 | 98-0212-3523-3 | WF-6009-1424-7 | WF-6009-1425-4 |

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Downhole Oil and Gas Applications, Industrial use.

For Industrial or Professional use only.

#### 1.3. Supplier's details

**Address:** 3M Australia - Building A, 1 Rivett Road, North Ryde NSW 2113  
**Telephone:** 136 136  
**E Mail:** productinfo.au@mmm.com  
**Website:** www.3m.com.au

#### 1.4. Emergency telephone number

EMERGENCY: 1800 097 146 (Australia only)

### SECTION 2: Hazard identification

This product is NOT classified as a hazardous chemical according to the Model Work Health and Safety Regulations, 2011, in accordance with applicable State and Territory legislation.

Refer to Section 14 of this Safety Data Sheets for product Dangerous Goods Classification.

#### 2.1. Classification of the substance or mixture

Not applicable.

#### 2.2. Label elements

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

**Signal word**

Not applicable.

**Symbols**

Not applicable.

**Pictograms**

Not applicable.

**2.3. Other assigned/identified product hazards**

None known.

**2.4. Other hazards which do not result in classification**

May be harmful if swallowed.

## SECTION 3: Composition/information on ingredients

This material is a mixture.

| Ingredient                   | CAS Nbr    | % by Weight |
|------------------------------|------------|-------------|
| SODA LIME BOROSILICATE GLASS | 65997-17-3 | 97 - 100    |

## SECTION 4: First aid measures

**4.1. Description of first aid measures**

**Inhalation**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin contact**

Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye contact**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If swallowed**

Rinse mouth. If you feel unwell, get medical attention.

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

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

## SECTION 5: Fire-fighting measures

**5.1. Suitable extinguishing media**

Material will not burn. Use a fire fighting agent suitable for the surrounding fire.

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

None inherent in this product.

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

### 5.3. Special protective actions for fire-fighters

No special protective actions for fire-fighters are anticipated.

## SECTION 6: Accidental release measures

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

Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

### 6.2. Environmental precautions

Avoid release to the environment.

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

Collect as much of the spilled material as possible. Use wet sweeping compound or water to avoid dusting. Sweep up. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

For industrial or professional use only. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

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

No special storage requirements.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

| Ingredient                   | CAS Nbr    | Agency                  | Limit type  | Additional comments |
|------------------------------|------------|-------------------------|---|---------------------|
| Glass filaments              | 65997-17-3 | Australia OELs          | TWA(8 hours):0.5 fibers/ml;TWA(as fiber)(8 hours):0.5 fibers/ml |                     |
| SODA LIME BOROSILICATE GLASS | 65997-17-3 | Manufacturer determined | TWA(as dust):10 mg/m3   |                     |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

Australia OELs : Australia. Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment

CMRG : Chemical Manufacturer's Recommended Guidelines

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

Sen: Sensitiser

Sk: Absorption through the skin may be a significant source of exposure.

### 8.2. Exposure controls

#### 8.2.1. Engineering controls

Provide appropriate local exhaust ventilation at transfer points. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray.

If ventilation is not adequate, use respiratory protection equipment.

### 8.2.2. Personal protective equipment (PPE)

#### Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Safety glasses with side shields.

Select and use eye protection in accordance with AS/NZS 1336. Eye protection should comply with the performance specifications of AS/NZS 1337.

#### Skin/hand protection

No chemical protective gloves are required.

#### Respiratory protection

Wear respiratory protection if ventilation is inadequate to prevent overexposure. An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure: Half facepiece or full facepiece air-purifying respirator suitable for particulates.

For questions about suitability for a specific application, consult with your respirator manufacturer.

Select and use respirators according to AS/NZS 1715. Respirators should comply with AS/NZS 1716 performance specifications. For information about respirators, call 3M on 1800 024 464.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|  |                              |
|--|------------------------------|
| <b>Physical state</b>                                    | Solid.                       |
| <b>Specific Physical Form:</b>                           | Fine Powder < 100 microns    |
| <b>Appearance/Odour</b>                                  | White, Odourless             |
| <b>Odour threshold</b>                                   | <i>Not applicable.</i>       |
| <b>Melting point/Freezing point</b>                      | <i>No data available.</i>    |
| <b>Boiling point/Initial boiling point/Boiling range</b> | <i>Not applicable.</i>       |
| <b>Flash point</b>                                       | <i>Not applicable.</i>       |
| <b>Evaporation rate</b>                                  | <i>Not applicable.</i>       |
| <b>Flammability (solid, gas)</b>                         | Not classified               |
| <b>Flammable Limits(LEL)</b>                             | <i>Not applicable.</i>       |
| <b>Flammable Limits(UEL)</b>                             | <i>Not applicable.</i>       |
| <b>Vapour pressure</b>                                   | <i>Not applicable.</i>       |
| <b>Vapour density</b>                                    | <i>Not applicable.</i>       |
| <b>Density</b>   | 0.1 - 0.6 g/cm <sup>3</sup>  |
| <b>Relative density</b>                                  | 0.1 - 0.6 [Ref Std: WATER=1] |
| <b>Water solubility</b>                                  | Negligible                   |
| <b>Solubility- non-water</b>                             | <i>Not applicable.</i>       |
| <b>Partition coefficient: n-octanol/water</b>            | <i>No data available.</i>    |
| <b>Autoignition temperature</b>                          | <i>Not applicable.</i>       |
| <b>Decomposition temperature</b>                         | <i>Not applicable.</i>       |
| <b>Viscosity</b>   | <i>Not applicable.</i>       |
| <b>Molecular weight</b>                                  | <i>No data available.</i>    |
| <b>Volatile organic compounds (VOC)</b>                  | <i>Not applicable.</i>       |
| <b>Percent volatile</b>                                  | < 0.5 % weight               |

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

Softening point  
VOC less H2O & exempt solvents

$\geq 600$  °C  
*Not applicable.*

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is considered to be non reactive under normal use conditions

### 10.2 Chemical stability

Stable.

### 10.3. Conditions to avoid

None known.

### 10.4. Possibility of hazardous reactions

Hazardous polymerisation will not occur.

### 10.5 Incompatible materials

None known.

### 10.6 Hazardous decomposition products

| <u>Substance</u>   | <u>Condition</u>   |
|--------------------|--------------------|
| Oxides of sulphur. | If Breakage Occurs |

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1 Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

#### Inhalation

Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

#### Skin contact

Mechanical skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

#### Eye contact

Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion.

#### Ingestion

May be harmful if swallowed.

Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.

#### Toxicological Data

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

#### Acute Toxicity

| Name                         | Route     | Species | Value  |
|------------------------------|-----------|---------|--|
| Overall product              | Ingestion |         | No data available; calculated ATE <sub>2,000</sub> - 5,000 mg/kg |
| SODA LIME BOROSILICATE GLASS | Dermal    |         | LD50 estimated to be > 5,000 mg/kg                               |
| SODA LIME BOROSILICATE GLASS | Ingestion |         | LD50 estimated to be 2,000 - 5,000 mg/kg                         |

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

| Name                         | Species                | Value                     |
|------------------------------|------------------------|---------------------------|
| SODA LIME BOROSILICATE GLASS | Professional judgement | No significant irritation |

#### Serious Eye Damage/Irritation

| Name                         | Species                | Value                     |
|------------------------------|------------------------|---------------------------|
| SODA LIME BOROSILICATE GLASS | Professional judgement | No significant irritation |

#### Skin Sensitisation

For the component/components, either no data are currently available or the data are not sufficient for classification.

#### Respiratory Sensitisation

For the component/components, either no data are currently available or the data are not sufficient for classification.

#### Germ Cell Mutagenicity

| Name                         | Route    | Value  |
|------------------------------|----------|--|
| SODA LIME BOROSILICATE GLASS | In Vitro | Some positive data exist, but the data are not sufficient for classification |

#### Carcinogenicity

| Name                         | Route      | Species                 | Value  |
|------------------------------|------------|-------------------------|--|
| SODA LIME BOROSILICATE GLASS | Inhalation | Multiple animal species | Some positive data exist, but the data are not sufficient for classification |

#### Reproductive Toxicity

##### Reproductive and/or Developmental Effects

For the component/components, either no data are currently available or the data are not sufficient for classification.

##### Target Organ(s)

##### Specific Target Organ Toxicity - single exposure

For the component/components, either no data are currently available or the data are not sufficient for classification.

##### Specific Target Organ Toxicity - repeated exposure

| Name                          | Route      | Target Organ(s)    | Value          | Species | Test result         | Exposure Duration     |
|-------------------------------|------------|--------------------|----------------|---------|---------------------|-----------------------|
| SODA LIME BOROSILIC ATE GLASS | Inhalation | respiratory system | Not classified | Human   | NOAEL not available | occupational exposure |

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

#### Aspiration Hazard

For the component/components, either no data are currently available or the data are not sufficient for classification.

#### Exposure Levels

Refer Section 8.1 Control Parameters of this Safety Data Sheet.

#### Interactive Effects

Not determined.

## SECTION 12: Ecological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

### 12.1. Toxicity

#### Acute aquatic hazard:

Not acutely toxic to aquatic life by GHS criteria.

#### Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria.

No product test data available.

| Material                      | CAS Number | Organism    | Type         | Exposure | Test endpoint | Test result  |
|-------------------------------|------------|-------------|--------------|----------|---------------|--------------|
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Green algae | Experimental | 72 hours | EC50          | >1,000 mg/l  |
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Water flea  | Experimental | 72 hours | EC50          | >1,000 mg/l  |
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Zebra Fish  | Experimental | 96 hours | LC50          | >1,000 mg/l  |
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Green algae | Experimental | 72 hours | NOEC          | >=1,000 mg/l |

### 12.2. Persistence and degradability

| Material                      | CAS Number | Test type   | Duration | Study Type | Test result | Protocol |
|-------------------------------|------------|---|----------|------------|-------------|----------|
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Data not available or insufficient for classification | N/A      | N/A        | N/A         | N/A      |

### 12.3 : Bioaccumulative potential

| Material                      | CAS Number | Test type                              | Duration | Study Type | Test result | Protocol |
|-------------------------------|------------|--|----------|------------|-------------|----------|
| SODA LIME BOROSILICA TE GLASS | 65997-17-3 | Data not available or insufficient for | N/A      | N/A        | N/A         | N/A      |

3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46

|  |  |                |  |  |  |  |
|--|--|----------------|--|--|--|--|
|  |  | classification |  |  |  |  |
|--|--|----------------|--|--|--|--|

#### 12.4. Mobility in soil

Please contact manufacturer for more details

#### 12.5 Other adverse effects

No information available.

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Incinerate in a permitted waste incineration facility.

### SECTION 14: Transport Information

#### Australian Dangerous Goods Code (ADG) - Road/Rail Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

Hazchem Code: Not applicable

IERG: Not applicable.

#### International Air Transport Association (IATA) - Air Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

#### International Maritime Dangerous Goods Code (IMDG)- Marine Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

Marine Pollutant: Not applicable.

### SECTION 15: Regulatory information

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

##### Australian Inventory Status:

This product is defined as an article under the Industrial Chemicals (Notification and Assessment) Act 1989, as amended, and is exempt from inventory requirements under the Industrial Chemicals (Notification and Assessment) Act 1989 as amended.

**Poison Schedule:** This product is an article therefore the Standard for the Uniform Scheduling of Medicines and Poisons Schedule is not applicable.

**3M™ Glass Bubbles HGS750, HGS2000, HGS3000, HGS4000, HGS5000, HGS6000, HGS8000X, HGS10000, HGS18000, HGS4K28, HGS19K46**

## **SECTION 16: Other information**

### **Revision information:**

Update to product identification numbers.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Safety Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

Greenguard® is a United States based program. The 'Low VOC' reference related to United States Federal and State regulations exemptions for some solvents.

**3M Australia SDSs are available at [www.3m.com.au](http://www.3m.com.au)**

## SAFETY DATA SHEET

### MICROBOND EXPANDING ADDITIVE

Revision Date: 21-Jun-2016

Revision Number: 28

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** MICROBOND EXPANDING ADDITIVE

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM001064

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

**Recommended Use** Cement Additive  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|                               |                   |
|-------------------------------|-------------------|
| Skin Corrosion/Irritation     | Category 2 - H315 |
| Serious Eye Damage/Irritation | Category 1 - H318 |
| Acute Aquatic Toxicity        | Category 3 - H402 |

##### Label elements, including precautionary statements

**Hazard pictograms**



|                                 |   |
|---------------------------------|---|
| <b>Signal Word</b>              | Danger  |
| <b>Hazard Statements:</b>       | H315 - Causes skin irritation<br>H318 - Causes serious eye damage<br>H402 - Harmful to aquatic life   |
| <b>Precautionary Statements</b> |   |
| <b>Prevention</b>               | P264 - Wash face, hands and any exposed skin thoroughly after handling<br>P273 - Avoid release to the environment<br>P280 - Wear protective gloves/eye protection/face protection   |
| <b>Response</b>                 | P302 + P352 - IF ON SKIN: Wash with plenty of soap and water<br>P332 + P313 - If skin irritation occurs: Get medical advice/attention<br>P362 - Take off contaminated clothing and wash before reuse<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing<br>P310 - Immediately call a POISON CENTER or doctor/physician |
| <b>Storage</b>                  | None  |
| <b>Disposal</b>                 | P501 - Dispose of contents/container in accordance with local/regional/national/international regulations   |
| <b>Contains Substances</b>      | <b>CAS Number</b>   |
| Calcium aluminate               | 12042-68-1  |
| Calcium hydroxide               | 1305-62-0   |

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances        | CAS Number | PERCENT (w/w) | GHS Classification - Australia                                       |
|-------------------|------------|---------------|--|
| Calcium aluminate | 12042-68-1 | 10 - 30%      | Acute Tox. 4 (H332)<br>Eye Irrit. 2 (H319)<br>Aquatic Acute 2 (H401) |
| Calcium hydroxide | 1305-62-0  | 10 - 30%      | Skin Irrit. 2 (H315)<br>Eye Corr. 1 (H318)<br>STOT SE 3 (H335)       |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.  
**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store in a cool, dry location.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances | CAS Number | Australia NOHSC | ACGIH TLV-TWA |
|------------|------------|-----------------|---------------|
|            |            |                 |               |

|                   |            |                          |                          |
|-------------------|------------|--------------------------|--------------------------|
| Calcium aluminate | 12042-68-1 | Not applicable           | 10 mg/m <sup>3</sup>     |
| Calcium hydroxide | 1305-62-0  | TWA: 5 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup> |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

Eyewash fountains and safety showers must be easily accessible.

**Environmental Exposure Controls**

Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

**9.1. Information on basic physical and chemical properties****Physical State:** Solid**Color:** Light red**Odor:** Odorless**Odor Threshold:** No information availablePropertyValues

Remarks/ - Method

**pH:**

No data available

**Freezing Point / Range**

No data available

**Melting Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

3.2

**Water Solubility**

Insoluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information****VOC Content (%)**

No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

#### **10.5. Incompatible materials**

None known.

#### **10.6. Hazardous decomposition products**

Oxides of sulfur. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

#### **Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

#### **Symptoms related to exposure**

##### **Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

#### **Numerical measures of toxicity**

#### **Toxicology data for the components**

| Substances        | CAS Number | LD50 Oral                              | LD50 Dermal                            | LC50 Inhalation                           |
|-------------------|------------|--|--|---|
| Calcium aluminate | 12042-68-1 | > 2000 mg/kg (Rat) (similar substance) | > 2000 mg/kg (Rat) (similar substance) | 1.9 mg/L air (Rat) 4h (similar substance) |
| Calcium hydroxide | 1305-62-0  | 7340 mg/kg-bw (rat)                    | >2500 mg/kg-bw (rabbit)                | No data available                         |

#### **Immediate, delayed and chronic health effects from exposure**

**Inhalation** May be harmful if inhaled. May cause mild respiratory irritation.  
**Eye Contact** Causes severe eye irritation which may damage tissue.  
**Skin Contact** Causes skin irritation.  
**Ingestion** Irritation of the mouth, throat, and stomach.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

#### **Exposure Levels**

No data available

#### **Interactive effects**

None known.

#### **Data limitations**

No data available

| Substances        | CAS Number | Skin corrosion/irritation  |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | Contact with moist skin may cause skin burns                                       |
| Calcium hydroxide | 1305-62-0  | Skin, rabbit: May cause moderate skin irritation. Causes moderate skin irritation. |

| Substances        | CAS Number | Serious eye damage/irritation                                |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | Causes moderate eye irritation (Rabbit) (similar substances) |
| Calcium hydroxide | 1305-62-0  | Eye, rabbit: Causes severe eye irritation                    |

| Substances        | CAS Number | Skin Sensitization   |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | Did not cause sensitization on laboratory animals (similar substances)                       |
| Calcium hydroxide | 1305-62-0  | Did not cause sensitization on laboratory animals (guinea pig) Not regarded as a sensitizer. |

| Substances        | CAS Number | Respiratory Sensitization                    |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | No information available                     |
| Calcium hydroxide | 1305-62-0  | No data of sufficient quality are available. |

| Substances        | CAS Number | Mutagenic Effects   |
|-------------------|------------|---|
| Calcium aluminate | 12042-68-1 | In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. (similar substances) |
| Calcium hydroxide | 1305-62-0  | In vitro tests did not show mutagenic effects.  |

| Substances        | CAS Number | Carcinogenic Effects   |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | No information available   |
| Calcium hydroxide | 1305-62-0  | Did not show carcinogenic effects in animal experiments (similar substances) |

| Substances        | CAS Number | Reproductive toxicity  |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | No information available   |
| Calcium hydroxide | 1305-62-0  | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances) |

| Substances        | CAS Number | STOT - single exposure   |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | No information available   |
| Calcium hydroxide | 1305-62-0  | May cause mild respiratory irritation. May cause respiratory irritation. |

| Substances        | CAS Number | STOT - repeated exposure   |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances) |
| Calcium hydroxide | 1305-62-0  | No significant toxicity observed in animal studies at concentration requiring classification.                      |

| Substances        | CAS Number | Aspiration hazard |
|-------------------|------------|-------------------|
| Calcium aluminate | 12042-68-1 | Not applicable    |
| Calcium hydroxide | 1305-62-0  | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances        | CAS Number | Toxicity to Algae  | Toxicity to Fish   | Toxicity to Microorganisms   | Toxicity to Invertebrates  |
|-------------------|------------|--|--|--|--|
| Calcium aluminate | 12042-68-1 | EC50 (72h) 3.6 mg/L (Desmodesmus subspicatus) (similar substance)<br>NOEC (72h) 2.6 mg/L (Desmodesmus subspicatus) (similar substance) | LC50 (96h) >100 mg/L (Danio rerio) (similar substance)   | EC50 (3h) > 100 mg/L (Activated sludge of a predominantly domestic sewage) (similar substance) | EC50 (48h) 5.4 mg/L (Daphnia magna) (similar substance)  |
| Calcium hydroxide | 1305-62-0  | EC50 (72h) 184.57 mg/L (Pseudokirchnerella subcapitata)  | LC50 (96 h) =50.6 mg/L (Oncorhynchus mykiss)<br>LC50 (96 h) =457 mg/L (Gasterosteus aculeatus) | EC50 (3h) 300.4 mg/L (respiration rate) (activated sludge of a predominantly domestic sewage)  | EC50 (48 h) =49.1 mg/L (Daphnia magna)<br>EC50 (96 h) =158 mg/L (Crangon septemspinosus)<br>NOAEC (14 d) =32 mg/L (Crangon septemspinosus) |

### 12.2. Persistence and degradability

| Substances        | CAS Number | Persistence and Degradability  |
|-------------------|------------|--|
| Calcium aluminate | 12042-68-1 | The methods for determining biodegradability are not applicable to inorganic substances. |
| Calcium hydroxide | 1305-62-0  | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

| Substances        | CAS Number | Log Pow                  |
|-------------------|------------|--------------------------|
| Calcium aluminate | 12042-68-1 | No information available |
| Calcium hydroxide | 1305-62-0  | No information available |

### 12.4. Mobility in soil

| Substances | CAS Number | Mobility |
|------------|------------|----------|
|------------|------------|----------|

|                   |            |                          |
|-------------------|------------|--------------------------|
| Calcium aluminate | 12042-68-1 | No information available |
| Calcium hydroxide | 1305-62-0  | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

## 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

## 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

None Allocated

**International Agreements**

|  |                |
|--|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>       | Does not apply |
| <b>Stolkholm Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>        | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                   | Does not apply |

## 16. Other information

---

**Date of preparation or review**

**Revision Date:** 21-Jun-2016

**Revision Note**

SDS sections updated: 2

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

H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H319 - Causes serious eye irritation  
H332 - Harmful if inhaled  
H335 - May cause respiratory irritation  
H401 - Toxic to aquatic life  
H402 - Harmful to aquatic life

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### TUNED SPACER E+

Revision Date: 23-Jun-2016

Revision Number: 33

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** TUNED SPACER E+

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003335

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

**Recommended Use** Cement Spacer  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                   |
|--|-------------------|
| Carcinogenicity                                      | Category 2 - H351 |
| Specific Target Organ Toxicity - (Repeated Exposure) | Category 2 - H373 |

##### Label elements, including precautionary statements

**Hazard pictograms**

**Signal Word**

Warning

**Hazard Statements:**

H351 - Suspected of causing cancer if inhaled  
 H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
 P281 - Use personal protective equipment as required

**Response**

P308 + P313 - IF exposed or concerned: Get medical advice/attention  
 P314 - Get medical attention/advice if you feel unwell

**Storage**

P405 - Store locked up

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains****Substances****CAS Number**

Crystalline silica, quartz  
 Crystalline silica, cristobalite  
 Crystalline silica, tridymite

14808-60-7  
 14464-46-1  
 15468-32-3

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
 This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances                       | CAS Number | PERCENT (w/w) | GHS Classification - Australia     |
|----------------------------------|------------|---------------|------------------------------------|
| Crystalline silica, quartz       | 14808-60-7 | 1 - 5%        | Carc. 2 (H351)<br>STOT RE 1 (H372) |
| Crystalline silica, cristobalite | 14464-46-1 | 0.1 - 1%      | Carc. 2 (H351)<br>STOT RE 1 (H372) |
| Crystalline silica, tridymite    | 15468-32-3 | 0.1 - 1%      | Carc. 2 (H351)<br>STOT RE 1 (H372) |

### 4. First aid measures

**Description of necessary first aid measures****Inhalation**

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

**Eyes**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin**

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

**Ingestion**

Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid creating and breathing dust.

**6.2. Environmental precautions**

None known.

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

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances | CAS Number | Australia NOHSC | ACGIH TLV-TWA |
|------------|------------|-----------------|---------------|
|            |            |                 |               |

|                                  |            |                            |                              |
|----------------------------------|------------|----------------------------|------------------------------|
| Crystalline silica, quartz       | 14808-60-7 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.025 mg/m <sup>3</sup> |
| Crystalline silica, cristobalite | 14464-46-1 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.025 mg/m <sup>3</sup> |
| Crystalline silica, tridymite    | 15468-32-3 | TWA: 0.1 mg/m <sup>3</sup> | TWA: 0.05 mg/m <sup>3</sup>  |

**Appropriate engineering controls****Engineering Controls**

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Solid

**Color:** White to light straw

**Odor:** Odorless

**Odor Threshold:** No information available

PropertyValues

Remarks/ - Method

**pH:**

No data available

**Freezing Point / Range**

No data available

**Melting Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

1.88 - 2.05

**Water Solubility**

Soluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information**

**VOC Content (%)**

No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Oxides of sulfur. Carbon monoxide and carbon dioxide. Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

## 11. Toxicological Information

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

**Numerical measures of toxicity**

**Toxicology data for the components**

| Substances                       | CAS Number | LD50 Oral             | LD50 Dermal              | LC50 Inhalation   |
|----------------------------------|------------|-----------------------|--------------------------|-------------------|
| Crystalline silica, quartz       | 14808-60-7 | > 15000 mg/kg (human) | No information available | No data available |
| Crystalline silica, cristobalite | 14464-46-1 | >15,000 mg/kg (Human) | No data available        | No data available |
| Crystalline silica, tridymite    | 15468-32-3 | >15,000 mg/kg (Human) | No data available        | No data available |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation**

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

**Eye Contact**

May cause mechanical irritation to eye.

**Skin Contact**

None known.

**Ingestion**

None known.

**Chronic Effects/Carcinogenicity**

**Silicosis:** Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

**Cancer Status:** The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence

that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

**Exposure Levels**

No data available

**Interactive effects**

Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

**Data limitations**

No data available

| Substances                       | CAS Number | Skin corrosion/irritation  |
|----------------------------------|------------|----------------------------|
| Crystalline silica, quartz       | 14808-60-7 | Non-irritating to the skin |
| Crystalline silica, cristobalite | 14464-46-1 | Non-irritating to the skin |
| Crystalline silica, tridymite    | 15468-32-3 | Non-irritating to the skin |

| Substances                       | CAS Number | Serious eye damage/irritation   |
|----------------------------------|------------|---|
| Crystalline silica, quartz       | 14808-60-7 | Mechanical irritation of the eyes is possible. No information available |
| Crystalline silica, cristobalite | 14464-46-1 | Mechanical irritation of the eyes is possible.                          |
| Crystalline silica, tridymite    | 15468-32-3 | Mechanical irritation of the eyes is possible.                          |

| Substances                       | CAS Number | Skin Sensitization        |
|----------------------------------|------------|---------------------------|
| Crystalline silica, quartz       | 14808-60-7 | No information available. |
| Crystalline silica, cristobalite | 14464-46-1 | No information available  |
| Crystalline silica, tridymite    | 15468-32-3 | No information available  |

| Substances                       | CAS Number | Respiratory Sensitization |
|----------------------------------|------------|---------------------------|
| Crystalline silica, quartz       | 14808-60-7 | No information available  |
| Crystalline silica, cristobalite | 14464-46-1 | No information available  |
| Crystalline silica, tridymite    | 15468-32-3 | No information available  |

| Substances                       | CAS Number | Mutagenic Effects          |
|----------------------------------|------------|----------------------------|
| Crystalline silica, quartz       | 14808-60-7 | Not regarded as mutagenic. |
| Crystalline silica, cristobalite | 14464-46-1 | Not regarded as mutagenic. |
| Crystalline silica, tridymite    | 15468-32-3 | Not regarded as mutagenic. |

| Substances                       | CAS Number | Carcinogenic Effects   |
|----------------------------------|------------|--|
| Crystalline silica, quartz       | 14808-60-7 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |
| Crystalline silica, cristobalite | 14464-46-1 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |
| Crystalline silica, tridymite    | 15468-32-3 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |

| Substances                       | CAS Number | Reproductive toxicity    |
|----------------------------------|------------|--------------------------|
| Crystalline silica, quartz       | 14808-60-7 | No information available |
| Crystalline silica, cristobalite | 14464-46-1 | No information available |
| Crystalline silica, tridymite    | 15468-32-3 | No information available |

| Substances                       | CAS Number | STOT - single exposure  |
|----------------------------------|------------|---|
| Crystalline silica, quartz       | 14808-60-7 | No significant toxicity observed in animal studies at concentration requiring classification. |
| Crystalline silica, cristobalite | 14464-46-1 | No significant toxicity observed in animal studies at concentration requiring classification. |
| Crystalline silica, tridymite    | 15468-32-3 | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances                       | CAS Number | STOT - repeated exposure   |
|----------------------------------|------------|--|
| Crystalline silica, quartz       | 14808-60-7 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |
| Crystalline silica, cristobalite | 14464-46-1 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |
| Crystalline silica, tridymite    | 15468-32-3 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |

| Substances                       | CAS Number | Aspiration hazard |
|----------------------------------|------------|-------------------|
| Crystalline silica, quartz       | 14808-60-7 | Not applicable    |
| Crystalline silica, cristobalite | 14464-46-1 | Not applicable    |
| Crystalline silica, tridymite    | 15468-32-3 | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances                       | CAS Number | Toxicity to Algae                                 | Toxicity to Fish  | Toxicity to Microorganisms | Toxicity to Invertebrates                                    |
|----------------------------------|------------|---|---|----------------------------|--|
| Crystalline silica, quartz       | 14808-60-7 | EC50 (72 h) =440 mg/L (Selenastrum capricornutum) | LL0 (96 h) =10000 mg/L (Danio rerio)                    | No information available   | LL50 (24 h) >10000 mg/L (Daphnia magna)                      |
| Crystalline silica, cristobalite | 14464-46-1 | No information available                          | LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance) | No information available   | LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance) |
| Crystalline silica, tridymite    | 15468-32-3 | No information available                          | LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance) | No information available   | LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance) |

### 12.2. Persistence and degradability

Expected to be readily biodegradable

| Substances                       | CAS Number | Persistence and Degradability  |
|----------------------------------|------------|--|
| Crystalline silica, quartz       | 14808-60-7 | The methods for determining biodegradability are not applicable to inorganic substances. |
| Crystalline silica, cristobalite | 14464-46-1 | The methods for determining biodegradability are not applicable to inorganic substances. |
| Crystalline silica, tridymite    | 15468-32-3 | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

| Substances                       | CAS Number | Log Pow                  |
|----------------------------------|------------|--------------------------|
| Crystalline silica, quartz       | 14808-60-7 | No information available |
| Crystalline silica, cristobalite | 14464-46-1 | No information available |
| Crystalline silica, tridymite    | 15468-32-3 | No information available |

### 12.4. Mobility in soil

| Substances                       | CAS Number | Mobility                 |
|----------------------------------|------------|--------------------------|
| Crystalline silica, quartz       | 14808-60-7 | No information available |
| Crystalline silica, cristobalite | 14464-46-1 | No information available |
| Crystalline silica, tridymite    | 15468-32-3 | No information available |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Bury in a licensed landfill according to federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

### Environmental regulations

Not applicable

## 14. Transport Information

### Transportation Information

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

### Special precautions during transport

None

### HazChem Code

None Allocated

## 15. Regulatory Information

### Safety, health and environmental regulations specific for the product

#### International Inventories

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

### Poisons Schedule number

None Allocated

### International Agreements

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

## 16. Other information

### Date of preparation or review

**Revision Date:** 23-Jun-2016

### **Revision Note**

SDS sections updated: 2

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

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H351 - Suspected of causing cancer if inhaled  
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled  
H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### HALAD® 413L CEMENT ADDITIVE

Revision Date: 07-May-2018

Revision Number: 26

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** HALAD® 413L CEMENT ADDITIVE

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM000824

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

**Recommended Use** Fluid Loss Additive  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road, Jandakot, WA 6164  
Australia  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951  
Global Incident Response Access Code: 334305  
Contract Number: 14012

##### Australian Poisons Information Centre

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements:** Not Classified

**Precautionary Statements**

**Prevention** None  
**Response** None  
**Storage** None  
**Disposal** None

**Contains**

**Substances** CAS Number  
 Contains no hazardous substances in concentrations above cut-off values according to the competent authority NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
 This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not classified                 |

**4. First aid measures**

**Description of necessary first aid measures**

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.  
**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.  
**Skin** Wash with soap and water. Get medical attention if irritation persists.  
**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for safe handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Product has a shelf life of 24 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.  
Not normally needed. But if significant exposures are possible then the following respirator is recommended:  
Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** Do not allow material to contaminate ground water system

**9. Physical and Chemical Properties**

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

**Physical State:** Liquid      **Color:** Brown-black  
**Odor:** Sweet      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 7.5                      |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.1                      |
| <b>Water Solubility</b>                       | Miscible with water      |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**VOC Content (%)**      No data available

**10. Stability and Reactivity**

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Oxides of nitrogen. Carbon monoxide and carbon dioxide.

**11. Toxicological Information**

**Information on routes of exposure**

**Principle Route of Exposure**      Eye or skin contact, inhalation.

**Symptoms related to exposure**

**Most Important Symptoms/Effects**

No significant hazards expected.

**Toxicology data for the components**

| <b>Substances</b>  | <b>CAS Number</b> | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|--|-------------------|-------------------|--------------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA                | No data available | No data available  | No data available      |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** None known.  
**Eye Contact** None known.  
**Skin Contact** None known.  
**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

**12. Ecological Information**

**Ecotoxicity**

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

|                                    |
|------------------------------------|
| <b>13. Disposal Considerations</b> |
|------------------------------------|

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information****Australia ADG**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**IMDG/IMO**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**IATA/ICAO**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

Product contains one or more components not listed on the inventory.

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply.

**Stockholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply.

**Basel Convention - Hazardous Waste:**

Does not apply.

**16. Other information****Date of preparation or review****Revision Date:** 07-May-2018**Revision Note**

SDS sections updated:

2

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### ECONOLITE LIQUID

Revision Date: 14-Oct-2015

Revision Number: 34

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** ECONOLITE LIQUID

##### Other means of Identification

**Synonyms** None  
**Product Code:** HM000478

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

**Recommended Use** Light Weight Cement Additive  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|                               |                   |
|-------------------------------|-------------------|
| Skin Corrosion/Irritation     | Category 2 - H315 |
| Serious Eye Damage/Irritation | Category 1 - H318 |

##### Label elements, including precautionary statements

**Hazard pictograms**



|                                 |   |
|---------------------------------|---|
| <b>Signal Word</b>              | Danger  |
| <b>Hazard Statements</b>        | H315 - Causes skin irritation<br>H318 - Causes serious eye damage   |
| <b>Precautionary Statements</b> |   |
| <b>Prevention</b>               | P264 - Wash face, hands and any exposed skin thoroughly after handling<br>P280 - Wear protective gloves/eye protection/face protection  |
| <b>Response</b>                 | P302 + P352 - IF ON SKIN: Wash with plenty of soap and water<br>P332 + P313 - If skin irritation occurs: Get medical advice/attention<br>P362 - Take off contaminated clothing and wash before reuse<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing<br>P310 - Immediately call a POISON CENTER or doctor/physician |
| <b>Storage</b>                  | None  |
| <b>Disposal</b>                 | None  |
| <b>Contains Substances</b>      | <b>CAS Number</b>   |
| Sodium silicate                 | 1344-09-8   |

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances      | CAS Number | PERCENT (w/w) | GHS Classification - Australia             |
|-----------------|------------|---------------|--|
| Sodium silicate | 1344-09-8  | 30 - 60%      | Skin Irrit. 2 (H315)<br>Eye Corr. 1 (H318) |

### 4. First aid measures

**Description of necessary 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>Eyes</b>       | In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.             |
| <b>Skin</b>       | In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse. |
| <b>Ingestion</b>  | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.  |

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

### **Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

## 5. Fire Fighting Measures

### **Suitable extinguishing equipment**

#### **Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

### **Specific hazards arising from the chemical**

#### **Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

### **Special protective equipment and precautions for fire fighters**

#### **Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

### **6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove. Do NOT spread spilled product with water.

## 7. Handling and storage

### **7.1. Precautions for safe handling**

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Avoid breathing vapors. Avoid breathing mist. Ensure adequate ventilation. Use appropriate protective equipment.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from acids. Store in a cool well ventilated area. Keep container closed when not in use.

#### **Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

### **Control parameters - exposure standards, biological monitoring**

#### **Exposure Limits**

| Substances      | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|-----------------|------------|-----------------|----------------|
| Sodium silicate | 1344-09-8  | Not applicable  | Not applicable |

### **Appropriate engineering controls**

#### **Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without

good cross ventilation.

### Personal protective equipment (PPE)

#### **Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

#### **Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

#### **Hand Protection**

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): (>= 0.4 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

#### **Skin Protection**

Full protective chemical resistant clothing.

#### **Eye Protection**

Chemical goggles; also wear a face shield if splashing hazard exists.

#### **Other Precautions**

Eyewash fountains and safety showers must be easily accessible.

#### **Environmental Exposure Controls**

Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Liquid

**Color**

Clear to hazy

**Odor:** Slightly soapy

**Odor Threshold:** No information available

#### Property

#### Values

Remarks/ - Method

**pH:**

11.2

**Freezing Point / Range**

-1 °C

**Melting Point / Range**

No data available

**Boiling Point / Range**

101 °C / 214 °F

**Flash Point**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

1.4

**Water Solubility**

Soluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

### 9.2. Other information

**VOC Content (%)**

No data available

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong acids. Amphoteric metals such as aluminum, magnesium, lead, tin, or zinc.

**10.6. Hazardous decomposition products**

Toxic fumes.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

**Information on routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances      | CAS Number | LD50 Oral        | LD50 Dermal                            | LC50 Inhalation   |
|-----------------|------------|------------------|--|---|
| Sodium silicate | 1344-09-8  | 3400 mg/kg (Rat) | > 5000 mg/kg (Rat) (similar substance) | > 2.06 mg/L (Rat) 4h (similar substance – Potassium silicate) |

**Immediate, delayed and chronic health effects from exposure****Inhalation**

May cause mild respiratory irritation.

**Eye Contact**

Causes severe eye irritation which may damage tissue.

**Skin Contact**

Causes skin irritation.

**Ingestion**

Irritation of the mouth, throat, and stomach.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.**Exposure Levels**

No data available

**Interactive effects**

Skin disorders.

**Data limitations**

No data available

| Substances      | CAS Number | Skin corrosion/irritation                 |
|-----------------|------------|---|
| Sodium silicate | 1344-09-8  | Causes moderate skin irritation. (Rabbit) |

| Substances      | CAS Number | Serious eye damage/irritation                                  |
|-----------------|------------|--|
| Sodium silicate | 1344-09-8  | Causes severe eye irritation which may damage tissue. (Rabbit) |

| Substances      | CAS Number | Skin Sensitization   |
|-----------------|------------|--|
| Sodium silicate | 1344-09-8  | Did not cause sensitization on laboratory animals (mouse) (similar substances) |

| Substances      | CAS Number | Respiratory Sensitization |
|-----------------|------------|---------------------------|
| Sodium silicate | 1344-09-8  | No information available  |

| Substances      | CAS Number | Mutagenic Effects  |
|-----------------|------------|--|
| Sodium silicate | 1344-09-8  | In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. |

| Substances | CAS Number | Carcinogenic Effects |
|------------|------------|----------------------|
|            |            |                      |

|                   |                   |  |
|-------------------|-------------------|--|
| Sodium silicate   | 1344-09-8         | No information available   |
| <b>Substances</b> | <b>CAS Number</b> | <b>Reproductive toxicity</b>   |
| Sodium silicate   | 1344-09-8         | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances) |
| <b>Substances</b> | <b>CAS Number</b> | <b>STOT - single exposure</b>  |
| Sodium silicate   | 1344-09-8         | No information available.  |
| <b>Substances</b> | <b>CAS Number</b> | <b>STOT - repeated exposure</b>  |
| Sodium silicate   | 1344-09-8         | No significant toxicity observed in animal studies at concentration requiring classification.                                      |
| <b>Substances</b> | <b>CAS Number</b> | <b>Aspiration hazard</b>   |
| Sodium silicate   | 1344-09-8         | Not applicable   |

## 12. Ecological Information

### Ecotoxicity

#### **Product Ecotoxicity Data**

No data available

#### **Substance Ecotoxicity Data**

| Substances      | CAS Number | Toxicity to Algae  | Toxicity to Fish  | Toxicity to Microorganisms                | Toxicity to Invertebrates            |
|-----------------|------------|--|---|---|--------------------------------------|
| Sodium silicate | 1344-09-8  | EC50 (72h) > 345 mg/L (growth rate)<br>(Scenedesmus subspicatus)<br>EC0 (72h) 35 mg/L (growth rate)<br>(Scenedesmus subspicatus) | LC50 (96h) 1108 mg/L (Danio rerio)<br>LC50 (96h) 260 – 310 mg/L (Oncorhynchus mykiss) | EC0 (0.5h) 3454 mg/L (Pseudomonas putida) | EC50 (48h) 1700 mg/L (Daphnia magna) |

### 12.2. Persistence and degradability

| Substances      | CAS Number | Persistence and Degradability  |
|-----------------|------------|--|
| Sodium silicate | 1344-09-8  | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

| Substances      | CAS Number | Log Pow                  |
|-----------------|------------|--------------------------|
| Sodium silicate | 1344-09-8  | No information available |

### 12.4. Mobility in soil

| Substances      | CAS Number | Mobility                 |
|-----------------|------------|--------------------------|
| Sodium silicate | 1344-09-8  | No information available |

### 12.6. Other adverse effects

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                   |                |
|-----------------------------------|----------------|
| <b>UN Number</b>                  | Not restricted |
| <b>UN proper shipping name</b>    | Not restricted |
| <b>Transport Hazard Class(es)</b> | Not applicable |
| <b>Packing Group:</b>             | Not applicable |
| <b>Environmental Hazards</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|  |  |
|--|--|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS   |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.  |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.  |

**Poisons Schedule number**

S5

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

**16. Other information****Date of preparation or review**

Revision Date: 14-Oct-2015

**Revision Note**

SDS sections updated: 2

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

H315 - Causes skin irritation

H318 - Causes serious eye damage

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### GASCON 469

Revision Date: 22-Sep-2015

Revision Number: 25

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** GASCON 469

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM000753

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

**Recommended Use** Cement Additive  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification** Not Classified

**Risk Phrases** None

**3. Composition/information on Ingredients**

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

**4. First aid measures**

**Description of necessary first aid measures**

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

**Eyes** In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

**5. Fire Fighting Measures**

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special Exposure Hazards**

Not applicable.

**Special protective equipment and precautions for fire fighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for Safe Handling**

**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store in a cool well ventilated area. Keep from excessive heat. Keep from freezing. Keep container closed when not in use. Store in non-rusting containers. Product has a shelf life of 12 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

|  |   |
|--|---|
| <b>Hand Protection</b>                 | Dust/mist respirator. (N95, P2/P3)                                    |
| <b>Skin Protection</b>                 | None known.   |
| <b>Eye Protection</b>                  | Normal work coveralls.  |
| <b>Other Precautions</b>               | Chemical goggles; also wear a face shield if splashing hazard exists. |
| <b>Environmental Exposure Controls</b> | None known.   |
|  | Do not allow material to contaminate ground water system              |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |          |                        |                          |
|------------------------|----------|------------------------|--------------------------|
| <b>Physical State:</b> | Liquid   | <b>Color:</b>          | Transparent              |
| <b>Odor:</b>           | Odorless | <b>Odor Threshold:</b> | No information available |

| Property                                      | Values                       |
|---|------------------------------|
| Remarks/ - Method                             |                              |
| <b>pH:</b>                                    | 10                           |
| <b>Freezing Point/Range</b>                   | No data available            |
| <b>Melting Point/Range</b>                    | No data available            |
| <b>Boiling Point/Range</b>                    | 100 °C / 212 °F              |
| <b>Flash Point</b>                            | No data available            |
| <b>Evaporation rate</b>                       | No data available            |
| <b>Vapor Pressure</b>                         | No data available            |
| <b>Vapor Density</b>                          | No data available            |
| <b>Specific Gravity</b>                       | 1.1                          |
| <b>Water Solubility</b>                       | Soluble in water (10g/100ml) |
| <b>Solubility in other solvents</b>           | No data available            |
| <b>Partition coefficient: n-octanol/water</b> | No data available            |
| <b>Autoignition Temperature</b>               | No data available            |
| <b>Decomposition Temperature</b>              | No data available            |
| <b>Viscosity</b>                              | No data available            |
| <b>Explosive Properties</b>                   | No information available     |
| <b>Oxidizing Properties</b>                   | No information available     |

### 9.2. Other information

|                        |    |
|------------------------|----|
| <b>VOC Content (%)</b> | 80 |
|------------------------|----|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers. Strong acids.

### 10.6. Hazardous Decomposition Products

None known.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

**Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause mild respiratory irritation.        |
| <b>Eye Contact</b>  | May cause mild eye irritation.                |
| <b>Skin Contact</b> | May cause mild skin irritation.               |
| <b>Ingestion</b>    | Irritation of the mouth, throat, and stomach. |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable        |

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

**Australian AICS Inventory** All components listed on inventory or are exempt.

**New Zealand Inventory of Chemicals** All components listed on inventory or are exempt.

**EINECS Inventory** This product, and all its components, complies with EINECS

**US TSCA Inventory** All components listed on inventory or are exempt.

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

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**Revision Date:** 22-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### HR-6L

Revision Date: 29-Jan-2015

Revision Number: 13

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** HR-6L

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM000901

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

**Recommended Use** Cement Retarder  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

None known

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification**

Not Classified

**Risk Phrases**

None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for Safe Handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Keep container closed when not in use.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)****Respiratory Protection**

Not normally necessary.

**Hand Protection**

Normal work gloves.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

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

**Physical State:** Liquid  
**Odor:** Molasses  
**Color:** Dark brown  
**Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 9.5                      |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 98 °C / > 210 °F PMCC  |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.21                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |
| <b>9.2. Other information</b>                 |                          |
| <b>VOC Content (%)</b>                        | No data available        |
| <b>Liquid Density</b>                         | 10.08 lbs/gal            |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Oxides of sulfur. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | May cause mild respiratory irritation. |
| <b>Eye Contact</b>  | May cause mild eye irritation.         |
| <b>Skin Contact</b> | None known.                            |
| <b>Ingestion</b>    | None known.                            |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.           |

| Substances   | CAS Number | Eye damage/irritation |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable.       |

| Substances   | CAS Number | Skin Sensitization |
|--|------------|--------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable     |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable            |

| Substances   | CAS Number | Mutagenic Effects |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

| Substances   | CAS Number | Carcinogenic Effects |
|--|------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable       |

| Substances   | CAS Number | Reproductive toxicity |
|--|------------|-----------------------|
| Contains no hazardous substances in concentrations above cut-off | NA         | Not applicable        |

|   |  |  |
|---|--|--|
| values according to the competent authority |  |  |
|---|--|--|

| Substances   | CAS Number | STOT - single exposure |
|--|------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable         |

| Substances   | CAS Number | STOT - repeated exposure |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable           |

| Substances   | CAS Number | Aspiration hazard |
|--|------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

**Safe handling and disposal methods**

This product is not regarded as hazardous waste. Dispose in accordance with local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

### 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

### 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>Canadian DSL Inventory</b>             | All components listed on inventory or are exempt.          |

**Poisons Schedule number**

None Allocated

### 16. Other information

**Date of preparation or review**

**Revision Date:** 29-Jan-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

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For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### HALAD® 344 CEMENT ADDITIVE

Revision Date: 07-Mar-2016

Revision Number: 34

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** HALAD® 344 CEMENT ADDITIVE

##### Other means of Identification

**Synonyms** None  
**Product Code:** HM000816

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

**Recommended Use** Fluid Loss Additive

**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
E-mail Address fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

**Hazard pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

All standard fire fighting media

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high

concentrations. Good housekeeping practices are required to minimize this potential.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for safe handling**

**Handling Precautions**

Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store in a cool, dry location. Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 60 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.  
Dust/mist respirator. (N95, P2/P3)

**Hand Protection** None known.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.



| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

**Inhalation** None known.  
**Eye Contact** Non-irritating to rabbit's eye  
**Skin Contact** Not irritating to skin in rabbits.  
**Ingestion** No adverse health effects are expected from swallowing.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

**12. Ecological Information**

**Ecotoxicity**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

Not readily biodegradable

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

Does not bioaccumulate.

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations**

**Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**Environmental regulations**

Not applicable

**14. Transport Information**

**Transportation Information**

|                                   |                |
|-----------------------------------|----------------|
| <b>UN Number</b>                  | Not restricted |
| <b>UN proper shipping name</b>    | Not restricted |
| <b>Transport Hazard Class(es)</b> | Not applicable |
| <b>Packing Group:</b>             | Not applicable |
| <b>Environmental Hazards</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information**

**Safety, health and environmental regulations specific for the product**

**International Inventories**

|  |  |
|--|--|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product does not comply with EINECS   |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.  |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.  |

**Poisons Schedule number**

---

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review**

**Revision Date:** 07-Mar-2016

**Revision Note**

SDS sections updated: 2

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

www.ChemADVISOR.com/  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### CFR-8L

Revision Date: 30-Sep-2015

Revision Number: 17

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** CFR-8L

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM005627

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

**Recommended Use** Cement Dispersant  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

*For the full text of the H-phrases mentioned in this Section, see Section 16*

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for Safe Handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Keep container closed when not in use.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment (PPE)**

**Respiratory Protection** Not normally necessary.

**Hand Protection** Nitrile gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

**Environmental Exposure Controls** Do not allow material to contaminate ground water system

## 9. Physical and Chemical Properties

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

**Physical State:** Liquid      **Color:** Brown-black  
**Odor:** Characteristic      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 9 - 11.3                 |
| <b>Freezing Point/Range</b>                   | -7 °C                    |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | 100 °C / 212 °F          |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | < 18 mmHg                |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.17 - 1.2               |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

**9.2. Other information**

**VOC Content (%)** No data available

|                                     |
|-------------------------------------|
| <b>10. Stability and Reactivity</b> |
|-------------------------------------|

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

Strong oxidizers.

**10.6. Hazardous Decomposition Products**

Oxides of sulfur.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

No significant hazards expected.

**Numerical measures of toxicity****Toxicology data for the components**

| <b>Substances</b>  | <b>CAS Number</b> | <b>LD50 Oral</b>  | <b>LD50 Dermal</b> | <b>LC50 Inhalation</b> |
|--|-------------------|-------------------|--------------------|------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent | NA                | No data available | No data available  | No data available      |

|           |  |  |  |  |
|-----------|--|--|--|--|
| authority |  |  |  |  |
|-----------|--|--|--|--|

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause mild respiratory irritation.                    |
| <b>Eye Contact</b>  | May cause mild eye irritation.                            |
| <b>Skin Contact</b> | May cause mild skin irritation.                           |
| <b>Ingestion</b>    | May cause abdominal pain, vomiting, nausea, and diarrhea. |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

## 12. Ecological Information

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

No information available

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

## 14. Transport Information

**Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

## 15. Regulatory Information

**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

Product contains one or more components not listed on inventory.

**New Zealand Inventory of****Chemicals**

Product contains one or more components not listed on inventory.

**EINECS Inventory**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

Product contains one or more components not listed on the inventory.

**Canadian DSL Inventory**

Product contains one or more components not listed on the inventory.

**Poisons Schedule number**

None Allocated

## 16. Other information

**Date of preparation or review**

Revision Date: 30-Sep-2015

**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### CFR-3L

Revision Date: 16-Sep-2016

Revision Number: 20

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** CFR-3L

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM000211

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

**Recommended Use** Friction Reducer  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road, Jandakot, WA 6164  
Australia  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951  
Global Incident Response Access Code: 334305  
Contract Number: 14012

##### Australian Poisons Information Centre

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### Hazard Pictograms

**Signal Word** Not Hazardous

**Hazard Statements:** Not Classified

**Precautionary Statements**

**Prevention** None  
**Response** None  
**Storage** None  
**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

None known

For the full text of the H-phrases mentioned in this Section, see Section 16

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment.

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

### 7.1. Precautions for safe handling

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

#### **Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

### Control parameters - exposure standards, biological monitoring

#### **Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

### Appropriate engineering controls

**Engineering Controls** Use in a well ventilated area.

### Personal protective equipment (PPE)

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Chemical goggles; also wear a face shield if splashing hazard exists.

**Other Precautions** None known.

**Environmental Exposure Controls** No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Liquid

**Color:** Red

**Odor:** Musty

**Odor Threshold:** No information available

Property

Values

Remarks/ - Method

|   |                          |
|---|--------------------------|
| <b>pH:</b>                                    | 7                        |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | No data available        |
| <b>Flash Point</b>                            | > 98 °C / > 210 °F PMCC  |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 1.17                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
| <b>Liquid Density</b>  | 9.75 lbs/gal      |

|                                     |
|-------------------------------------|
| <b>10. Stability and Reactivity</b> |
|-------------------------------------|

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Oxides of sulfur. Carbon monoxide and carbon dioxide.

|                                      |
|--------------------------------------|
| <b>11. Toxicological Information</b> |
|--------------------------------------|

Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

Symptoms related to exposure**Most Important Symptoms/Effects**

No significant hazards expected.

Numerical measures of toxicityToxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

Immediate, delayed and chronic health effects from exposure

|                    |                                |
|--------------------|--------------------------------|
| <b>Inhalation</b>  | None known.                    |
| <b>Eye Contact</b> | Non-irritating to rabbit's eye |

**Skin Contact** Not irritating to skin in rabbits.  
**Ingestion** None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

## 12. Ecological Information

**Ecotoxicity**

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### 13. Disposal Considerations

**Safe handling and disposal methods**

Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

### 14. Transport Information

**Transportation Information**

**Australia ADG**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**IMDG/IMO**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**IATA/ICAO**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number</b>                   | Not restricted |
| <b>UN proper shipping name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

### 15. Regulatory Information

**Safety, health and environmental regulations specific for the product**

**International Inventories**

**Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements**

|   |                |
|---|----------------|
| Montreal Protocol - Ozone Depleting Substances:       | Does not apply |
| Stockholm Convention - Persistent Organic Pollutants: | Does not apply |
| Rotterdam Convention - Prior Informed Consent:        | Does not apply |
| Basel Convention - Hazardous Waste:                   | Does not apply |

**16. Other information****Date of preparation or review**

Revision Date: 16-Sep-2016

**Revision Note**

SDS sections updated: 2

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NOEC – No Observed Effect Concentration  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

www.ChemADVISOR.com/  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### NF-6

Revision Date: 16-Aug-2016

Revision Number: 28

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** NF-6

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM001971

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

**Recommended Use** Defoamer  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road, Jandakot, WA 6164  
Australia  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951  
Global Incident Response Access Code: 334305  
Contract Number: 14012

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements:** Not Classified

**Precautionary Statements**

**Prevention** None  
**Response** None  
**Storage** None  
**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

*For the full text of the H-phrases mentioned in this Section, see Section 16*

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Carbon dioxide, dry chemical, foam.

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

None known.

**Specific hazards arising from the chemical**

**Special exposure hazards in a fire**

Use water spray to cool fire exposed surfaces. Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Keep container closed when not in use.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances   | CAS Number | Australia NOHSC | ACGIH TLV-TWA  |
|--|------------|-----------------|----------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.  
Organic vapor respirator with a dust/mist filter. (A2P2/P3)

**Hand Protection**

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Polyvinylchloride gloves. (>= 0.7 mm thickness)  
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter

|  |   |
|--|---|
|  | than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types. |
| <b>Skin Protection</b>                 | Normal work coveralls.  |
| <b>Eye Protection</b>                  | Chemical goggles; also wear a face shield if splashing hazard exists.   |
| <b>Other Precautions</b>               | None known.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |        |                        |                          |
|------------------------|--------|------------------------|--------------------------|
| <b>Physical State:</b> | Liquid | <b>Color</b>           | Yellow                   |
| <b>Odor:</b>           | Mild   | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | No data available        |
| <b>Freezing Point / Range</b>                 | No data available        |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 182 °C / 360 °F          |
| <b>Flash Point</b>                            | > 170 °C / > 340 °F      |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 0.93                     |
| <b>Water Solubility</b>                       | Dispersible              |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 385 °C / 725 °F          |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
| <b>Liquid Density</b>  | 7.70 lbs/gal      |

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

None anticipated

### 10.5. Incompatible materials

Strong oxidizers.

### 10.6. Hazardous decomposition products

Hydrocarbons. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

**Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

#### Immediate, delayed and chronic health effects from exposure

##### **Product Information**

Under certain conditions of use, some of the product ingredients may cause the following:

##### **Inhalation**

May cause mild respiratory irritation.

##### **Eye Contact**

None known.

##### **Skin Contact**

None known.

##### **Ingestion**

May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

#### Exposure Levels

No data available

#### Interactive effects

None known.

#### Data limitations

No data available

## 12. Ecological Information

#### Ecotoxicity

##### **Product Ecotoxicity Data**

##### **Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

#### 12.2. Persistence and degradability

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

### 12.3. Bioaccumulative potential

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.4. Mobility in soil

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

### 12.6. Other adverse effects

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

### Environmental regulations

Not applicable

## 14. Transport Information

### Transportation Information

#### Australia ADG

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

#### IMDG/IMO

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

#### IATA/ICAO

|                             |                |
|-----------------------------|----------------|
| UN Number                   | Not restricted |
| UN proper shipping name:    | Not restricted |
| Transport Hazard Class(es): | Not applicable |
| Packing Group:              | Not applicable |
| Environmental Hazards:      | Not applicable |

### Special precautions during transport

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product, and all its components, complies with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

None Allocated

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stockholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

**16. Other information****Date of preparation or review****Revision Date:** 16-Aug-2016**Revision Note**

SDS sections updated: 2

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID  
Cosmetic Ingredient Review

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### D-AIR 3000L

Revision Date: 17-Feb-2015

Revision Number: 16

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** D-AIR 3000L

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM003191

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

**Recommended Use** Defoamer  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

61 (08) 9455 8300

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word**

Not Hazardous

**Hazard Statements**

Not Classified

**Precautionary Statements****Prevention** None**Response** None**Storage** None**Disposal** None**Contains****Substances**

Alkenes

**CAS Number**

Proprietary

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

None known

**Australia Classification***For the full text of the R/H-phrases mentioned in this Section, see Section 16***Classification**

Not Classified

**Risk Phrases**

None

**3. Composition/information on Ingredients**

| Substances | CAS Number  | PERCENT (w/w) | GHS Classification - Australia |
|------------|-------------|---------------|--------------------------------|
| Alkenes    | Proprietary | 60 - 100%     |                                |

**4. First aid measures****Description of necessary first aid measures****Inhalation**

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

**Eyes**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin**

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

**Ingestion**

Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

**Symptoms caused by exposure**

May cause lung damage if swallowed.

**Medical Attention and Special Treatment****Notes to Physician**

Treat symptomatically

**5. Fire Fighting Measures****Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special Exposure Hazards**

Decomposition in fire may produce toxic gases.

**Special protective equipment and precautions for fire fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

|                                       |
|---------------------------------------|
| <b>6. Accidental release measures</b> |
|---------------------------------------|

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

Use appropriate protective equipment.

**6.2. Environmental precautions**

None known.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

|                                |
|--------------------------------|
| <b>7. Handling and storage</b> |
|--------------------------------|

**7.1. Precautions for Safe Handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 24 months.

**Other Guidelines**

No information available

|   |
|---|
| <b>8. Exposure Controls/Personal Protection</b> |
|---|

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances | CAS Number  | Australia NOHSC | ACGIH TLV-TWA  |
|------------|-------------|-----------------|----------------|
| Alkenes    | Proprietary | Not applicable  | Not applicable |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area.

**Personal protective equipment (PPE)****Respiratory Protection**

Not normally necessary.

**Hand Protection**

None known.

**Skin Protection**

Normal work coveralls.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

**Environmental Exposure Controls**

No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Liquid      **Color:** Opaque  
**Odor:** Hydrocarbon      **Odor Threshold:** No information available

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 5.5-7.9                  |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 121 °C PMCC            |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | 0.92                     |
| <b>Water Solubility</b>                       | Insoluble in water       |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

**VOC Content (%)** No data available

## 10. Stability and Reactivity

### 10.1. Reactivity

Not applicable

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

None anticipated

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### Most Important Symptoms/Effects

May cause lung damage if swallowed.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances | CAS Number  | LD50 Oral                              | LD50 Dermal                            | LC50 Inhalation  |
|------------|-------------|--|--|------------------|
| Alkenes    | Proprietary | > 5000 mg/kg (Rat) (similar substance) | > 2000 mg/kg (Rat) (similar substance) | > 2.1 mg/L (Rat) |

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.   |
| <b>Eye Contact</b>  | May cause mild eye irritation.  |
| <b>Skin Contact</b> | May cause mild skin irritation.   |
| <b>Ingestion</b>    | May cause abdominal pain, vomiting, nausea, and diarrhea. Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal. |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

## 12. Ecological Information

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances | CAS Number  | Toxicity to Algae   | Toxicity to Fish   | Toxicity to Microorganisms | Toxicity to Invertebrates                                     |
|------------|-------------|---|--|----------------------------|---|
| Alkenes    | Proprietary | EC50(72h): > 1000 mg/L<br>(Selenastrum capicomutum) (similar substance) | LL50(96h): > 1000 mg/L<br>(Oncorhynchus mykiss) (similar substance)<br>LL50(96h): > 10000 mg/L<br>(Scophthalmus maximus) (similar substance) | No information available   | EC50(48h): > 1000 mg/L<br>(Daphnia magna) (similar substance) |

**12.2. Persistence and degradability**

| Substances | CAS Number  | Persistence and Degradability          |
|------------|-------------|--|
| Alkenes    | Proprietary | Readily biodegradable (77 - 81% @ 28d) |

**12.3. Bioaccumulative potential**

| Substances | CAS Number  | Log Pow |
|------------|-------------|---------|
| Alkenes    | Proprietary | > 7     |

**12.4. Mobility in soil**

No information available

**12.6. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**13. Disposal Considerations****Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations.

**Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

**14. Transport Information****Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

**15. Regulatory Information****Safety, health and environmental regulations specific for the product****International Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>Canadian DSL Inventory</b>             | All components listed on inventory or are exempt.          |

**Poisons Schedule number**

None Allocated

**16. Other information****Date of preparation or review**

Revision Date: 17-Feb-2015

**Revision Note**

Update to Format SECTION: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

Not applicable

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### SA-1015

Revision Date: 30-Sep-2015

Revision Number: 10

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** SA-1015

##### Other means of Identification

**Synonyms:** None  
**Product Code:** HM007221

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

**Recommended Use** Suspending Agent  
**Uses Advised Against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-Mail address:** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

Not classified

##### Label elements, including precautionary statements

##### **Hazard Pictograms**

**Signal Word** Not Hazardous

**Hazard Statements** Not Classified

**Precautionary Statements**

**Prevention** None

**Response** None

**Storage** None

**Disposal** None

**Contains**

**Substances**

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

**CAS Number**

NA

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

Dust can form an explosive mixture in air

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**Australia Classification**

For the full text of the H-phrases mentioned in this Section, see Section 16

**Classification** Not Classified

**Risk Phrases** None

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia |
|--|------------|---------------|--------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | 60 - 100%     | Not Applicable                 |

### 4. First aid measures

**Description of necessary first aid measures**

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

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

**Symptoms caused by exposure**

No significant hazards expected.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

### **Specific hazards arising from the chemical**

#### **Special Exposure Hazards**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

#### **Special protective equipment and precautions for fire fighters**

##### **Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## **6. Accidental release measures**

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

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

### **6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Scoop up and remove. Do NOT spread spilled product with water.

## **7. Handling and storage**

### **7.1. Precautions for Safe Handling**

#### **Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Avoid dust accumulations. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment. Slippery when wet.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

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

#### **Storage Information**

Store away from oxidizers. Keep container closed when not in use. Store in a dry location.

#### **Other Guidelines**

No information available

## **8. Exposure Controls/Personal Protection**

### **Control parameters - exposure standards, biological monitoring**

#### **Exposure Limits**

| <b>Substances</b>  | <b>CAS Number</b> | <b>Australia NOHSC</b> | <b>ACGIH TLV-TWA</b> |
|--|-------------------|------------------------|----------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA                | Not applicable         | Not applicable       |

### **Appropriate engineering controls**

#### **Engineering Controls**

Use in a well ventilated area.

### **Personal protective equipment (PPE)**

#### **Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

#### **Hand Protection**

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

#### **Skin Protection**

Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket,

|  |   |
|--|---|
| <b>Eye Protection</b>                  | pants or coverall, as appropriate, to prevent skin contact. |
| <b>Other Precautions</b>               | Wear safety glasses or goggles to protect against exposure. |
| <b>Environmental Exposure Controls</b> | None known.   |
|  | Do not allow material to contaminate ground water system    |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |        |                        |                          |
|------------------------|--------|------------------------|--------------------------|
| <b>Physical State:</b> | Powder | <b>Color:</b>          | White to tan             |
| <b>Odor:</b>           | Slight | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 7 (1%)                   |
| <b>Freezing Point/Range</b>                   | No data available        |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | No data available        |
| <b>Flash Point</b>                            | > 93 °C / > 200 °F PMCC  |
| <b>Evaporation rate</b>                       | No data available        |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | No data available        |
| <b>Specific Gravity</b>                       | No data available        |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               | 204 °C / 400 °F          |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical Stability

Stable

### 10.3. Possibility of Hazardous Reactions

Will Not Occur

### 10.4. Conditions to Avoid

Keep away from heat, sparks and flame.

### 10.5. Incompatible Materials

Strong oxidizers.

### 10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye and skin contact.

### Symptoms related to exposure

**Most Important Symptoms/Effects**

No significant hazards expected.

### Numerical measures of toxicity

### Toxicology data for the components

| Substances   | CAS Number | LD50 Oral         | LD50 Dermal       | LC50 Inhalation   |
|--|------------|-------------------|-------------------|-------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No data available | No data available | No data available |

**Immediate, delayed and chronic health effects from exposure**

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | May cause mild respiratory irritation.                          |
| <b>Eye Contact</b>  | May cause mechanical irritation to eye.                         |
| <b>Skin Contact</b> | Prolonged or repeated contact may cause slight skin irritation. |
| <b>Ingestion</b>    | None known.   |

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**Exposure Levels**

No data available

**Interactive effects**

None known.

**Data limitations**

No data available

## 12. Ecological Information

**Ecotoxicity****Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances   | CAS Number | Toxicity to Algae        | Toxicity to Fish         | Toxicity to Microorganisms | Toxicity to Invertebrates |
|--|------------|--------------------------|--------------------------|----------------------------|---------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available | No information available | No information available   | No information available  |

**12.2. Persistence and degradability**

| Substances   | CAS Number | Persistence and Degradability |
|--|------------|-------------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available      |

**12.3. Bioaccumulative potential**

| Substances   | CAS Number | Log Pow                  |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

#### **12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Contains no hazardous substances in concentrations above cut-off values according to the competent authority | NA         | No information available |

#### **12.6. Other adverse effects**

##### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### **13. Disposal Considerations**

#### **Safe handling and disposal methods**

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

#### **Disposal of any contaminated packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

#### **Environmental regulations**

Not applicable

### **14. Transport Information**

#### **Transportation Information**

|                                    |                |
|------------------------------------|----------------|
| <b>UN Number:</b>                  | Not restricted |
| <b>UN Proper Shipping Name:</b>    | Not restricted |
| <b>Transport Hazard Class(es):</b> | Not applicable |
| <b>Packing Group:</b>              | Not applicable |
| <b>Environmental Hazards:</b>      | Not applicable |

#### **Special precautions during transport**

None

#### **HazChem Code**

None Allocated

### **15. Regulatory Information**

#### **Safety, health and environmental regulations specific for the product**

##### **International Inventories**

##### **Australian AICS Inventory**

All components listed on inventory or are exempt.

##### **New Zealand Inventory of Chemicals**

All components listed on inventory or are exempt.

##### **EINECS Inventory**

This product, and all its components, complies with EINECS

##### **US TSCA Inventory**

All components listed on inventory or are exempt.

##### **Canadian DSL Inventory**

All components listed on inventory or are exempt.

#### **Poisons Schedule number**

None Allocated

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**16. Other information**

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**Date of preparation or review****Revision Date:** 30-Sep-2015**Revision Note**

SDS sections updated: 2

**Full text of R-phrases referred to under Sections 2 and 3**

None

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

None

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m<sup>3</sup> - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

**Key literature references and sources for data**[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

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**End of Safety Data Sheet**

## SAFETY DATA SHEET

### ALDACIDE® G ANTIMICROBIAL

Revision Date: 09-May-2016

Revision Number: 35

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** ALDACIDE® G ANTIMICROBIAL

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003462

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

**Recommended Use** Biocide  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia  
  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951

##### **Australian Poisons Information Centre**

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                    |
|--|--------------------|
| Acute Oral Toxicity                                | Category 4 - H302  |
| Acute inhalation toxicity - vapor                  | Category 3 - H331  |
| Skin Corrosion/Irritation                          | Category 1 - H314  |
| Serious Eye Damage/Irritation                      | Category 1 - H318  |
| Respiratory Sensitization                          | Category 1 - H334  |
| Skin Sensitization                                 | Category 1 - H317  |
| Reproductive Toxicity                              | Category 1B - H360 |
| Specific Target Organ Toxicity - (Single Exposure) | Category 3 - H335  |

|                          |                   |
|--------------------------|-------------------|
| Acute Aquatic Toxicity   | Category 1 - H400 |
| Chronic Aquatic Toxicity | Category 3 - H412 |

**Label elements, including precautionary statements****Hazard pictograms****Signal Word**

Danger

**Hazard Statements:**

H302 - Harmful if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H331 - Toxic if inhaled  
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H335 - May cause respiratory irritation  
 H360 - May damage fertility or the unborn child  
 H400 - Very toxic to aquatic life  
 H412 - Harmful to aquatic life with long lasting effects

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe 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  
 P273 - Avoid release to the environment  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P281 - Use personal protective equipment as required  
 P285 - In case of inadequate ventilation wear respiratory protection

**Response**

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 P330 - Rinse mouth  
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
 P363 - Wash contaminated clothing before reuse  
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 P310 - Immediately call a POISON CENTER or doctor/physician  
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 P391 - Collect spillage

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
 P405 - Store locked up

**Disposal**

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains**

**Substances**  
 Glutaraldehyde  
 Methanol

**CAS Number**  
 111-30-8  
 67-56-1

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).  
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

### 3. Composition/information on Ingredients

| Substances     | CAS Number | PERCENT (w/w) | GHS Classification - Australia  |
|----------------|------------|---------------|---|
| Glutaraldehyde | 111-30-8   | 10 - 30%      | Acute Tox. 3 (H301)<br>Acute Tox. 2 (H330)<br>Skin Corr. 1B (H314)<br>Eye Corr. 1 (H318)<br>Resp. Sens. 1 (H334)<br>Skin Sens. 1 (H317)<br>STOT SE 3 (H335)<br>Aquatic Acute 1 (H400)<br>Aquatic Chronic 2 (H411) |
| Methanol       | 67-56-1    | 0.1 - 1%      | Acute Tox. 3 (H301)<br>Acute Tox. 3 (H311)<br>Acute Tox. 3 (H331)<br>Repr. 1B (H360)<br>STOT SE 1 (H370)<br>Flam. Liq. 2 (H225)   |

### 4. First aid measures

**Description of necessary 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>Eyes</b>       | Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.   |
| <b>Skin</b>       | In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately. |
| <b>Ingestion</b>  | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.   |

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

**Medical Attention and Special Treatment**

**Notes to Physician** Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**Special protective equipment and precautions for fire fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

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

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Evacuate all persons from the area. Use only competent persons for cleanup.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

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

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

**7.1. Precautions for safe handling****Handling Precautions**

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid breathing mist. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from acids. Store away from alkalis. Store in a well ventilated area. Keep container closed when not in use. Store locked up. Product has a shelf life of 36 months.

**Other Guidelines**

No information available

## 8. Exposure Controls/Personal Protection

**Control parameters - exposure standards, biological monitoring****Exposure Limits**

| Substances     | CAS Number | Australia NOHSC  | ACGIH TLV-TWA                 |
|----------------|------------|--|-------------------------------|
| Glutaraldehyde | 111-30-8   | 0.1 ppm  | 0.05 ppm                      |
| Methanol       | 67-56-1    | TWA: 200 ppm<br>TWA: 262 mg/m <sup>3</sup><br>STEL: 250 ppm<br>STEL: 328 mg/m <sup>3</sup> | TWA: 200 ppm<br>STEL: 250 ppm |

**Appropriate engineering controls****Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation. If vapors are strong enough to be irritating to the nose or eyes, the TLV is probably being exceeded and special ventilation or respiratory protection maybe required.

**Personal protective equipment (PPE)****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

|  |   |
|--|---|
| <b>Hand Protection</b>                 | Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.                        |
| <b>Skin Protection</b>                 | Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact. |
| <b>Eye Protection</b>                  | Chemical goggles; also wear a face shield if splashing hazard exists.   |
| <b>Other Precautions</b>               | Eyewash fountains and safety showers must be easily accessible.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                        |        |                        |                          |
|------------------------|--------|------------------------|--------------------------|
| <b>Physical State:</b> | Liquid | <b>Color</b>           | Clear light yellow       |
| <b>Odor:</b>           | Sharp  | <b>Odor Threshold:</b> | No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| <u>Remarks/ - Method</u>                      |                          |
| <b>pH:</b>                                    | 3.1-4.5                  |
| <b>Freezing Point / Range</b>                 | (-5) - (-10) °C          |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 100.5 °C / 213 °F        |
| <b>Flash Point</b>                            | No data available        |
| <b>Evaporation rate</b>                       | 0.9                      |
| <b>Vapor Pressure</b>                         | 0.2 mmHg                 |
| <b>Vapor Density</b>                          | 0.8                      |
| <b>Specific Gravity</b>                       | 1.064                    |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | -0.333                   |
| <b>Autoignition Temperature</b>               | > 275 °C / > 527 °F      |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

Keep away from heat, sparks and flame.

### 10.5. Incompatible materials

Strong acids. Strong alkalis.

### 10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### Information on routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation; Ingestion.

### Symptoms related to exposure

### Most Important Symptoms/Effects

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May

cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

### Numerical measures of toxicity

#### Toxicology data for the components

| Substances     | CAS Number | LD50 Oral   | LD50 Dermal                                    | LC50 Inhalation            |
|----------------|------------|---|--|----------------------------|
| Glutaraldehyde | 111-30-8   | 50 mg/kg (Guinea Pig)                               | 560 µL/kg (Rabbit)                             | 0.28-0.5 mg/L (Rat) 4h     |
| Methanol       | 67-56-1    | 300 mg/kg-bw (human)<br>< 790 to 13,000 mg/kg (rat) | 1000 mg/kg-bw (human)<br>17,100 mg/kg (rabbit) | 10 mg/L (human, vapor, 4h) |

#### Immediate, delayed and chronic health effects from exposure

|                     |   |
|---------------------|---|
| <b>Inhalation</b>   | Toxic if inhaled. May cause allergic respiratory reaction. Causes severe respiratory irritation. Inhalation of vapors may result in skin sensitization. |
| <b>Eye Contact</b>  | Causes serious eye damage.  |
| <b>Skin Contact</b> | Causes severe burns. May cause an allergic skin reaction.   |
| <b>Ingestion</b>    | Causes burns of the mouth, throat and stomach. Harmful if swallowed.  |

#### Exposure Levels

No data available

#### Interactive effects

Skin disorders. Lung disorders. Liver disorders.

#### Data limitations

No data available

| Substances     | CAS Number | Skin corrosion/irritation                                       |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | Causes severe skin irritation with tissue destruction. (Rabbit) |
| Methanol       | 67-56-1    | Non-irritating to the skin (Rabbit)                             |

| Substances     | CAS Number | Serious eye damage/irritation                                  |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Causes severe eye irritation which may damage tissue. (Rabbit) |
| Methanol       | 67-56-1    | Non-irritating to the eye (Rabbit)                             |

| Substances     | CAS Number | Skin Sensitization   |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Skin sensitizer in guinea pig.                                 |
| Methanol       | 67-56-1    | Did not cause sensitization on laboratory animals (guinea pig) |

| Substances     | CAS Number | Respiratory Sensitization             |
|----------------|------------|---------------------------------------|
| Glutaraldehyde | 111-30-8   | May cause sensitization by inhalation |
| Methanol       | 67-56-1    | No information available              |

| Substances     | CAS Number | Mutagenic Effects   |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | In vivo tests did not show mutagenic effects.   |
| Methanol       | 67-56-1    | The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic. |

| Substances     | CAS Number | Carcinogenic Effects                                    |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | Did not show carcinogenic effects in animal experiments |
| Methanol       | 67-56-1    | No data of sufficient quality are available.            |

| Substances     | CAS Number | Reproductive toxicity  |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Not a confirmed teratogen or embryotoxin.                                  |
| Methanol       | 67-56-1    | Experiments have shown reproductive toxicity effects on laboratory animals |

| Substances     | CAS Number | STOT - single exposure  |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | No information available  |
| Methanol       | 67-56-1    | May cause disorder and damage to the Central Nervous System (CNS) |

| Substances | CAS Number | STOT - repeated exposure |
|------------|------------|--------------------------|
|------------|------------|--------------------------|

|                |          |   |
|----------------|----------|---|
| Glutaraldehyde | 111-30-8 | May cause disorder and damage to the (Kidney) |
| Methanol       | 67-56-1  | No data of sufficient quality are available.  |

| Substances     | CAS Number | Aspiration hazard |
|----------------|------------|-------------------|
| Glutaraldehyde | 111-30-8   | Not applicable    |
| Methanol       | 67-56-1    | Not applicable    |

## 12. Ecological Information

### Ecotoxicity

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

| Substances     | CAS Number | Toxicity to Algae   | Toxicity to Fish  | Toxicity to Microorganisms                   | Toxicity to Invertebrates  |
|----------------|------------|---|---|--|--|
| Glutaraldehyde | 111-30-8   | EC50 (72h) 0.61 mg/L<br>(Desmodesmus subspicatus)   | LC50 (96h) 10 mg/L<br>(Lepomis macrochirus)<br>NOEC (97d) 1.6 mg/L<br>(Oncorhynchus mykiss)<br>LC50 (96h) 3.5 mg/L<br>(Oncorhynchus mykiss) | EC50 (17h) 6.65 mg/L<br>(Pseudomonas putida) | EC50 (48h) 0.35 mg/L<br>(Daphnia magna)<br>EC50 (48h) 0.7 mg/L<br>(Acartia tonsa)<br>NOEC (21d) 0.13 mg/L<br>(Daphnia magna) |
| Methanol       | 67-56-1    | EC50 (96 h) =22000 mg/L<br>(Pseudokirchnerella subcapitata)<br>NOEC (8 d) =8000 mg/L<br>(Scenedesmus quadricauda) | LC50 (96 h) =15400 mg/L<br>(Lepomis macrochirus)<br>EC50 (200 h) =14536 mg/L<br>(Oryzias latipes)   | IC50 (3h) > 1000 mg/L<br>(activated sludge)  | EC50 (96 h) =18260 mg/L<br>(Daphnia magna)<br>NOEC (21 d) =208 mg/L<br>(Daphnia magna)                                       |

### 12.2. Persistence and degradability

Readily biodegradable

| Substances     | CAS Number | Persistence and Degradability     |
|----------------|------------|-----------------------------------|
| Glutaraldehyde | 111-30-8   | Readily biodegradable (75% @ 28d) |
| Methanol       | 67-56-1    | (95-97% @ 20d)                    |

### 12.3. Bioaccumulative potential

Does not bioaccumulate.

| Substances     | CAS Number | Log Pow   |
|----------------|------------|---|
| Glutaraldehyde | 111-30-8   | -0.36   |
| Methanol       | 67-56-1    | -0.77<br>BCF = 1.0 – 4.5 (Cyprinus carpio)<br>BCF < 10 (Leuciscus idus melanotus) |

### 12.4. Mobility in soil

| Substances     | CAS Number | Mobility   |
|----------------|------------|--|
| Glutaraldehyde | 111-30-8   | Potential for mobility in soil is high (Koc between 50 and 150). Given its very low Henry's constant (3.3E-08 atm*m3/mole; 25 °C Measured), volatilization from natural bodies of water or moist soil is not expected to be an important fate process. |
| Methanol       | 67-56-1    | No information available   |

### 12.6. Other adverse effects

#### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 13. Disposal Considerations

### Safe handling and disposal methods

Disposal should be made in accordance with federal, state, and local regulations.

### Disposal of any contaminated packaging

Follow all applicable national or local regulations.

**Environmental regulations**

Not applicable

|                                  |
|----------------------------------|
| <b>14. Transport Information</b> |
|----------------------------------|

**Transportation Information**

|                                    |   |
|------------------------------------|---|
| <b>UN Number</b>                   | UN3265  |
| <b>UN proper shipping name:</b>    | Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde) |
| <b>Transport Hazard Class(es):</b> | 8   |
| <b>Packing Group:</b>              | III   |
| <b>Environmental Hazards:</b>      | Marine Pollutant  |

**Special precautions during transport**

None

**HazChem Code**

None Allocated

|                                   |
|-----------------------------------|
| <b>15. Regulatory Information</b> |
|-----------------------------------|

**Safety, health and environmental regulations specific for the product****International Inventories**

|  |   |
|--|---|
| <b>Australian AICS Inventory</b>                                   | All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.  |
| <b>New Zealand Inventory of Chemicals</b>                          | All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate. |
| <b>EINECS (European Inventory of Existing Chemical Substances)</b> | This product, and all its components, complies with EINECS  |
| <b>US TSCA Inventory</b>   | All components listed on inventory or are exempt.   |
| <b>Canadian Domestic Substances List (DSL)</b>                     | All components listed on inventory or are exempt.   |

**Poisons Schedule number**

S6

**International Agreements**

|   |                |
|---|----------------|
| <b>Montreal Protocol - Ozone Depleting Substances:</b>      | Does not apply |
| <b>Stolkhom Convention - Persistent Organic Pollutants:</b> | Does not apply |
| <b>Rotterdam Convention - Prior Informed Consent:</b>       | Does not apply |
| <b>Basel Convention - Hazardous Waste:</b>                  | Does not apply |

|                              |
|------------------------------|
| <b>16. Other information</b> |
|------------------------------|

**Date of preparation or review**

**Revision Date:** 09-May-2016

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

H301 - Toxic if swallowed  
 H302 - Harmful if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H330 - Fatal if inhaled  
 H331 - Toxic if inhaled

---

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

H400 - Very toxic to aquatic life

H411 - Toxic to aquatic life with long lasting effects

H412 - Harmful to aquatic life with long lasting effects

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

### BARACOR® 100

Revision Date: 14-Jul-2016

Revision Number: 53

#### 1. Product Identifier & Identity for the Chemical

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### 1.1. Product Identifier

**Product Name** BARACOR® 100

##### Other means of Identification

**Synonyms** None  
**Hazardous Material Number:** HM003391

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

**Recommended Use** Corrosion Inhibitor  
**Uses advised against** No information available

##### Supplier's name, address and phone number

**Manufacturer/Supplier** Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road, Jandakot, WA 6164  
Australia  
ACN Number: 009 000 775  
Telephone Number: + 61 1 800 686 951  
Fax Number: 61 (08) 9455 5300  
**E-mail Address** fdunexchem@halliburton.com

##### Emergency phone number

+ 61 1 800 686 951  
Global Incident Response Access Code: 334305  
Contract Number: 14012

##### Australian Poisons Information Centre

24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

#### 2. Hazard Identification

**Statement of Hazardous Nature** Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

##### Classification of the hazardous chemical

|  |                    |
|--|--------------------|
| Acute Oral Toxicity                                | Category 4 - H302  |
| Skin Corrosion/Irritation                          | Category 2 - H315  |
| Serious Eye Damage/Irritation                      | Category 1 - H318  |
| Skin Sensitization                                 | Category 1 - H317  |
| Carcinogenicity                                    | Category 2 - H351  |
| Reproductive Toxicity                              | Category 1B - H360 |
| Specific Target Organ Toxicity - (Single Exposure) | Category 1 - H370  |
| Flammable liquids.                                 | Category 3 - H226  |

**Label elements, including precautionary statements****Hazard Pictograms****Signal Word**

DANGER

**Hazard Statements:**

H226 - Flammable liquid and vapor  
 H302 - Harmful if swallowed  
 H315 - Causes skin irritation  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H351 - Suspected of causing cancer  
 H360 - May damage fertility or the unborn child  
 H370 - Causes damage to organs

**Precautionary Statements****Prevention**

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 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  
 P260 - Do not breathe 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  
 P272 - Contaminated work clothing should not be allowed out of the workplace  
 P280 - Wear protective gloves/eye protection/face protection  
 P281 - Use personal protective equipment as required

**Response**

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 P330 - Rinse mouth  
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention  
 P363 - Wash contaminated clothing before reuse  
 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  
 P307 + P311 - IF exposed: Call a POISON CENTER or doctor/physician  
 P370 + P378 - In case of fire: Use water spray for extinction  
 P403 + P235 - Store in a well-ventilated place. Keep cool  
 P405 - Store locked up  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Storage****Disposal****Contains Substances****CAS Number**

|  |            |
|--|------------|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 |
| Methanol   | 67-56-1    |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  |

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

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

### 3. Composition/information on Ingredients

| Substances   | CAS Number | PERCENT (w/w) | GHS Classification - Australia  |
|--|------------|---------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | 10 - 30%      | Skin Irrit. 2 (H315)<br>Eye Corr. 1 (H318)<br>Skin Sens. 1 (H317)   |
| Methanol   | 67-56-1    | 10 - 30%      | Acute Tox. 3 (H301)<br>Acute Tox. 3 (H311)<br>Acute Tox. 3 (H331)<br>Repr. 1B (H360)<br>STOT SE 1 (H370)<br>Flam. Liq. 2 (H225) |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | 1 - 5%        | Acute Tox. 4 (H302)<br>Eye Irrit. 2A (H319)<br>Carc. 2 (H351)   |

### 4. First aid measures

**Description of necessary first aid measures****Inhalation**

If inhaled, move victim to fresh air and seek medical attention.

**Eyes**

Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.

**Skin**

In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

**Ingestion**

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Symptoms caused by exposure**

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. Harmful if swallowed. Potential carcinogen. Potential reproductive hazard. May cause birth defects. May cause damage to internal organs.

**Medical Attention and Special Treatment****Notes to Physician**

Treat symptomatically

### 5. Fire Fighting Measures

**Suitable extinguishing equipment****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

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

None known.

**Specific hazards arising from the chemical****Special exposure hazards in a fire**

May be ignited by heat, sparks or flames Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce harmful gases. Runoff to sewer may cause fire or explosion hazard.

**Special protective equipment and precautions for fire fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

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

Remove sources of ignition. Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Evacuate all persons from the area.

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

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

Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Contain spill with sand or other inert materials. Scoop up and remove.

**7. Handling and storage**

**7.1. Precautions for safe handling**

**Handling Precautions**

Remove sources of ignition. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Ground and bond containers when transferring from one container to another. Use appropriate protective equipment.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Information**

Store away from oxidizers. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 24 months.

**Other Guidelines**

No information available

**8. Exposure Controls/Personal Protection**

**Control parameters - exposure standards, biological monitoring**

**Exposure Limits**

| Substances   | CAS Number | Australia NOHSC  | ACGIH TLV-TWA                 |
|--|------------|--|-------------------------------|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | Not applicable   | Not applicable                |
| Methanol   | 67-56-1    | TWA: 200 ppm<br>TWA: 262 mg/m <sup>3</sup><br>STEL: 250 ppm<br>STEL: 328 mg/m <sup>3</sup> | TWA: 200 ppm<br>STEL: 250 ppm |
| Nitilotriacetic acid, trisodium salt monohydrate                                       | 5064-31-3  | Not applicable   | Not applicable                |

**Appropriate engineering controls**

**Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal protective equipment (PPE)**

**Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

|  |   |
|--|---|
| <b>Respiratory Protection</b>          | If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.<br>Positive pressure self-contained breathing apparatus if methanol is released.  |
| <b>Hand Protection</b>                 | Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Neoprene gloves. Nitrile gloves. Butyl rubber gloves. (>= .? mm thickness)<br>This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types. |
| <b>Skin Protection</b>                 | Rubber apron.   |
| <b>Eye Protection</b>                  | Chemical goggles; also wear a face shield if splashing hazard exists.   |
| <b>Other Precautions</b>               | Eyewash fountains and safety showers must be easily accessible.   |
| <b>Environmental Exposure Controls</b> | Do not allow material to contaminate ground water system  |

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

|                               |   |
|-------------------------------|---|
| <b>Physical State:</b> Liquid | <b>Color</b> Brown                              |
| <b>Odor:</b> Alcohol          | <b>Odor Threshold:</b> No information available |

| <u>Property</u>                               | <u>Values</u>            |
|---|--------------------------|
| Remarks/ - Method                             |                          |
| <b>pH:</b>                                    | 9-11                     |
| <b>Freezing Point / Range</b>                 | -23 °C                   |
| <b>Melting Point / Range</b>                  | No data available        |
| <b>Boiling Point / Range</b>                  | 100 °C / 212 °F          |
| <b>Flash Point</b>                            | 33 °C / 92 °F PMCC       |
| <b>Upper flammability limit</b>               | 36%                      |
| <b>Lower flammability limit</b>               | 6%                       |
| <b>Evaporation rate</b>                       | 1.6                      |
| <b>Vapor Pressure</b>                         | No data available        |
| <b>Vapor Density</b>                          | > 1                      |
| <b>Specific Gravity</b>                       | 1.01                     |
| <b>Water Solubility</b>                       | Soluble in water         |
| <b>Solubility in other solvents</b>           | No data available        |
| <b>Partition coefficient: n-octanol/water</b> | -0.84                    |
| <b>Autoignition Temperature</b>               | No data available        |
| <b>Decomposition Temperature</b>              | No data available        |
| <b>Viscosity</b>                              | No data available        |
| <b>Explosive Properties</b>                   | No information available |
| <b>Oxidizing Properties</b>                   | No information available |

### 9.2. Other information

|                        |                   |
|------------------------|-------------------|
| <b>VOC Content (%)</b> | No data available |
|------------------------|-------------------|

## 10. Stability and Reactivity

### 10.1. Reactivity

Not expected to be reactive.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

**10.4. Conditions to avoid**

Keep away from heat, sparks and flame.

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Ammonia. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

**Information on routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Symptoms related to exposure****Most Important Symptoms/Effects**

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. Harmful if swallowed. Potential carcinogen. Potential reproductive hazard. May cause birth defects. May cause damage to internal organs.

**Numerical measures of toxicity****Toxicology data for the components**

| Substances   | CAS Number | LD50 Oral   | LD50 Dermal                                    | LC50 Inhalation                              |
|--|------------|---|--|--|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | 3816 mg/kg-bw (rat)                                 | > 2000 mg/kg (Rat)                             | No toxicity at saturation (rat, 8 h, vapour) |
| Methanol   | 67-56-1    | 300 mg/kg-bw (human)<br>< 790 to 13,000 mg/kg (rat) | 1000 mg/kg-bw (human)<br>17,100 mg/kg (rabbit) | 10 mg/L (human, vapor, 4h)                   |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | 1740 mg/kg (Rat)                                    | > 2000 mg/kg (Rabbit)                          | > 5 mg/L (Rat, Aerosol, 4h)                  |

**Immediate, delayed and chronic health effects from exposure****Inhalation**

May cause respiratory irritation. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

**Eye Contact**

Causes severe eye irritation which may damage tissue.

**Skin Contact**

Causes skin irritation. May cause an allergic skin reaction. May be absorbed through the skin.

**Ingestion**

Harmful if swallowed.

**Chronic Effects/Carcinogenicity**

Prolonged or repeated exposure may cause eye, blood, lung, liver, kidney, heart, central nervous system and spleen damage. Contains nitrilotriacetic acid or its salts, which is NTP Classification 2 (Reasonably Anticipated to be a Human Carcinogen) and IARC Classification 2B (a Possible Human Carcinogen) Prolonged or repeated exposure may cause embryo and fetus toxicity.

**Exposure Levels**

No data available

**Interactive effects**

Skin disorders. Eye ailments.

**Data limitations**

No data available

| Substances   | CAS Number | Skin corrosion/irritation                               |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | Causes moderate skin irritation. (Rabbit) Skin, rabbit: |

|   |           |  |
|---|-----------|--|
| Methanol  | 67-56-1   | Non-irritating to the skin (Rabbit)  |
| Nitritotriacetic acid, trisodium salt monohydrate | 5064-31-3 | Non-irritating to the skin (Rabbit) Not irritating to skin in rabbits. Skin, rabbit: |

| Substances   | CAS Number | Serious eye damage/irritation   |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | Causes eye burns Causes severe eye irritation. Will damage tissue.      |
| Methanol   | 67-56-1    | Non-irritating to the eye (Rabbit)                                      |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Irritating to eyes (Rabbit) Eye, rabbit: Causes moderate eye irritation |

| Substances   | CAS Number | Skin Sensitization   |
|--|------------|--|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | May cause sensitization by skin contact (mouse)                |
| Methanol   | 67-56-1    | Did not cause sensitization on laboratory animals (guinea pig) |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Did not cause sensitization on laboratory animals (guinea pig) |

| Substances   | CAS Number | Respiratory Sensitization |
|--|------------|---------------------------|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | No information available  |
| Methanol   | 67-56-1    | No information available  |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | No information available  |

| Substances   | CAS Number | Mutagenic Effects   |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.                                      |
| Methanol   | 67-56-1    | The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic. |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Not regarded as mutagenic. In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects            |

| Substances   | CAS Number | Carcinogenic Effects   |
|--|------------|--|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | No information available   |
| Methanol   | 67-56-1    | No data of sufficient quality are available.   |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Contains nitritotriacetic acid or its salts, which is listed as a suspect carcinogen of the urinary tract and kidneys by NTP, based on feeding studies with laboratory animals. According to the ACGIH guidelines, NTA would "not be considered an occupational carcinogen of any significance." IARC cancer review classification: 2B (Possibly Carcinogenic to Humans)<br>Available data indicate that this substance is a suspected carcinogen. |

| Substances   | CAS Number | Reproductive toxicity   |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. |
| Methanol   | 67-56-1    | Experiments have shown reproductive toxicity effects on laboratory animals                                    |
| Nitritotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. |

| Substances   | CAS Number | STOT - single exposure  |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | No significant toxicity observed in animal studies at concentration requiring classification. |
| Methanol   | 67-56-1    | May cause disorder and damage to the Central Nervous System (CNS)                             |

|  |                   |   |
|--|-------------------|---|
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3         | No significant toxicity observed in animal studies at concentration requiring classification. |
| <b>Substances</b>  | <b>CAS Number</b> | <b>STOT - repeated exposure</b>   |
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3        | No significant toxicity observed in animal studies at concentration requiring classification. |
| Methanol   | 67-56-1           | No data of sufficient quality are available.  |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3         | No significant toxicity observed in animal studies at concentration requiring classification. |

|  |                   |                          |
|--|-------------------|--------------------------|
| <b>Substances</b>  | <b>CAS Number</b> | <b>Aspiration hazard</b> |
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3        | Not applicable           |
| Methanol   | 67-56-1           | Not applicable           |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3         | Not applicable           |

## 12. Ecological Information

### Ecotoxicity

#### Substance Ecotoxicity Data

| Substances   | CAS Number | Toxicity to Algae  | Toxicity to Fish  | Toxicity to Microorganisms               | Toxicity to Invertebrates  |
|--|------------|--|---|--|--|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | EC50 (72 h) =100 mg/L (Skeletonema costatum)<br>EC50 (72 h) >120 mg/L (Desmodesmus subspicatus)<br>NOEC (72 h) >120 mg/L (Desmodesmus subspicatus) | LC50 (96 h) >100 mg/L (Scophthalmus maximus)<br>LC50 (96 h) =681.1 mg/L (Leuciscus idus)    | EC50 (3h) > 1000 mg/L (activated sludge) | LC50 (48 h) =287.2 mg/L (Acartia tonsa)<br>EC50 (48 h) >120 mg/L (Daphnia Magna)                         |
| Methanol   | 67-56-1    | EC50 (96 h) =22000 mg/L (Pseudokirchnerella subcapitata)<br>NOEC (8 d) =8000 mg/L (Scenedesmus quadricauda)  | LC50 (96 h) =15400 mg/L (Lepomis macrochirus)<br>EC50 (200 h) =14536 mg/L (Oryzias latipes) | IC50 (3h) > 1000 mg/L (activated sludge) | EC50 (96 h) =18260 mg/L (Daphnia magna)<br>NOEC (21 d) =208 mg/L (Daphnia magna)                         |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | EC50 (72 h) >91.5 mg/L (Desmodesmus subspicatus)   | TL50 (96 h) =103 mg/L (Pimephales promelas)<br>NOEC (229 d) >54 mg/L (Pimephales promelas)  | NOEC (90d) >200 mg/L (activated sludge)  | TL50 (96 h) range 115 mg/L (Gammarus pseudolimnaeus)<br>NOEC (147 d) =9.3 mg/L (Gammarus pseudolimnaeus) |

#### 12.2. Persistence and degradability

Not readily biodegradable

| Substances   | CAS Number | Persistence and Degradability   |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | No information available  |
| Methanol   | 67-56-1    | (95-97% @ 20d)  |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | Readily biodegradable (100% @ 14d) Marine water Persistent (6% @ 28d) |

#### 12.3. Bioaccumulative potential

Does not bioaccumulate.

| Substances   | CAS Number | Log Pow   |
|--|------------|---|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | Log Pow <1  |
| Methanol   | 67-56-1    | -0.77<br>BCF = 1.0 – 4.5 (Cyprinus carpio)<br>BCF < 10 (Leuciscus idus melanotus) |

|   |           |                    |
|---|-----------|--------------------|
| Nitrilotriacetic acid, trisodium salt monohydrate | 5064-31-3 | -2.62 (calculated) |
|---|-----------|--------------------|

#### **12.4. Mobility in soil**

| Substances   | CAS Number | Mobility                 |
|--|------------|--------------------------|
| Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues | 68909-77-3 | No information available |
| Methanol   | 67-56-1    | No information available |
| Nitrilotriacetic acid, trisodium salt monohydrate                                      | 5064-31-3  | No information available |

#### **12.6. Other adverse effects**

##### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### **13. Disposal Considerations**

#### **Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations.

#### **Disposal of any contaminated packaging**

Follow all applicable national or local regulations.

#### **Environmental regulations**

Not applicable

### **14. Transport Information**

#### **Transportation Information**

##### **Australia ADG**

**UN Number:** UN1993  
**UN proper shipping name:** Flammable Liquid, N.O.S. (Contains Methanol)  
**Transport Hazard Class(es):** 3  
**Packing Group:** III  
**Environmental Hazards:** Not applicable

##### **IMDG/IMO**

**UN Number:** UN1993  
**UN proper shipping name:** Flammable Liquid, N.O.S. (Contains Methanol)  
**Transport Hazard Class(es):** 3  
**Packing Group:** III  
**Environmental Hazards:** Not applicable  
**EMS:** EmS F-E, S-E

##### **IATA/ICAO**

**UN Number:** UN1993  
**UN proper shipping name:** Flammable Liquid, N.O.S. (Contains Methanol)  
**Transport Hazard Class(es):** 3  
**Packing Group:** III  
**Environmental Hazards:** Not applicable

#### **Special precautions during transport**

None

#### **HazChem Code**

3WE

### **15. Regulatory Information**

#### **Safety, health and environmental regulations specific for the product**

**International Inventories****Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

**New Zealand Inventory of Chemicals**

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

**EINECS (European Inventory of Existing Chemical Substances)**

This product does not comply with EINECS

**US TSCA Inventory**

All components listed on inventory or are exempt.

**Canadian Domestic Substances List (DSL)**

All components listed on inventory or are exempt.

**Poisons Schedule number**

S6

**International Agreements****Montreal Protocol - Ozone Depleting Substances:**

Does not apply

**Stockholm Convention - Persistent Organic Pollutants:**

Does not apply

**Rotterdam Convention - Prior Informed Consent:**

Does not apply

**Basel Convention - Hazardous Waste:**

Does not apply

## 16. Other information

**Date of preparation or review**

**Revision Date:** 14-Jul-2016

**Revision Note**

SDS sections updated: 2

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

H225 - Highly flammable liquid and vapor

H226 - Flammable liquid and vapor

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H331 - Toxic if inhaled

H351 - Suspected of causing cancer

H360 - May damage fertility or the unborn child

H370 - Causes damage to organs

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key abbreviations or acronyms used**

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
vPvB – very Persistent and very Bioaccumulative  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## MATERIAL SAFETY DATA SHEET

**Product Trade Name:** SCR-100L

**Revision Date:** 12-Apr-2013

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Statement of Hazardous Nature** Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

**Manufacturer/Supplier** Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

**Product Emergency Telephone**

Australia: 08-64244950  
Papua New Guinea: 05 1 281 575 5000  
NewZealand: 06-7559274

**Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

### Identification of Substances or Preparation

**Product Trade Name:** SCR-100L  
**Synonyms:** None  
**Chemical Family:** Anionic Polymer  
**UN Number:** None  
**Dangerous Goods Class:** None  
**Subsidiary Risk:** None  
**Hazchem Code:** None Allocated  
**Poisons Schedule:** None Allocated  
**Application:** Retarder

**Prepared By** Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Substances                       | CAS Number | PERCENT   | Australia<br>NOHSC | New Zealand<br>WES | ACGIH TLV-TWA  |
|----------------------------------|------------|-----------|--------------------|--------------------|----------------|
| Contains no hazardous substances | Mixture    | 60 - 100% | Not applicable     | Not applicable     | Not applicable |

## Non-Hazardous Substance to Total of 100%

### 3. HAZARDS IDENTIFICATION

**Hazard Overview** May cause eye irritation.

**HSNO Classification** Non-hazardous

### 4. FIRST AID MEASURES

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

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Eyes** Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Notes to Physician** Not Applicable

### 5. FIRE FIGHTING MEASURES

**Suitable Extinguishing Media** All standard fire fighting media

**Extinguishing media which must not be used for safety reasons** None known.

**Special Exposure Hazards** Decomposition in fire may produce toxic gases.

**Special Protective Equipment for Fire-Fighters** Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures** Use appropriate protective equipment.

**Environmental Precautionary Measures** Prevent from entering sewers, waterways, or low areas.

**Procedure for Cleaning / Absorption** Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

### 7. HANDLING AND STORAGE

**Handling Precautions** Avoid contact with eyes, skin, or clothing.

**Storage Information** Store away from oxidizers. Store in a dry location. Keep container closed when not in use.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls** Use in a well ventilated area.

|                               |  |
|-------------------------------|--|
| <b>Respiratory Protection</b> | Not normally needed. But if significant exposures are possible then the following respirator is recommended:<br>Dust/mist respirator. (N95, P2/P3) |
| <b>Hand Protection</b>        | Impervious rubber gloves.  |
| <b>Skin Protection</b>        | Normal work coveralls.   |
| <b>Eye Protection</b>         | Wear safety glasses or goggles to protect against exposure.  |
| <b>Other Precautions</b>      | None known.  |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|  |                                 |
|--|---------------------------------|
| <b>Physical State:</b>                                       | Liquid                          |
| <b>Color:</b>  | Blue                            |
| <b>Odor:</b>   | Odorless                        |
| <b>pH:</b>   | 3 - 4 (28%)                     |
| <b>Specific Gravity @ 20 C (Water=1):</b>                    | 1.16                            |
| <b>Density @ 20 C (kg/l):</b>                                | 1.16                            |
| <b>Bulk Density @ 20 C (kg/m<sup>3</sup>):</b>               | Not Determined                  |
| <b>Boiling Point/Range (C):</b>                              | Not Determined                  |
| <b>Freezing Point/Range (C):</b>                             | -4                              |
| <b>Pour Point/Range (C):</b>                                 | Not Determined                  |
| <b>Flash Point/Range (C):</b>                                | Not Determined <b>Min:</b> > 93 |
| <b>Flash Point Method:</b>                                   | PMCC                            |
| <b>Autoignition Temperature (C):</b>                         | 520                             |
| <b>Flammability Limits in Air - Lower (g/m<sup>3</sup>):</b> | Not Determined                  |
| <b>Flammability Limits in Air - Lower (%):</b>               | Not Determined                  |
| <b>Flammability Limits in Air - Upper (g/m<sup>3</sup>):</b> | Not Determined                  |
| <b>Flammability Limits in Air - Upper (%):</b>               | Not Determined                  |
| <b>Vapor Pressure @ 20 C (mmHg):</b>                         | Not Determined                  |
| <b>Vapor Density (Air=1):</b>                                | Not Determined                  |
| <b>Percent Volatiles:</b>                                    | ~60                             |
| <b>Evaporation Rate (Butyl Acetate=1):</b>                   | Not Determined                  |
| <b>Solubility in Water (g/100ml):</b>                        | Soluble                         |
| <b>Solubility in Solvents (g/100ml):</b>                     | Not Determined                  |
| <b>VOCs (g/l):</b>   | Not Determined                  |
| <b>Viscosity, Dynamic @ 20 C (centipoise):</b>               | 15-30 (25C)                     |
| <b>Viscosity, Kinematic @ 20 C (centistokes):</b>            | Not Determined                  |
| <b>Partition Coefficient/n-Octanol/Water:</b>                | Not Determined                  |
| <b>Molecular Weight (g/mole):</b>                            | Not Determined                  |
| <b>Decomposition Temperature (C):</b>                        | Not Determined                  |

## 10. STABILITY AND REACTIVITY

|   |   |
|---|---|
| <b>Stability Data:</b>                      | Stable  |
| <b>Hazardous Polymerization:</b>            | Will Not Occur  |
| <b>Conditions to Avoid</b>                  | None anticipated  |
| <b>Incompatibility (Materials to Avoid)</b> | Strong oxidizers.   |
| <b>Hazardous Decomposition Products</b>     | Oxides of nitrogen. Oxides of sulfur. Carbon monoxide and carbon dioxide. |
| <b>Additional Guidelines</b>                | Not Applicable  |

## 11. TOXICOLOGICAL INFORMATION

|   |  |
|---|--|
| <b>Principle Route of Exposure</b>            | Eye or skin contact, inhalation.   |
| <b>Symptoms related to exposure</b>           |  |
| <b>Inhalation</b>                             | May cause respiratory irritation.  |
| <b>Skin Contact</b>                           | May cause mild skin irritation.  |
| <b>Eye Contact</b>                            | May cause mild eye irritation.   |
| <b>Ingestion</b>                              | Irritation of the mouth, throat, and stomach.  |
| <b>Aggravated Medical Conditions</b>          | Skin disorders.  |
| <b>Chronic Effects/Carcinogenicity</b>        | No data available to indicate product or components present at greater than 1% are chronic health hazards. |
| <b>Other Information</b>                      | None known.  |
| <b>Toxicity Tests</b>                         |  |
| <b>Oral Toxicity:</b>                         | Not determined   |
| <b>Dermal Toxicity:</b>                       | Not determined   |
| <b>Inhalation Toxicity:</b>                   | Not determined   |
| <b>Primary Irritation Effect:</b>             | Not determined   |
| <b>Carcinogenicity</b>                        | Not determined   |
| <b>Genotoxicity:</b>                          | Not determined   |
| <b>Reproductive / Developmental Toxicity:</b> | Not determined   |

## 12. ECOLOGICAL INFORMATION

|                                  |                |
|----------------------------------|----------------|
| <b>Mobility (Water/Soil/Air)</b> | Not determined |
| <b>Persistence/Degradability</b> | Not determined |
| <b>Bio-accumulation</b>          | Not determined |

### Ecotoxicological Information

|                                    |                |
|------------------------------------|----------------|
| <b>Acute Fish Toxicity:</b>        | Not determined |
| <b>Acute Crustaceans Toxicity:</b> | Not determined |
| <b>Acute Algae Toxicity:</b>       | Not determined |
| <b>Chemical Fate Information</b>   | Not determined |
| <b>Other Information</b>           | Not applicable |

## 13. DISPOSAL CONSIDERATIONS

|                        |  |
|------------------------|--|
| <b>Disposal Method</b> | Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility. |
|------------------------|--|

**Contaminated Packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**14. TRANSPORT INFORMATION****Land Transportation**

**ADR**  
Not restricted

**Air Transportation**

**ICAO/IATA**  
Not restricted

**Sea Transportation**

**IMDG**  
Not restricted

**Other Transportation Information**

**Labels:** None

**15. REGULATORY INFORMATION****Chemical Inventories**

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | All components listed on inventory or are exempt.          |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |

**Classification** Not Classified

**Risk Phrases** Not classified

**Safety Phrases** Not classified

**16. OTHER INFORMATION**

**The following sections have been revised since the last issue of this SDS**  
Not applicable

**Contact**

**Australian Poisons Information Centre**  
24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

**New Zealand National Poisons Centre**  
0800 764 766

**Additional Information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**\*\*\*END OF MSDS\*\*\***

## MATERIAL SAFETY DATA SHEET

**Product Trade Name:**            **CALCIUM CHLORIDE - PELLETS**

**Revision Date:**                    01-Feb-2012

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Statement of Hazardous Nature**   Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

**Manufacturer/Supplier**           Halliburton/Baroid Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

ACN Number: 009 000 775  
Telephone Number: 61 (08) 9455 8300  
Fax Number: 61 (08) 9455 5300

#### **Product Emergency Telephone**

Australia: 08-64244950  
Papua New Guinea: 05 1 281 575 5000  
New Zealand: 06-7559274

#### **Fire, Police & Ambulance - Emergency Telephone**

Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

### Identification of Substances or Preparation

**Product Trade Name:**            CALCIUM CHLORIDE - PELLETS  
**Synonyms:**                       None  
**Chemical Family:**               Inorganic Salt  
**UN Number:**                     None  
**Dangerous Goods Class:**       None  
**Subsidiary Risk:**               None  
**Hazchem Code:**                 None Allocated  
**Poisons Schedule:**             None Allocated  
**Application:**                    Accelerator

**Prepared By**                     Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Substances         | CAS Number | PERCENT   | Australia<br>NOHSC | New Zealand<br>WES | ACGIH TLV-TWA  |
|--------------------|------------|-----------|--------------------|--------------------|----------------|
| Calcium chloride   | 10043-52-4 | 60 - 100% | Not applicable     | Not applicable     | Not applicable |
| Potassium chloride | 7447-40-7  | 2-3       | Not applicable     | Not applicable     | Not applicable |

## Non-Hazardous Substance to Total of 100%

### 3. HAZARDS IDENTIFICATION

|                            |  |
|----------------------------|--|
| <b>Hazard Overview</b>     | May cause eye, skin, and respiratory irritation. May be harmful if swallowed.  |
| <b>Risk Phrases</b>        | R36 Irritating to eyes.  |
| <b>HSNO Classification</b> | 6.1D Acutely Toxic Substances 6.1E Acutely Toxic Substances 6.3A Irritating to the skin 6.4A Irritating to the eye 9.3C Harmful to terrestrial vertebrates |

### 4. 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>Skin</b>               | Wash with soap and water. Get medical attention if irritation persists. Remove contaminated clothing and launder before reuse.                                      |
| <b>Eyes</b>               | In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing. |
| <b>Ingestion</b>          | Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.          |
| <b>Notes to Physician</b> | Not Applicable  |

### 5. FIRE FIGHTING MEASURES

|  |                                  |
|--|----------------------------------|
| <b>Suitable Extinguishing Media</b>                                  | All standard fire fighting media |
| <b>Extinguishing media which must not be used for safety reasons</b> | None known.                      |
| <b>Special Exposure Hazards</b>                                      | Not applicable.                  |
| <b>Special Protective Equipment for Fire-Fighters</b>                | Not applicable.                  |

### 6. ACCIDENTAL RELEASE MEASURES

|   |  |
|---|--|
| <b>Personal Precautionary Measures</b>      | Use appropriate protective equipment. Avoid creating and breathing dust. |
| <b>Environmental Precautionary Measures</b> | Prevent from entering sewers, waterways, or low areas.                   |
| <b>Procedure for Cleaning / Absorption</b>  | Scoop up and remove.   |

### 7. HANDLING AND STORAGE

|                             |  |
|-----------------------------|--|
| <b>Handling Precautions</b> | Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. |
| <b>Storage Information</b>  | Store in a cool, dry location.   |

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

|                        |   |
|------------------------|---|
| Engineering Controls   | Use in a well ventilated area.                                  |
| Respiratory Protection | Dust/mist respirator. (N95, P2/P3)                              |
| Hand Protection        | Normal work gloves.   |
| Skin Protection        | Normal work coveralls.  |
| Eye Protection         | Dust proof goggles.   |
| Other Precautions      | Eyewash fountains and safety showers must be easily accessible. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|   |                                  |
|---|----------------------------------|
| Physical State:   | Solid                            |
| Color:  | White                            |
| Odor:   | Odorless                         |
| pH:   | 10                               |
| Specific Gravity @ 20 C (Water=1):                      | 2.15                             |
| Density @ 20 C (kg/l):                                  | Not Determined                   |
| Bulk Density @ 20 C (kg/m <sup>3</sup> ):               | Not Determined                   |
| Boiling Point/Range (C):                                | Not Determined <b>Min:</b> > 260 |
| Freezing Point/Range (C):                               | Not Determined                   |
| Pour Point/Range (C):                                   | Not Determined                   |
| Flash Point/Range (C):                                  | Not Determined                   |
| Flash Point Method:                                     | Not Determined                   |
| Autoignition Temperature (C):                           | Not Determined                   |
| Flammability Limits in Air - Lower (g/m <sup>3</sup> ): | Not Determined                   |
| Flammability Limits in Air - Lower (%):                 | Not Determined                   |
| Flammability Limits in Air - Upper (g/m <sup>3</sup> ): | Not Determined                   |
| Flammability Limits in Air - Upper (%):                 | Not Determined                   |
| Vapor Pressure @ 20 C (mmHg):                           | Not Determined                   |
| Vapor Density (Air=1):                                  | Not Determined                   |
| Percent Volatiles:                                      | Not Determined                   |
| Evaporation Rate (Butyl Acetate=1):                     | Not Determined                   |
| Solubility in Water (g/100ml):                          | 40                               |
| Solubility in Solvents (g/100ml):                       | Not Determined                   |
| VOCs (g/l):   | Not Determined                   |
| Viscosity, Dynamic @ 20 C (centipoise):                 | Not Determined                   |
| Viscosity, Kinematic @ 20 C (centistokes):              | Not Determined                   |
| Partition Coefficient/n-Octanol/Water:                  | Not Determined                   |
| Molecular Weight (g/mole):                              | 110.986                          |
| Decomposition Temperature (C):                          | Not Determined                   |

## 10. STABILITY AND REACTIVITY

|                                      |                  |
|--------------------------------------|------------------|
| Stability Data:                      | Stable           |
| Hazardous Polymerization:            | Will Not Occur   |
| Conditions to Avoid                  | None anticipated |
| Incompatibility (Materials to Avoid) | None known.      |
| Hazardous Decomposition Products     | None known.      |
| Additional Guidelines                | Not Applicable   |

## 11. TOXICOLOGICAL INFORMATION

|   |  |
|---|--|
| <b>Principle Route of Exposure</b>            | Eye or skin contact, inhalation.   |
| <b>Symptoms related to exposure</b>           |  |
| <b>Inhalation</b>                             | May cause respiratory irritation.  |
| <b>Skin Contact</b>                           | May cause skin irritation. May cause skin burns on prolonged contact.                                      |
| <b>Eye Contact</b>                            | May cause severe eye irritation. May cause corneal injury.   |
| <b>Ingestion</b>                              | Causes burns of the mouth, throat and stomach.   |
| <b>Aggravated Medical Conditions</b>          | Skin disorders.  |
| <b>Chronic Effects/Carcinogenicity</b>        | No data available to indicate product or components present at greater than 1% are chronic health hazards. |
| <b>Other Information</b>                      | None known.  |
| <b>Toxicity Tests</b>                         |  |
| <b>Oral Toxicity:</b>                         | LD50: 1000 mg/kg (Rat)   |
| <b>Dermal Toxicity:</b>                       | LD50: > 5000 mg/kg (Rabbit)  |
| <b>Inhalation Toxicity:</b>                   | Not determined   |
| <b>Primary Irritation Effect:</b>             | Not determined   |
| <b>Carcinogenicity</b>                        | Not determined   |
| <b>Genotoxicity:</b>                          | Not determined   |
| <b>Reproductive / Developmental Toxicity:</b> | Not determined   |

## 12. ECOLOGICAL INFORMATION

|                                  |                |
|----------------------------------|----------------|
| <b>Mobility (Water/Soil/Air)</b> | Not determined |
| <b>Persistence/Degradability</b> | Not applicable |
| <b>Bio-accumulation</b>          | Not determined |

### Ecotoxicological Information

|                                    |                |
|------------------------------------|----------------|
| <b>Acute Fish Toxicity:</b>        | Not determined |
| <b>Acute Crustaceans Toxicity:</b> | Not determined |
| <b>Acute Algae Toxicity:</b>       | Not determined |
| <b>Chemical Fate Information</b>   | Not determined |
| <b>Other Information</b>           | Not applicable |

## 13. DISPOSAL CONSIDERATIONS

|                               |   |
|-------------------------------|---|
| <b>Disposal Method</b>        | Bury in a licensed landfill according to federal, state, and local regulations. |
| <b>Contaminated Packaging</b> | Follow all applicable national or local regulations.                            |

## 14. TRANSPORT INFORMATION

### Land Transportation

**ADR**  
Not restricted

### Air Transportation

**ICAO/IATA**  
Not restricted

### Sea Transportation

**IMDG**  
Not restricted

### Other Transportation Information

**Labels:** None

## 15. REGULATORY INFORMATION

### Chemical Inventories

|   |  |
|---|--|
| <b>Australian AICS Inventory</b>          | All components listed on inventory or are exempt.          |
| <b>New Zealand Inventory of Chemicals</b> | This product does not comply with NZIOC                    |
| <b>US TSCA Inventory</b>                  | All components listed on inventory or are exempt.          |
| <b>EINECS Inventory</b>                   | This product, and all its components, complies with EINECS |

**Classification** Xi - Irritant.

**Risk Phrases** R36 Irritating to eyes.

**Safety Phrases** S22 Do not breathe dust.  
S24 Avoid contact with skin.

## 16. OTHER INFORMATION

**The following sections have been revised since the last issue of this SDS**  
Not applicable

### Contact

**Australian Poisons Information Centre**  
24 Hour Service: - 13 11 26  
Police or Fire Brigade: - 000 (exchange): - 1100

**New Zealand National Poisons Centre**  
0800 764 766

**Additional Information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**\*\*\*END OF MSDS\*\*\***

## SAFETY DATA SHEET

**Product Name**      **FRAC ATTACK**

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### 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

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**Supplier name**                      **RHEOCHEM LTD**  
**Address**                                11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA  
**Telephone**                            +61 8 9410 8200  
**Fax**                                        +61 8 9410 8299  
**Emergency**                            1800 127 406 (Australia); 011 64 3 3530199 (International)  
**Web site**                                <http://www.rheochem.com.au/>  
**Synonym(s)**                            FRAC-ATTACK  
**Use(s)**                                    LOST CIRCULATION MATERIAL  
**SDS date**                                11 July 2013

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### 2. HAZARDS IDENTIFICATION

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**CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA**

**RISK PHRASES**

R34                                        Causes burns.

**SAFETY PHRASES**

S26                                        In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
 S36/37/39                                Wear suitable protective clothing, gloves and eye/face protection.  
 S45                                        In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

**NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

|                      |                |                           |                |
|----------------------|----------------|---------------------------|----------------|
| <b>UN number</b>     | None Allocated | <b>DG class</b>           | None Allocated |
| <b>Packing group</b> | None Allocated | <b>Subsidiary risk(s)</b> | None Allocated |
| <b>Hazchem code</b>  | None Allocated |                           |                |

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### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

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| Ingredient                            | Identification                   | Classification   | Content |
|---------------------------------------|----------------------------------|------------------|---------|
| CALCIUM OXIDE                         | CAS: 1305-78-8<br>EC: 215-138-9  | Xi;R37/38 Xi;R41 | <10%    |
| CALCIUM HYDROXIDE                     | CAS: 1305-62-0<br>EC: 215-137-3  | C;R34            | <5%     |
| CRISTOBALITE                          | CAS: 14464-46-1<br>EC: 238-455-4 | Not Available    | <5%     |
| QUARTZ (SILICA CRYSTALLINE)           | CAS: 14808-60-7<br>EC: 238-878-4 | Not Available    | <3%     |
| 2-PROPENENITRILE-1,3-BUTADIENE RUBBER | CAS: 9003-18-3<br>EC: 618-357-1  | Not Available    | <50%    |
| NATURAL RUBBER                        | CAS: 9006-04-6<br>EC: 232-689-0  | Not Available    | <50%    |
| POLYISOPRENE                          | CAS: 9003-31-0<br>EC: 618-362-9  | Not Available    | <50%    |

**Product Name**      **FRAC ATTACK**

|                    |                                  |               |      |
|--------------------|----------------------------------|---------------|------|
| SBR ELASTOMERS     | CAS: 9003-55-8<br>EC: 618-370-2  | Not Available | <50% |
| CELLULOSE          | CAS: 9004-34-6<br>EC: 232-674-9  | Not Available | <30% |
| DIATOMACEOUS EARTH | CAS: 61790-53-2<br>EC: 612-383-7 | Not Available | <15% |
| FULLERS EARTH      | CAS: 8031-18-3<br>EC: 617-052-0  | Not Available | <12% |
| MAGNESIUM OXIDE    | CAS: 1309-48-4<br>EC: 215-171-9  | Not Available | <2%  |

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**4. FIRST AID MEASURES**

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|                             |  |
|-----------------------------|--|
| <b>Eye</b>                  | If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.                 |
| <b>Inhalation</b>           | If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.  |
| <b>Skin</b>                 | If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor. |
| <b>Ingestion</b>            | For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).  |
| <b>Advice to doctor</b>     | Treat symptomatically.   |
| <b>First aid facilities</b> | Eye wash facilities should be available.   |

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**5. FIRE FIGHTING MEASURES**

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|                           |  |
|---------------------------|--|
| <b>Flammability</b>       | Non flammable. May evolve toxic gases if strongly heated. May evolve calcium oxides when heated to decomposition.  |
| <b>Fire and explosion</b> | Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas. |
| <b>Extinguishing</b>      | Use an extinguishing agent suitable for the surrounding fire.  |
| <b>Hazchem code</b>       | None Allocated   |

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**6. ACCIDENTAL RELEASE MEASURES**

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|                                  |   |
|----------------------------------|---|
| <b>Personal precautions</b>      | Wear Personal Protective Equipment (PPE) as detailed in Section 8 of this SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate. |
| <b>Environmental precautions</b> | Prevent product from entering drains and waterways.   |
| <b>Methods of cleaning up</b>    | Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.   |
| <b>References</b>                | See Sections 8 and 13 for exposure controls and disposal.   |

---

**7. STORAGE AND HANDLING**

---

|                 |   |
|-----------------|---|
| <b>Storage</b>  | Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.                             |
| <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. |

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Exposure standards**

| Ingredient                          | Reference | TWA |                   | STEL |                   |
|-------------------------------------|-----------|-----|-------------------|------|-------------------|
|                                     |           | ppm | mg/m <sup>3</sup> | ppm  | mg/m <sup>3</sup> |
| Calcium hydroxide                   | SWA (AUS) | --  | 5                 | --   | --                |
| Calcium oxide                       | SWA (AUS) | --  | 2                 | --   | --                |
| Cellulose (paper fibre) (a)         | SWA (AUS) | --  | 10                | --   | --                |
| Cristobalite                        | SWA (AUS) | --  | 0.1               | --   | --                |
| Diatomaceous earth (uncalcined) (a) | SWA (AUS) | --  | 10                | --   | --                |
| Magnesium oxide (fume)              | SWA (AUS) | --  | 10                | --   | --                |
| Silica, Crystalline Quartz          | SWA (AUS) | --  | 0.1               | --   | --                |

**Biological limits**

No biological limit allocated.

**Engineering controls**

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

**PPE****Eye / Face**

Wear dust-proof goggles.

**Hands**

Wear PVC or rubber gloves.

**Body**

Wear coveralls.

**Respiratory**

Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

|                                  |                   |
|----------------------------------|-------------------|
| <b>Appearance</b>                | BROWN/GREY POWDER |
| <b>Odour</b>                     | ODOURLESS         |
| <b>Flammability</b>              | NON FLAMMABLE     |
| <b>Flash point</b>               | NOT RELEVANT      |
| <b>Boiling point</b>             | NOT RELEVANT      |
| <b>Melting point</b>             | NOT AVAILABLE     |
| <b>Evaporation rate</b>          | NON VOLATILE      |
| <b>pH</b>                        | ALKALINE          |
| <b>Vapour density</b>            | NOT AVAILABLE     |
| <b>Specific gravity</b>          | 2.10              |
| <b>Solubility (water)</b>        | NEGLIGIBLE        |
| <b>Vapour pressure</b>           | NOT AVAILABLE     |
| <b>Upper explosion limit</b>     | NOT RELEVANT      |
| <b>Lower explosion limit</b>     | NOT RELEVANT      |
| <b>Partition coefficient</b>     | NOT AVAILABLE     |
| <b>Autoignition temperature</b>  | NOT AVAILABLE     |
| <b>Decomposition temperature</b> | NOT AVAILABLE     |
| <b>Viscosity</b>                 | NOT AVAILABLE     |
| <b>Explosive properties</b>      | NOT AVAILABLE     |
| <b>Oxidising properties</b>      | NOT AVAILABLE     |
| <b>Odour threshold</b>           | NOT AVAILABLE     |
| <b>% Volatiles</b>               | NOT RELEVANT      |

**10. STABILITY AND REACTIVITY****Chemical stability**

Stable under recommended conditions of storage.

**Conditions to avoid**

Avoid heat, sparks, open flames and other ignition sources.

**Material to avoid**

Incompatible with oxidising agents (eg. hypochlorites) and acids (eg. nitric acid). Other material to

**Product Name**      **FRAC ATTACK**

avoid includes Fluorine, Oxygen Difluoride, Chlorine, Trifluoride and Hydrofluoric Acid.

**Hazardous Decomposition Products**      May evolve calcium oxides when heated to decomposition.**Hazardous Reactions**      Polymerization will not occur.

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**11. TOXICOLOGICAL INFORMATION**

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|                              |   |  |
|------------------------------|---|--|
| <b>Health Hazard Summary</b> | Slightly corrosive - irritant. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in irritation and possible tissue damage. Chronic exposure to crystalline silica may cause lung fibrosis (silicosis), however due to the low levels of crystalline silica in this product, chronic health effects are not anticipated with normal use. Crystalline silica is classified as carcinogenic to humans (IARC Group 1). |  |
| <b>Eye</b>                   | Slightly corrosive - irritant. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and possible burns.   |  |
| <b>Inhalation</b>            | Slightly corrosive - irritant. Over exposure may result in irritation of the nose and throat, with coughing.  |  |
| <b>Skin</b>                  | Slightly corrosive. Contact may result in irritation, redness, pain, rash, dermatitis and possible burns.   |  |
| <b>Ingestion</b>             | Slightly corrosive. Ingestion may result in ulceration and burns to the mouth and throat, nausea, vomiting, abdominal pain and diarrhoea.   |  |
| <b>Toxicity data</b>         | CALCIUM HYDROXIDE (1305-62-0)<br>LD50 (ingestion)                      7300 mg/kg (mouse)   |  |
|                              | CRISTOBALITE (14464-46-1)<br>TCLo (inhalation)                      16 mppcf/8hours/17.9 years (human-fibrosis)   |  |
|                              | QUARTZ (SILICA CRYSTALLINE) (14808-60-7)<br>LCLo (inhalation)                      300 ug/m <sup>3</sup> /10 years (human)<br>TCLo (inhalation)                      16 000 000 particles/ft <sup>3</sup> /8 hours/17.9 years (human-fibrosis)  |  |
|                              | CELLULOSE (9004-34-6)<br>LC50 (inhalation)                      > 5800 mg/m <sup>3</sup> /4 hours (rat)<br>LD50 (ingestion)                      > 5000 mg/kg (rat)<br>LD50 (intraperitoneal)                      > 31600 mg/kg (rat)<br>LD50 (skin)                              > 2000 mg/kg (rabbit)  |  |
|                              | MAGNESIUM OXIDE (1309-48-4)<br>TCLo (inhalation)                      400 mg/kg (human)   |  |

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**12. ECOLOGICAL INFORMATION**

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|                                      |  |
|--------------------------------------|--|
| <b>Toxicity</b>                      | No information provided.   |
| <b>Persistence and degradability</b> | No information provided.   |
| <b>Bioaccumulative potential</b>     | No information provided.   |
| <b>Mobility in soil</b>              | No information provided.   |
| <b>Other adverse effects</b>         | The manufacturer reports that this product is harmful to aquatic life. |

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**13. DISPOSAL CONSIDERATIONS**

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|                       |  |
|-----------------------|--|
| <b>Waste disposal</b> | Collect without generating dust. Place in clean, sealed containers 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.  |

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**14. TRANSPORT INFORMATION**

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**NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE****LAND TRANSPORT  
(ADG)****SEA TRANSPORT  
(IMDG / IMO)****AIR TRANSPORT  
(IATA / ICAO)**

**Product Name**      **FRAC ATTACK**

|                             |                |                |                |
|-----------------------------|----------------|----------------|----------------|
| <b>UN number</b>            | None Allocated | None Allocated | None Allocated |
| <b>Proper shipping name</b> | None Allocated | None Allocated | None Allocated |
| <b>DG class/ Division</b>   | None Allocated | None Allocated | None Allocated |
| <b>Subsidiary risk(s)</b>   | None Allocated | None Allocated | None Allocated |
| <b>Packing group</b>        | None Allocated | None Allocated | None Allocated |
| <b>Hazchem code</b>         | None Allocated |                |                |

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**15. REGULATORY INFORMATION**

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|                             |   |
|-----------------------------|---|
| <b>Poison schedule</b>      | A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). |
| <b>Inventory Listing(s)</b> | <b>AUSTRALIA: AICS (Australian Inventory of Chemical Substances)</b><br>All components are listed on AICS, or are exempt.                                       |

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**16. OTHER INFORMATION**

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**Additional information**      **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 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 a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**Abbreviations**

|                   |   |
|-------------------|---|
| ACGIH             | American Conference of Governmental Industrial Hygienists                                       |
| CAS #             | Chemical Abstract Service number - used to uniquely identify chemical compounds                 |
| CNS               | Central Nervous System  |
| EC No.            | EC No - European Community Number   |
| GHS               | Globally Harmonized System  |
| IARC              | International Agency for Research on Cancer   |
| LD50              | Lethal Dose, 50% / Median Lethal Dose   |
| mg/m <sup>3</sup> | Milligrams per Cubic Metre  |
| PEL               | Permissible Exposure Limit  |
| pH                | relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). |
| ppm               | Parts Per Million   |
| REACH             | Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals              |
| STOT-RE           | Specific target organ toxicity (repeated exposure)  |
| STOT-SE           | Specific target organ toxicity (single exposure)  |
| SUSMP             | Standard for the Uniform Scheduling of Medicines and Poisons                                    |
| TLV               | Threshold Limit Value   |
| TWA/OEL           | Time Weighted Average or Occupational Exposure Limit  |

**Revision history**

| <b>Revision</b> | <b>Description</b>   |
|-----------------|----------------------|
| 1.5             | Standard SDS Review  |
| 1.4             | Standard SDS Review. |
| 1.3             | Standard SDS Review. |
| 1.2             | Standard SDS Review. |
| 1.1             | Standard SDS Review. |
| 1.0             | Initial SDS creation |

**Report status**

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT 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, RMT 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.

**Prepared by**

Risk Management Technologies  
5 Ventnor Ave, West Perth  
Western Australia 6005  
Phone: +61 8 9322 1711  
Fax: +61 8 9322 1794  
Email: info@rmt.com.au  
Web: www.rmt.com.au.

**Revision:** 1.5  
**SDS Date:** 11 July 2013

**End of SDS**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

### 1.1 Product identifier

**Product name** STRATA-VANGUARD  
**Synonym(s)** STRATA VANGUARD

### 1.2 Uses and uses advised against

**Use(s)** DRILLING FLUID ADDITIVE

### 1.3 Details of the supplier of the product

**Supplier name** NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD  
**Address** 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA  
**Telephone** +61 8 9410 8200  
**Fax** +61 8 9410 8299  
**Website** [www.newpark.com](http://www.newpark.com)

### 1.4 Emergency telephone number(s)

**Emergency** 1800 127 406 (Australia); +64 3 3530199 (International)

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

### 2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

### 2.3 Other hazards

No information provided.

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

### 3.1 Substances / Mixtures

| Ingredient                            | CAS Number | EC Number | Content |
|---------------------------------------|------------|-----------|---------|
| CRISTOBALITE                          | 14464-46-1 | 238-455-4 | <5%     |
| QUARTZ (CRYSTALLINE SILICA)           | 14808-60-7 | 238-878-4 | <2%     |
| 2-PROPENENITRILE-1,3-BUTADIENE RUBBER | 9003-18-3  | 618-357-1 | <50%    |
| NATURAL RUBBER                        | 9006-04-6  | 232-689-0 | <50%    |
| POLYISOPRENE                          | 9003-31-0  | 618-362-9 | <50%    |
| SBR ELASTOMERS                        | 9003-55-8  | 618-370-2 | <50%    |
| CELLULOSE                             | 9004-34-6  | 232-674-9 | <30%    |
| DIATOMACEOUS EARTH, FLUX CALCINED     | 68855-54-9 | 272-489-0 | <15%    |
| FULLERS EARTH                         | 8031-18-3  | 617-052-0 | <10%    |
| LIMESTONE (CALCIUM CARBONATE)         | 1317-65-3  | 215-279-6 | <10%    |

**PRODUCT NAME STRATA-VANGUARD**

|                 |           |           |     |
|-----------------|-----------|-----------|-----|
| POLYETHYLENE    | 9002-88-4 | 618-339-3 | <3% |
| MAGNESIUM OXIDE | 1309-48-4 | 215-171-9 | <1% |

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**4. FIRST AID MEASURES**

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**4.1 Description of first aid measures**

|                             |  |
|-----------------------------|--|
| <b>Eye</b>                  | If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.                 |
| <b>Inhalation</b>           | If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.  |
| <b>Skin</b>                 | If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor. |
| <b>Ingestion</b>            | For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.  |
| <b>First aid facilities</b> | No information provided.   |

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

See Section 11 for more detailed information on health effects and symptoms.

**4.3 Immediate medical attention and special treatment needed**

Treat symptomatically.

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**5. FIRE FIGHTING MEASURES**

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**5.1 Extinguishing media**

Use an extinguishing agent suitable for the surrounding fire.

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

Non flammable. May evolve toxic gases if strongly heated.

**5.3 Advice for firefighters**

No fire or explosion hazard exists.

**5.4 Hazchem code**

None allocated.

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**6. ACCIDENTAL RELEASE MEASURES**

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

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

**6.2 Environmental precautions**

Prevent product from entering drains and waterways.

**6.3 Methods of cleaning up**

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

**6.4 Reference to other sections**

See Sections 8 and 13 for exposure controls and disposal.

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**7. HANDLING AND STORAGE**

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**7.1 Precautions for safe handling**

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.

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

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

**7.3 Specific end use(s)**

No information provided.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**

**Exposure standards**

| Ingredient                                     | Reference | TWA |                   | STEL |                   |
|--|-----------|-----|-------------------|------|-------------------|
|  |           | ppm | mg/m <sup>3</sup> | ppm  | mg/m <sup>3</sup> |
| Calcium carbonate (Limestone, Marble, Whiting) | SWA (AUS) | --  | 10                | --   | --                |
| Cellulose (paper fibre) (a)                    | SWA (AUS) | --  | 10                | --   | --                |
| Cristobalite                                   | SWA (AUS) | --  | 0.1               | --   | --                |
| Magnesium oxide (fume)                         | SWA (AUS) | --  | 10                | --   | --                |
| Quartz (respirable dust)                       | SWA (AUS) | --  | 0.1               | --   | --                |

**Biological limits**

No biological limit values have been entered for this product.

**8.2 Exposure controls**

**Engineering controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

**PPE**

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or a Full-face Class P3 (Particulate) respirator.



**9. PHYSICAL AND CHEMICAL PROPERTIES**

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

|                                  |                     |
|----------------------------------|---------------------|
| <b>Appearance</b>                | TAN COLOURED POWDER |
| <b>Odour</b>                     | MILD ODOUR          |
| <b>Flammability</b>              | NON FLAMMABLE       |
| <b>Flash point</b>               | NOT AVAILABLE       |
| <b>Boiling point</b>             | NOT AVAILABLE       |
| <b>Melting point</b>             | NOT AVAILABLE       |
| <b>Evaporation rate</b>          | NOT AVAILABLE       |
| <b>pH</b>                        | 6.3 (5% Suspension) |
| <b>Vapour density</b>            | NOT AVAILABLE       |
| <b>Specific gravity</b>          | 2.1                 |
| <b>Solubility (water)</b>        | INSOLUBLE           |
| <b>Vapour pressure</b>           | 1 mm Hg @ 20°C      |
| <b>Upper explosion limit</b>     | NOT AVAILABLE       |
| <b>Lower explosion limit</b>     | NOT AVAILABLE       |
| <b>Partition coefficient</b>     | NOT AVAILABLE       |
| <b>Autoignition temperature</b>  | NOT AVAILABLE       |
| <b>Decomposition temperature</b> | NOT AVAILABLE       |
| <b>Viscosity</b>                 | NOT AVAILABLE       |
| <b>Explosive properties</b>      | NOT AVAILABLE       |
| <b>Oxidising properties</b>      | NOT AVAILABLE       |
| <b>Odour threshold</b>           | NOT AVAILABLE       |

**9.2 Other information**

% Volatiles

NOT AVAILABLE

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**10. STABILITY AND REACTIVITY**

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**10.1 Reactivity**

Carefully review all information provided in sections 10.2 to 10.6.

**10.2 Chemical stability**

Stable under recommended conditions of storage.

**10.3 Possibility of hazardous reactions**

Polymerization is not expected to occur.

**10.4 Conditions to avoid**

Avoid contact with incompatible substances.

**10.5 Incompatible materials**

Incompatible with acids (e.g. nitric acid). Also incompatible with oxygen difluoride, chlorine and trifluoride.

**10.6 Hazardous decomposition products**

May evolve toxic gases if heated to decomposition.

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**11. TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

**Acute toxicity**

Toxicity Data available for the ingredients:  
CRISTOBALITE (14464-46-1):  
TCLo (inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis)  
QUARTZ (SILICA CRYSTALLINE) (14808-60-7):  
LCLo (inhalation) 300 ug/m<sup>3</sup>/10 years (human)  
TCLo (inhalation) 16 000 000 particles/ft<sup>3</sup>/8 hours/17.9 years (human-fibrosis)  
CELLULOSE (9004-34-6):  
LC50 (inhalation) > 5800 mg/m<sup>3</sup>/4 hours (rat)  
LD50 (ingestion) > 5000 mg/kg (rat)  
LD50 (intraperitoneal) > 31600 mg/kg (rat)  
LD50 (skin) > 2000 mg/kg (rabbit)  
POLYETHYLENE (9002-88-4):  
LDLo (ingestion) 3000 mg/kg (rat)  
MAGNESIUM OXIDE (1309-48-4):  
TCLo (inhalation) 400 mg/kg (human)

**Skin**

Not classified as a skin irritant. Contact may result in mechanical irritation.

**Eye**

Not classified as an eye irritant. Contact may result in mechanical irritation.

**Sensitization**

This product is not known to be a skin or respiratory sensitiser.

**Mutagenicity**

No evidence of mutagenic effects.

**Carcinogenicity**

Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is insufficient respirable silica in this product to be classified as a carcinogen.

**Reproductive**

No evidence of reproductive effects.

**STOT – single exposure**

No known effects from this product.

**STOT – repeated exposure**

Adverse health effects associated with silica, such as the development of silicosis (lung fibrosis), is not anticipated unless chronic (i.e. prolonged and repeated) exposure to silica quartz dust occurs.

**Aspiration**

This product does not present an aspiration hazard.

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**12. ECOLOGICAL INFORMATION**

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**12.1 Toxicity**

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

**12.2 Persistence and degradability**

Not applicable.

**12.3 Bioaccumulative potential**

This product is not expected to bioaccumulate.

**12.4 Mobility in soil**

This product has low mobility in soil.

**12.5 Other adverse effects**

No information provided.

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**13. DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

**Waste disposal** Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).

**Legislation** Dispose of in accordance with relevant local legislation.

---

**14. TRANSPORT INFORMATION**

---

**NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA**

|                                    | <b>LAND TRANSPORT<br/>(ADG)</b> | <b>SEA TRANSPORT<br/>(IMDG / IMO)</b> | <b>AIR TRANSPORT<br/>(IATA / ICAO)</b> |
|------------------------------------|---------------------------------|---------------------------------------|--|
| <b>14.1 UN Number</b>              | None Allocated                  | None Allocated                        | None Allocated                         |
| <b>14.2 Proper Shipping Name</b>   | None Allocated                  | None Allocated                        | None Allocated                         |
| <b>14.3 Transport hazard class</b> | None Allocated                  | None Allocated                        | None Allocated                         |
| <b>14.4 Packing Group</b>          | None Allocated                  | None Allocated                        | None Allocated                         |

**14.5 Environmental hazards** No information provided

**14.6 Special precautions for user**

**Hazchem code** None Allocated

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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**

**Poison schedule** A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

**Classifications** Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

**Hazard codes** None allocated.

**Risk phrases** None allocated.

**Safety phrases** None allocated.

**Inventory listing(s)** **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**  
All components are listed on AICS, or are exempt.

---

**16. OTHER INFORMATION**

---

**Additional information** 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 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 a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**Abbreviations**

|                   |   |
|-------------------|---|
| ACGIH             | American Conference of Governmental Industrial Hygienists                                       |
| CAS #             | Chemical Abstract Service number - used to uniquely identify chemical compounds                 |
| CNS               | Central Nervous System  |
| EC No.            | EC No - European Community Number   |
| EMS               | Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)                   |
| GHS               | Globally Harmonized System  |
| GTEPG             | Group Text Emergency Procedure Guide  |
| IARC              | International Agency for Research on Cancer   |
| LC50              | Lethal Concentration, 50% / Median Lethal Concentration   |
| LD50              | Lethal Dose, 50% / Median Lethal Dose   |
| mg/m <sup>3</sup> | Milligrams per Cubic Metre  |
| OEL               | Occupational Exposure Limit   |
| pH                | relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). |
| ppm               | Parts Per Million   |
| STEL              | Short-Term Exposure Limit   |
| STOT-RE           | Specific target organ toxicity (repeated exposure)  |
| STOT-SE           | Specific target organ toxicity (single exposure)  |
| SUSMP             | Standard for the Uniform Scheduling of Medicines and Poisons                                    |
| SWA               | Safe Work Australia   |
| TLV               | Threshold Limit Value   |
| TWA               | Time Weighted Average   |

**Report status**

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It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

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**Prepared by**

Risk Management Technologies  
5 Ventnor Ave, West Perth  
Western Australia 6005  
Phone: +61 8 9322 1711  
Fax: +61 8 9322 1794  
Email: info@rmt.com.au  
Web: www.rmt.com.au.

**[ End of SDS ]**