PBE OPERATIONS

JINGEMIA PRODUCTION FACILITY

ENVIRONMENT PLAN SUMMARY

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Abbreviations

Term	Definition
ABN	Australian Business Number
ALARP	As low as reasonably practicable
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety (formerly Department of Mines, Industry Regulation and Safety (DMIRS))
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EP	Environment Plan
FY	Financial Year
GDE	Groundwater Dependent Ecosystem
IBC	Intermediate Bulk Container
JPF	Jingemia Production Facility
J09	Jingemia-09
JSA	Job Safety Analysis
MEPAU	Mitsui Exploration and Production Australia
NGERS	National Greenhouse and Energy Reporting Scheme
NORM	Naturally Occurring Radioactive Material
NVCP	Native Vegetation Clearing Permit
OSCP	Oil Spill Contingency Plan
PBE	Perth Basin Energy Operations Ptd Ltd
PGER(E)R	*Petroleum and Geothermal Energy Resources (Environment) Regulations 2012*
RO	Reverse Osmosis
TDS	Total Dissolved Solids
UCL	Unallocated Crown Land
WIA	Well Intervention Activities
YSRC	Yamatji Southern Regional Council

1.0 Introduction

1.1 Overview

PBE Operations Pty Ltd (PBE) are the owner of the Jingemia Production Facility (JPF, the Facility). The Facility comprises of infrastructure contained within Production Licence L14 and the Jingemia well and lease area associated with Jingemia-09 in the MEPAU operated Production Licence L2. The JPF is located 340 kilometres north of Perth in the Shire of Irwin (Figure 1-1).

The JPF is under care & maintenance and plans to recommence operations in 2024/25 FY.

1.2 Purpose

The EP and this EP Summary have been prepared to meet the requirements of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* (PGER(E)R).

The EP has been prepared in accordance with the DMIRS *'Draft Guideline for the Development of Petroleum and Geothermal Environment Plans in Western Australia'* (DMIRS 2021).

1.3 Instrument Holder and Nominated Operator

PBE is the 100% owner and nominated operator of L14. In accordance with the PGER(E)R, the contact details for the operator are listed below (Table 1-1).

Table 1-1: Nominated Contact Details

Company Name	PBE Operations Pty Ltd
ABN	17 612 244 827
Business Address	210 Alice Street, Brisbane QLD 4000
Telephone Number	+61 467 456 043
website	perthbasinenergy.com
Contact Person	Executive Director Energy

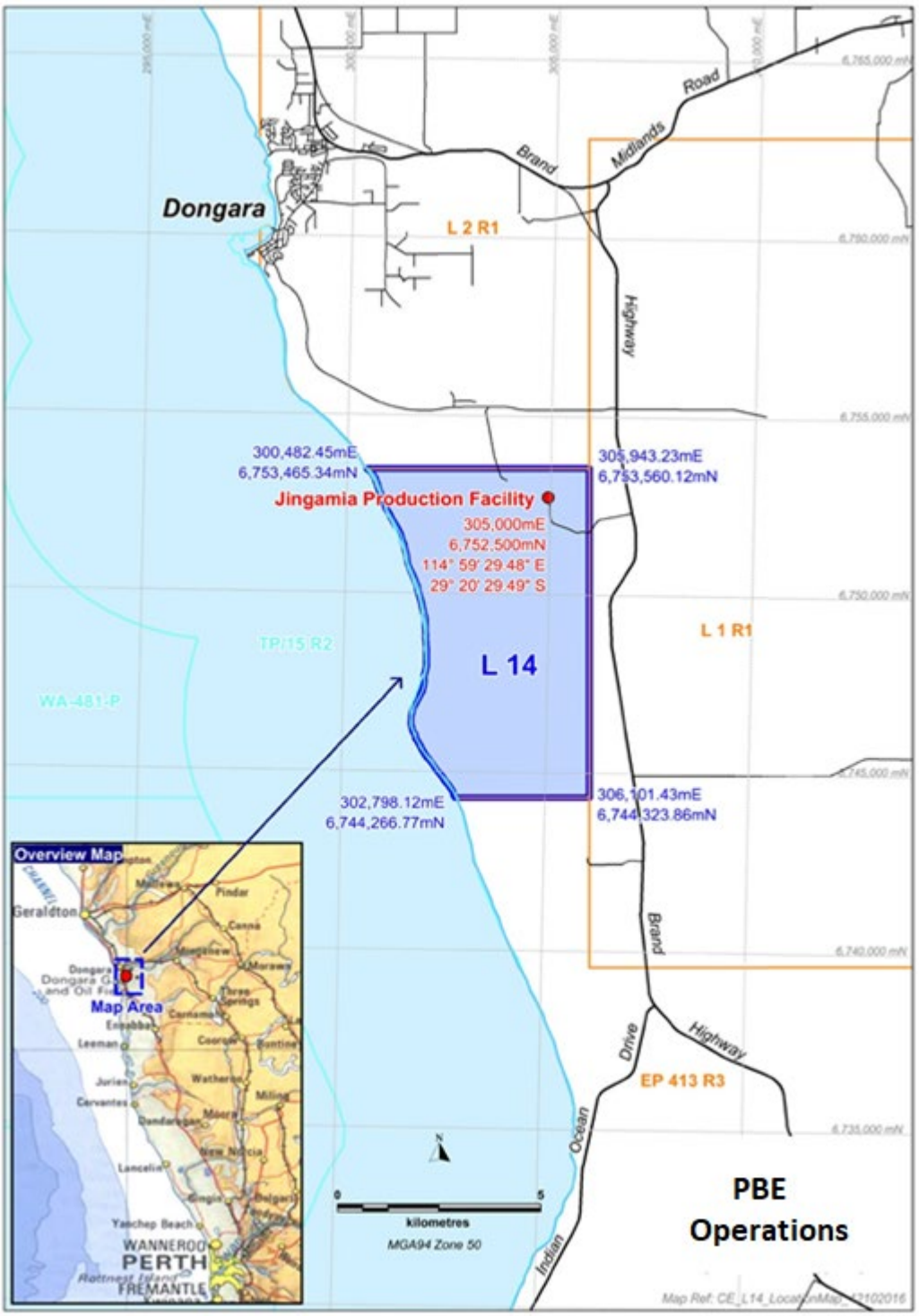

Figure 1-1: JPF Location

2.0 JPF Activities & Infrastructure

2.1 Facility overview

JPF activities predominantly occur on one large facility pad which includes 6 wells connected and a remote reinjection wellpad (J09).

The areas are surfaced and maintained free of vegetation.

Activities pursuant to the production of oil and associated gas and water will occur during this phase of the life of the JPF.

Specifically, the activities associated with this Plan include:

- Production operation of the JPF;
- Inspection, maintenance and repair of infrastructure within the JPF;
- Planned major maintenance including well intervention and workover activities; and
- Intermittent Care & Maintenance.

2.2 Operation of the JPF

Production operations of the JPF involve:

- production of reservoir fluids;
- separation and treatment of reservoir fluids (crude oil, water and gas);
- storage and export of crude oil;
- injection of chemicals;
- re-injection of produced water / groundwater; and
- operations of flare to combust excess gas and venting.

Reservoir fluids which comprise crude oil, water and gas are produced via production wells on artificial lift. Reservoir fluids are separated into the three components where crude oil is transported via infield flowlines to one of several export tanks. Once full, crude is transferred to a load out facility where export tankers are filled with crude oil, then transported offsite for further refining.

Gas is conditioned on-site and used as fuel gas to offset the use of diesel / crude. Where excess gas is generated, it is diverted to a flare tower where it is flared.

Produced water is treated and stored in onsite tanks. It is transferred from the water storage tanks to HPS water injection pumps. These pumps boost the water pressure which is then is directed down one or more of the water injection wells into the production reservoir to provide hydrocarbon sweep and pressure support. All produced water ends up back in the aquifer where it originated.

JPF Process overview schematic overview is shown in Figure 2-1.

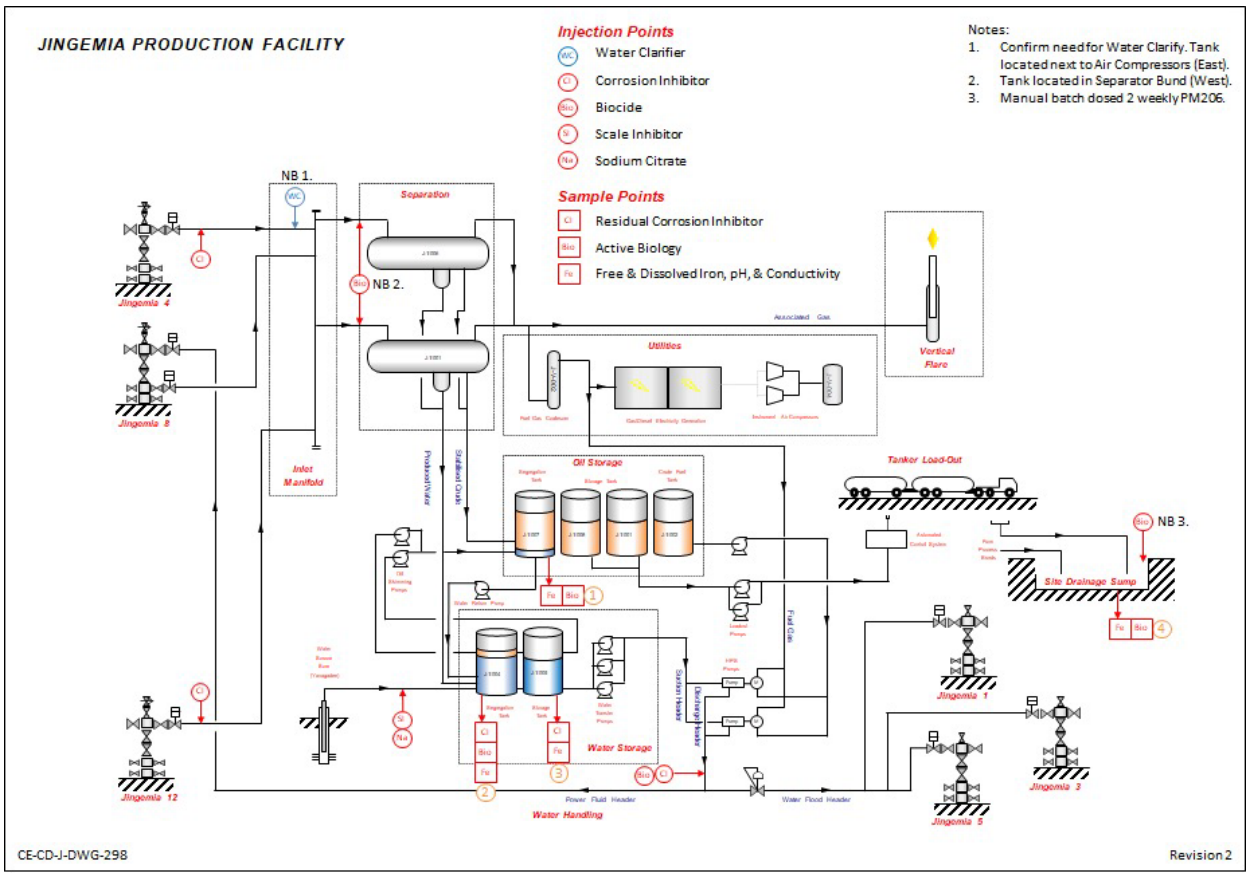

Figure 2-1: JPF Process Schematic

2.3 Inspection, maintenance, and repair of infrastructure within the JPF

Inspection, maintenance and repair of infrastructure within the JPF is undertaken as required but is a continuous activity to ensure that the JPF is operating both safely and at optimum efficiency. Specifically, the types of activities classified as inspection maintenance and repair include:

- routine wellhead maintenance and monitoring;
- well intervention and workover activities;
- periodic maintenance to plant and equipment, as per statutory requirements and scheduling in the maintenance Management System;
- repair and maintenance as required to plant, equipment, hardstands and roads etc.;
- firebreak and vegetation maintenance in accordance with conditions of DFES approval and Shire of Irwin requirements;
- laydown of equipment on designated areas including area subject to NVCP CPS 9098;
- maintenance as required of site buildings; and
- compliance monitoring and maintenance.

2.4 Well Intervention Activities

Well workovers and interventions may be required from time to time to ensure optimal and safe operation of the wells. Well intervention activities are generally defined as activities that occur within the wellbore. These activities include:

- slickline / wireline operations;
- well testing and flowback; and
- well workovers.

2.5 Support operations within the JPF

To support the actual production of crude oil at the JPF, of the following support activities are also required to take place:

- production and combusting produced (associated) gas in power generation and pump engines;
- combusting produced crude in pump engines;
- injection of chemicals in various locations in the facilities, including but limited to: biocide, scale inhibitor, corrosion inhibitor, demulsifier and water clarifier;
- laboratory monitoring of crude and water;
- movement and storage of lubricants and chemicals;
- movement of vehicles and machinery around the facility;
- storage and monitoring of NORM and maintenance to the NORM storage area;
- spraying of herbicide for weed control into the JPF boundary;
- refuelling diesel site vehicles;
- importing / loading in diesel to the bulk diesel storage tank;
- refilling the elevated diesel storage tank; and
- discharging of waste RO fluid into Turkeys Nest.

2.6 Care & Maintenance

The following activities are carried out to ensure JPF integrity and HES Compliance:

- Production operations - No production operations as per section 2.2 are planned during care and maintenance.
- Inspection, maintenance, and repair – Activities in section 2.3 have been reviewed and risk assessed. Where required to ensure HES management or for regulator compliance, activities are continued as set out in the MEX Maintenance and MyOSH Compliance Register. Refer to MOC-096 Care & Maintenance of JPF and JPF Maintenance Policies Risk Assessment (CE-CD-J-PLN-671).
- Well Intervention Activities – All well intervention activies at per section 2.4 may be carried out to manage well integrity or in preparation for production restart. Well testing and flowback, if required, would not be done to the JPF facility. All well intervention activities are detailed in the current Well Management Plans or require a separate well activity plan to be submitted to DEMIRS.
- Support operations within the JPF – Support activities are still requred as per section 2.5 but at a reduced frequency.

2.7 Decommissioning, Reinstatement and Rehabilitation

PBE commit to remove all property, equipment and infrastructure when decommissioning the JPF.

The entire JPF plus all ancillary infrastructure will be removed. The site will be decommissioned to pre existing land use. Decommissioning activities will include the following:

- Risk assessment, Job Safety Analysis (JSA), tool box meetings,
- De-energising of all equipment, mechanical, electrical and receivers,
- Draining or decanting of stored hydrocarbons to approved depository,
- Pigging of all hydrocarbon pipework,
- Draining of all fluids from tanks and other storage containers,
- Removing air, water, gas, foam, and crude pipework,
- Decommission and remove generators,
- Decommission all pumps and remove,
- Decommission, and deconstruct all sheds, lean-to and other structures,
- Decommission and dismantle offices, ablution, and accommodation units.
- Remove fencing,
- Remove any remaining NORMS,
- Rip and windrow bitumen pick up same and put through concrete plant, and
- Scarify and contour plant site.

The JPF is on Unallocated Crown Land (UCL) which was historically cleared and semi-recolonised by disturbance colonising native vegetation. The post activity land use is the cleared area left in a state that will allow surrounding native vegetation recolonising.

The acess track is on private pastoral land and will be left in the state as per the landowner agreement.

3.0 Existing Environment

A summary of the environment within proximity of the proposed activities is included in Table 3-1.

Table 3-1: Existing Environment Summary

Environment	Summary
Landform	The well site is located within the coastal sandhills of the Mid West region of WA within the Lesueur Sandplain subregion of the Geraldton Sandplains Bioregion. The facility area is surrounded by historically disturbed and semi-recolonised native vegetation.
Soil	Unconsolidated sand (quartz grains) and shell fragments with organic matter darkening the surface layers.
Surface Water	No drainage lines, creeks, rivers or wetlands in thew vicinity of JPF. The closest rivers to the JPF are the Irwin River (8 km) and the Arrowsmith River (24 km).
Groundwater	Superficial aquifer present at JPF with TDS in range of 3,000 to 7,000 mg/L. The main regional aquifer underlying the Development Envelope is the Yarragadee. The formation is multi-layered with groundwater occurring within beds of fine to course-grained sandstone confined between thick sequences of shale and siltstone.
Conservation Areas	The JPF is not located within any conservation significant areas ot environmentally sensitive areas.
Vegetation	Clearing Permit CPS 9098 in place for laydown clearing of native vegetation activities. The vegetation immediately surrounding JPF is: • Not identified as having a high potential for GDE. • Not identified as a threatened ecological community • Identified as a priority ecological community • Not identified as containing threatened or priority flora
Weeds	Four weeds of potential concern have been recorded in the area surrounding the JPF.
Dieback	Dieback has not been recorded within the Development Envelope. Environmental conditions such as low rainfall, sandy calcareous soils which provide good water drainage and unsuitable pH reduces the risk of dieback infestation at JPF.
Fauna	There are 37 significant fauna species identified as having the potential to be present within the area surrounding the JPF.
Aboriginal Heritage	There are no registered or lodged aboriginal sites within Production Licence L14 Petroleum.
Socio-economic	The Development Envelope is located in an agricultural dominated area with extensive existing oil and gas field development. It is located within the Shire of Irwin, with the town of Dongara-Port Denison the largest population centre in the vicinity of the JPF.

4.0 Environmental Risk Assessment Methodology

The risk assessment for this Plan was undertaken in accordance with PBE HAZID Identification and Risk Management Procedure (CE-CD-J-PDR-035.0) using the PBE Risk Matrix. This approach generally aligns with the processes outlined in ISO 31000:2009 Risk Management – Principles and Guidelines (Standards Australia/Standards New Zealand 2009) and Handbook 203:2012 Managing Environment-related Risk (Standards Australia/Standards New Zealand 2012). Hazards and aspects and their associated management and mitigation measures are detailed below in Table 4 1.

Table 4-1: Environmental Risks, Management and Mitigation Measures

Aspect	Hazard	Management and Mitigation Measures
Physical Interaction – Soil and Vegetation	• spread non-indigenous species (weed / pathogens) • disturbance to vegetation • damage heritage sites / artefacts	• Weed presence monitoring. • Annual weed control program • Fill material bought onto site is low weed risk • Hygiene for all earth-moving machinery prior to and leaving the area of clearing • Machines and vehicles confined to permitted areas • Environmental specialist Malleefowl inspection • Heritage monitors. • YSRC Heritage Site Discovery Procedure • MyOSH • Monthly monitoring for site erosion • PTW records • Induction
Noise Emissions	• Reduction in ambient noise levels caused by JPF operations (fauna) • Reduction in ambient noise levels caused by JPF operations (stakeholders)	• Noise monitoring (where there is a change to routine operations) • Stakeholder consultation • MYOSH
Light Emissions	• Behavioural disturbance of fauna • Disturbance to relevant stakeholders	• Stakeholder consultation • MYOSH
Atmospheric Emissions	• Reduction in air quality from emissions from JPF operations	• DEMIRS quarterly emissions and discharges report • Annual DWER report • NGERS report • MYOSH.
Extraction of Groundwater	• Drawdown of superficial aquifer	• Current groundwater licences GWL202619 and GWL202801 • Meters are installed and calibrated in accordance with the Facility 5C licence • Annual water abstraction reported
Planned Discharge	• Contamination of Soil and Water causing adverse effects on native vegetation and wildlife	• Downhole chemical disclosure • Chemical acquisition checklist (CE-CD-J-REG-064) completed prior to acquisition of chemicals • Monthly chemical inventory • 6-monthly produced water samples • Annual DWER report • DEMIRS quarterly emissions and discharges report

Aspect	Hazard	Management and Mitigation Measures
		• Quarterly groundwater bore sampling
Physical Interaction - Fauna	• Fauna injury / death	• Ring lock fencing with critter mesh surrounding the turkey nest with fauna egress ladder • Good condition well cellar covers in place • No fauna within cellars • Speed limit signs in place • Induction
Fire	• Habitat and vegetation loss, fauna mortality and contamination	• Hot works permits. • Bushfires Act 1954 25A exemption in place prior to the restricted and prohibited period • Firebreaks maintained • Fire suppression system maintained • Annual fire emergency training exercise
Accidental Release of Solid Waste	• Pollution resulting in attraction and / or injury of protected fauna species within the vicinity of the JPF	• Waste segregation • Lids or covers for receptacles containing potentially windblown waste • Waste register • Appropriately licenced waste contractors • Disposal at licenced waste facility • Induction
Accidental Release – Small release of reservoir fluids, produced water, hydrocarbon or hazardous materials	• Contamination of soil / groundwater.	• Secondary containment for hazardous liquids • Production chemical IBC's (or drums) stored within bunded areas and use dedicated transfer hose • NORMS storage containers are closed, secured and bunded • PBE Well Integrity Register • PBE waste register • WIA integrity and securement checks • Recordable incident reports • Spill protection • Incident reports • Daily field readings. • EP awareness • Spill kits are in place and maintained. • Induction
Accidental Release– Hydrocarbon Spill During Bulk Transfer / Storage	• Contamination of soil / groundwater. • Contamination and subsequent toxic effects to vegetation.	• Bulk transfer procedures • Well maintained export facility • MEX maintenance system • Closed drainage system on export facility • Overfill / overpressure protection on bulk crude export tankers. • High-high level alarm on bulk crude storage tanks • Oil level monitoring (manned or unmanned plant) • Daily checks • Tank certification • AS1940 [2004] tank bunding • Bunds are maintained empty, and valves closed. • OSCP (CE-CD-J-PLN-020) • Groundwater monitoring • Spill kits in place and maintained • Induction

Aspect	Hazard	Management and Mitigation Measures
Accidental Release– Traffic accident (within the JPF) resulting in a release from bulk tanker	• Contamination of soil / groundwater. • Contamination and subsequent toxic effects to vegetation.	• Speed limit signs • Induction • OSCP (CE-CD-J-PLN-020) • Groundwater monitoring. • Spill kits
Accidental Release– LOWC	• Contamination of soil / groundwater. • Contamination and subsequent toxic effects to vegetation.	• HES audit • Pressure control equipment. • Pressure test prior to well entry • WSM well control certification records • OSCP (CE-CD-J-PLN-020) • Groundwater monitoring • Spill kits • Induction

5.0 Implementation Strategy

The objective of the implementation strategy is to describe how all aspects of the activity will be directed, reviewed and managed to ensure that all potential impacts and risks are continuously reduced to ALARP. The specific implementation objectives include:

1. Ensure that the agreed environmental performance objectives and standards are met
2. Identify specific systems, practices and procedures to be used to ensure that environmental risks and effects are reduced to ALARP
3. Establish a commitment to the protection of the environment
4. Establish a clear chain of command that sets out the roles and responsibilities of personnel in relation to the implementation, management and review of the EP
5. Ensure that each employee or contractor working on or in connection with the activity has the appropriate skills and training
6. Monitor, audit and review environmental performance and the Implementation Strategy
7. Maintain quantitative records
8. Develop and implement emergency and spill preparedness planning and response capability
9. Report on environmental performance
10. Provide for appropriate consultation with relevant government authorities and other interested persons or organisations

Details of PBE systems, practices and procedures relating to the management of all potential impacts and risks of the activity are detailed in Table 5-1. The objective of these is to continuously reduce the potential impacts and risks of the activity to ALARP.

Table 5-1: OMS Overview

OMS Principle	OMS components
Leadership & Commitment	• Vision • Values • Strategy and Targets • Policies • Standards • Organisation
Risk Management	• Risk Assessment • Risk Controls • Quality Assurance • Plans, Procedures and Registers • Competency & Training
Project Implementation	• Asset Design • Inspection and Maintenance • Plans, Procedures and Schedules
Continuous Improvement	• Monitoring • Reporting • Learning • Auditing and Corrective Actions

6.0 Stakeholder Consultation

Minimising and mitigating the potential environmental impacts associated with the JPF is assisted by the engagement of key stakeholders to ensure all issues are identified and addressed.

In accordance with Regulation 17 of PGER(E)R, PBE has consulted with the following key stakeholders in relation to its JPF activities:

- government agencies (DEMIRS, DWER, DFES),
- Yamatji Southern Regional Corporation (YSRC),
- Department of Planning, Lands and Heritage (DPLH),
- Shire of Irwin,
- Access Road Landholder, and
- Neighbouring landholder.

Consultation on the JPF well has occurred historically and will be ongoing (Table 6-1).

Table 6-1: Consultation – Current & Ongoing

Stakeholder	Consultation to Date	Ongoing
Access Road Landowner	Consultation on access into Jingemia and management of agricultural activities.	Land access and future land use.
Neighbouring Landholders	Recent letter sent to advise of revision to EP and inviting feedback on JPF activities.	Updates on operational status changes.
DPLH	Contact to discuss completion criteria for JPF site.	Future land use.
DFES	JPF fire readiness and fire breaks.	Fire planning and response.
YSRC	Inquiry on survey and monitoring requirements for JPF additional laydown area.	Engagement of Heritage Monitors for JPF additional laydown area.
DEMIRS	Submission of JPF Environment Plan (Rev 12).	Consultation in relation to the assessment of the Environment Plan and ongoing compliance of activities under the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012

7.0 References

DMIRS, Department of Mines, Industry Regulation and Safety. 2021. Draft Guideline for the Development of Petroleum and Geothermal Environment Plans in Western Australia

DMP, Department of Mines and Petroleum. 2013. “Chemical Disclosure Guideline.” https://www.dmp.wa.gov.au/Documents/Environment/ENV-PEB-178.pdf.

ISO. 2018. “ISO 31000:2018 Risk Management - Guidelines.”

Standards Australia/Standards New Zealand. 2012. “ Handbook 203:2012 Managing Environment-related Risk.” Sydney, Australia/Wellington, New Zealand.

APPENDIX A – Chemical Disclosure

All chemicals that are to be used down hole under this plan are included on the Australian Inventory of Chemical Substances (AICS) or are otherwise approved for use in Australia.

A.1 Production Operations

A.1.1 System Details

System	Total Volume of System
JPF produced water	1280kL water / day (8000bbl water / day)

A.1.2 Product List

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
Produced water	PBE	Water disposal to water injection well	99.9605	No hazard	NA
Sodium Citrate solution	Environex	Water Stabiliser	0.0250	**Acute Toxicity:** no data available **Chronic Toxicity:** Not known as mutagenic, carcinogenic or reproductive toxicant **Ecotoxicity:** Component 1. Sodium Citrate: LD50 655 to 825.9 mg/l Component 2. Citric Acid: Fish LD50 440 to 706 mg/l Invertebrate LD100 Daphnia magna 120 mg/l lifetime exposure in soft water, LD0 Daphnia magna 80 mg/l lifetime exposure in soft water. **Biodegradation and bioaccumulation:** Not available	28 Feb 2023

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
SCAL16157A	ChampionX	Scale Inhibitor	0.0075	**Acute toxicity:** no data available **Chronic Toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC No reproductive toxic effects expected. Contains no ingredient listed as a mutagen **Ecotoxicity:** This product has no known ecotoxicological effects. Daphnia and other aquatic invertebrates LC50(48h) Palaemonetes africanus: 826 mg/l LC50(48h) Desmocaris trispinosa: 78.07 mg/l **Biodegradation and bioaccumulation:** Not available	25 Jun 2025
CORR22363A	ChampionX	Corrosion Inhibitor	0.0020	**Acute toxicity:** Acute Oral Toxicity 1,056 mg/kg Acute inhalation toxicity (vapour) >20 mg/l (4 h) Acute dermal toxicity >2,000 mg/kg **Chronic toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. Suspected of damaging fertility or the unborn child. Contains no ingredient listed as a mutagen **Ecotoxicity:** Toxic to aquatic life with long lasting effects Component 1. - Tall Oil, DETA Imidazoline Acetates Fish LC50 (96hr): >023mg/L Daphnia & other aquatic invertebrates EC50(48h) 0.72 mg/l, Chronic toxicity 0.063 mg/l (21 d) Algae EC50(72hr): 0.17mg/L Bacteria 175 mg/l	07 Sep 2021

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Component 2. 2-Mercaptoethanol Fish LC50(96hr): 37mg/L (Leuciscus idus (Golden orfe) Daphnia & other aquatic invertebrates LC50(48hr): 0.4mg/L (Daphnia magna - Water flea) Algae EC50(72hr) 19 mg/l (Desmodesmus subspicatus - green algae Component 3. Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride Daphnia & other aquatic invertebrates EC50(48h) 0.0058 mg/l Component 4. Diethylenetriamine Fish LC50(96h) 430 mg/l (Poecilia reticulata - guppy) Daphnia & other aquatic invertebratesEC50(48h) 16 mg/l (Daphnia magna - Water flea) Algae EC50(72h) 187 mg/l (Pseudokirchneriella subcapitata - green algae) Bacteria 32.7 mg/l Component 5. Isopropanol Fish LC50/(96h) 9,640 mg/l (Pimephales promelas - fathead minnow) Daphnia & other aquatic invertebrates LC50 > 10,000 mg/l (Daphnia magna - Water flea) Bacteria 1,050 mg/l **Biodegradation and bioaccumulation:** Not available ***The low volume, lack of environmental receptors, storage and handling practices and site security ensure there is no plausible significant risk of health or environmental risks associated with the storage and handling of this product.***	
BIOC31150A	ChampionX	Biocide	0.0050	**Acute toxicity:** Acute oral toxicity 260.87 mg/kg Acute inhalation toxicity 0.5303 mg/l (4 h) dust/mist Acute dermal toxicity > 2,000 mg/kg **Chronic toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. No reproductive toxic effects expected.	02 Jun 2021

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Contains no ingredient listed as a mutagen **Ecotoxicity**: Toxic to aquatic life with long lasting effects Component 1. - Glutaraldehyde Fish LC50(96h) 0.8 mg/l (Oncorhynchus mykiss - rainbow trout) Daphnia & other aquatic invertebrates EC50(48h) 0.35 mg/l (Daphnia magna - Water flea) Algae EC50(72h) 0.6 mg/l (Scenedesmus quadricauda - Green algae), NOEC(72h) 0.025 mg/l Scenedesmus quadricauda - Green algae) Component 2. - Methanol Fish LC50(96h) 15,400 mg/l Daphnia & other aquatic invertebrates EC50(48h) > 10,000 mg/l Algae EC50(72h) 22,000 mg/l Bacteria > 1,000 mg/l **Degradation and bioaccumulative potential:** biodegradation data not available, not expected to bioaccumulate.	
TOTAL			100%		

A.1.3 Chemical List

Chemicals within Products	CAS number	Mass fraction (%)
Water	7732-18-5	99.97841
Glutaraldehyde	111-30-8	0.01500
Methanol	67-56-1	0.00250
Citric Acid	77-92-2	0.00225
Sodium Citrate, Dihydrate	6132-04-3	0.00038

Chemicals within Products	CAS number	Mass fraction (%)
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	0.00020
Tall Oil, DETA Imidazoline Acetates	68140-11-4	0.00020
2-Mercaptoethanol	60-24-2	0.00020
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	0.00060
Isopropanol	67-63-0	0.00006
Benzyl-Dimethyl-Hexadecyl-Ammonium Chloride	122-18-9	0.00020
Diethylenetriamine	111-40-0	0.00001
Total		**100.0000**

A.1.4 Contingency Products Details

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
CORR11447A	ChampionX	Corrosion Inhibitor	0.0020	**Acute toxicity:** Acute oral toxicity > 2,000 mg/kg Acute inhalation toxicity > 20 mg/l (4 h) vapour Acute dermal toxicity > 2,000 mg/kg **Chronic toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. Suspected of damaging fertility or the unborn child. Contains no ingredient listed as a mutagen **Ecotoxicity:** Toxic to aquatic life with long lasting effects Component 1. - Tall Oil, DETA Imidazoline Acetates Fish LC50(96hr): >023mg/L Daphnia & other aquatic invertebrates LC50(48hr): 0.72mg/L Algae EC50(72hr): 0.17mg/L Bacteria 175 mg/l Component 2. 2-Mercaptoethanol Fish LC50(96hr): 37mg/L (Leuciscus idus (Golden orfe) Daphnia & other aquatic invertebrates LC50(48hr): 0.4mg/L (Daphnia magna - Water flea) Algae EC50(72hr) 19 mg/l (Desmodesmus subspicatus - green algae, NOEC(72hr) 1.7 mg/L (Desmodesmus subspicatus - green algae) **Degradation and bioaccumulative potential:** Biodegradation and bioaccumulation not available ***The low volume, lack of environmental receptors, storage and handling practices and site security ensure there is no plausible significant risk of health or environmental risks associated with the storage and handling of this product.***	23 Mar 2021

A.1.5 Contingency Chemical List

Chemicals within Products	CAS number	Mass fraction (%)
Tall Oil, DETA Imidazoline Acetates	68140-11-4	0.00040
2-Mercaptoethanol	60-24-2	0.00030
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	0.00030
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	0.00010

A.2 Well Intervention Operations

A.2.1 System Details

System	Total Volume of System
Well Intervention Operations – Inhibited Brine / Kill Fluid, Loss Circulation Pill & Treatment Fluid	477 kL (3,000bbl) per well per event **Note: Assumption that a workover is required for 1 month with 4 bbl per hour loss rate.**

A.2.2 Product List

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
Water	Groundwater abstraction bore	Make up water	86.105	N/A	N/A
Ancor 1	Newpark	Corrosion Inhibitor	0.996	**Acute toxicity:** LD50 (Ingestion): 2200 mg/kg (rabbit) LD50 (Intraperitoneal): 1450 mg/kg (mouse) LD50 (Skin): > 20 mL/kg (rabbit) TDLo (Ingestion): 16 g/kg/64 weeks (mouse - cancer) Component 1 Triethanolamine: LD50 (oral) 6400 mg/kg (rat) LD50 (dermal) > 2000 mg/kg (rabbit) **Chronic toxicity:** Not classified as a mutagen Triethanolamine is not classifiable as to its carcinogenicity. Not classified as a reproductive toxin. **Ecotoxicity:** LC50 (shrimp): > 100 ppm	16 Dec 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Degradation and bioaccumulative potential: Readily biodegradable, not expected to bioaccumulate	
Idcide-20	Newpark Drilling Fluids	Biocide	0.065	**Acute Toxicity:** Component 1: TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE(2:1) Oral (rat) LD50 248 mg/kg Dermal (rat) LD50 > 2000 mg/kg Inhalation (rat) LC50 5.5 mg/L (4hrs) Oral (rat) TDLo 650 mg/kg (13 weeks) - intermittent **Chronic Toxicity:** Not classified as a mutagen Not classified as a carcinogen Not classified as a reproductive toxin. **Ecotoxicity:** Compound 1: 75% TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE: LC50 (Rainbow Trout) = 119 mg/L (96 hr) LC50(Bluegill Sunfish) = 93 mg/L (96 hr) EC50 (Daphnia Magna) = 19 mg/L (48 hr) LC50 (Brown Shrimp) = 340 mg/L (96 hr) LC50 (Mysid Shrimp) = 9.5 mg/L (96 hr) LC50 (Sheepshead Minnow) = 94 mg/L (96 hr) LC50 (Jevenile Plaice) = 86 mg/L (96 hr) **Degradability and bioaccumulative potential:** This product is readily biodegradable and no information provided on bioaccumulative potential.	16 Dec 2022
Salt	Newpark Drilling Fluids	Chloride Source	12.677	**Acute Toxicity:** Oral (rat) LD50 3000 mg/kg Dermal (rabbit) LD50 > 10000 mg/kg Inhalation (rat) LC50 > 42000 mg/m^3(1 h)	08 Jan 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Chronic Toxicity: No evidence of mutagenic effects. No evidence of carcinogenic effects. No relevant or reliable studies on reproductive toxicity were identified. **Ecotoxicity:** Aquatic (water flea) LC50 = 2122 mg/L (48 h) Aquatic (fathead minnow) LC50 = 6.57 g/L (96 h) **Degradability and bioaccumulative potential:** Biodegradability does not pertain to inorganic substances. Not expected to bioaccumulate.	
Sodium Sulphite	Newpark Drilling Fluids	Reducing Agent	0.157	**Acute Toxicity:** Component 1: Sodium Sulphite: Oral (mouse) LD50 820 mg/kg Oral (rat) LD50 3560 mg/kg Dermal (rat) LD50 > 2000 mg/kg Inhalation(rat) LC50 > 5500 mg/m3 (4h) Component 2: Sodium Sulphate: Oral (mouse) LD50 5989 mg/kg Component 3: Sodium Carbonate: Oral (rat) LD50 >2000 mg/kg Dermal (rat) LD50 > 2000 mg/kg Inhalation(rat) LC50 > 2000 mg/m³ **Chronic Toxicity:** Not classified as a mutagen. Not classified as a carcinogen. Not classified as a reproductive toxin. **Ecotoxicity:** No information provided.	28 Apr 2021

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Degradability and bioaccumulative potential: Biodegradability does not pertain to inorganic substances. This product does not bioaccumulate.	
Total			**100**		

A.2.3 Chemical List

Chemicals within Products	CAS number	Mass fraction (%)
Water	7732-18-5	86.4333
Sodium Chloride	7647-14-5	12.6770
Tetrakis (Hydroxymethyl) Phosphonium Sulphate	55566-30-8	0.0161
Sodium Sulphite	7757-83-7	0.1525
Sodium Sulphate	7757-82-6	0.0039
Sodium Carbonate	497-19-8	0.0002
Triethanolamine	102-71-6	0.7169
Total		**100.0000**

A.2.4 Contingent Product List

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
CRW24340	Baker Hughes	Hydrotest Corrosion Inhibitor	0.366	**Acute toxicity:** not available **Chronic toxicity:** No known significant effects or critical hazards (not a carcinogen, mutagen, reproductive or developmental toxin) **Ecotoxicity:** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Component 1 Amines, N-tallow alkyltrimethylenedi-, ethoxylated Acute LC50 (Crustaceans – Corophium Volutator) 2723 mg/l Marine water (10 days) Component 2 Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides Algae Acute EC50 0.03 mg/l (96 h) Invertebrates Acute EC50 (Daphnia) 0.016 mg/l (48 h) Fish Acute LC50 0.515 mg/l (96 h) Component 3: 2-(2-butoxyethoxy)ethanol Fish Acute LC50 (Lepomis macrochirus) 1300000 µg/l (96 h) **Degradation and bioaccumulative potential:** Readily biodegradable, low bioaccumulative potential log Pow -1.07	19 Feb 2024
CA370FE	CHAMPIONX	Fluid Iron Control Additive	0.020	**Acute toxicity:** not available **Chronic toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. No toxicity to reproduction Contains no ingredient listed as a mutagen **Ecotoxicity:** This product has no known ecotoxicological effects **Degradation and bioaccumulative potential:** Biodegradation and bioaccumulation not available	19 Jul 2021

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
CF210PH	Condor Energy Services	Fluid Buffer to Resist pH Changes	0.240	**Acute Toxicity:** Health injuries are not known or expected under normal use. **Chronic Toxicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. No reproductive toxic effects expected. Contains no ingredient listed as a mutagen **Ecotoxicity:** This product has no known ecotoxicological effects. Component 1 Citric Acid: LC50 (Fish) > 100 mg/l (96 h) **Degradation and bioaccumulative potential:** Biodegradation and bioaccumulative potential not available	22 Jul 2021
Caustic Soda	Newpark Drilling Fluids	Reagent / Scrubbing Agent	0.025	**Acute Toxicity:** Component 1: SODIUM HYDROXIDE (1310-73-2): Oral (rabbit) LDLo 500 mg/kg Intraperitoneal (mouse) LD50 40 mg/kg Ingestion (human) LDLo 1.57 mg/kg **Chronic Toxicity:** Both the in vitro and the in vivo genetic toxicity tests indicated no evidence of mutagenic activity. Not classified as a carcinogen. Not classified as a reproductive toxin. **Ecotoxicity:** EC50 Ceriodaphnia: 40 mg/L. LC50 values ranged between 33 and 189 mg/L. **Degradability and bioaccumulative potential:** Readily biodegradable. Does not bioaccumulate.	16 Dec 2022
Circal (Calcium Carbonate)	Newpark Drilling Fluids	Fluid Weight (Density) Modifier	0.359	**Acute Toxicity:** This product is expected to be of low toxicity. Based on available data, the classification criteria are not met. LD50 (Ingestion) = 6450 mg/kg (rat).	14 Dec 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Component 1: Calcium Carbonate Oral (rat) LD50 >2,000 mg/kg Dermal (rat) LD50 >2,000 mg/kg Inhalation LC50 >3.0 mg/L **Chronic Toxicity:** Not classified as a mutagen Not classified as a carcinogen. Crystalline silica is classified as carcinogenic to humans (IARC Group 1). Not classified as a reproductive toxin. **Ecotoxicity:** 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. **Degradability and bioaccumulative potential:** Dissolved calcium carbonate dissociates into calcium and carbonate ions. Calcium ions will be assimilated by living organisms in the water and the carbonate will become part of the carbon cycle. This product does not bioaccumulate.	
NDFT 376/377	Newpark Drilling Fluids	Fluid loss control additive	0.425	**Acute Toxicity:** Unknown acute toxicity **Chronic Toxicity:** No information available on mutagenicity. No information available on carcinogenicity. No information available on reproductive toxicity. **Ecotoxicity:** The environmental impact of this product has not been fully investigated. **Degradability and bioaccumulative potential:** No information available on degradability or bioaccumulative potential.	14 Dec 2022
Newzan D	Newpark Drilling Fluids	Fluid Viscosity Modifier	0.029	**Acute Toxicity:** This product is expected to be of low acute toxicity. Under normal conditions of use, adverse health effects are not anticipated. **Chronic Toxicity:** No evidence of mutagenic effects. No evidence of carcinogenic effects. No relevant or reliable studies were identified on reproductive toxicity.	08 Jan 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
				Ecotoxicity: No information provided. **Degradability and bioaccumulative potential:** No information provided on degradability or bioaccumulative potential.	
Potassium Chloride	Newpark Drilling Fluids	Fluid Weight (Density) Modifier	13.709	**Acute Toxicity:** Oral (rat) LD50 2,600 mg/kg **Chronic Toxicity:** No evidence of mutagenic effects. No evidence of carcinogenic effects. No relevant or reliable studies were identified on reproductive toxicity. **Ecotoxicity:** KCl is not hazardous to freshwater organisms. LC50 (Ictalurus punctulus) = 720 mg/l (48h) LC50 (Daphnia magna) = 177 mg/l (48h) EC50 (Nitzschia linearis) = 1337 mg/l (120h). **Degradability and bioaccumulative potential:** Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.	14 Dec 2022
Quickseal (F,M,C)	Newpark Drilling Fluids	Fluid loss control additive	0..432	**Acute Toxicity:** This product is expected to be of low acute toxicity. Oral (rat) LD50 > 5000 mg/kg. Dermal (rat) LD50 > 2000 mg/kg Inhalation (rat) LC50 = 5800 mg/m3 (4hrs) **Chronic Toxicity:** No evidence of mutagenic effects. No evidence of carcinogenic effects. No relevant or reliable studies were identified on reproductive toxicity. **Ecotoxicity:** Low toxicity to aquatic organisms. **Degradability and bioaccumulative potential:** This product is readily biodegradable. This product is not expected to bioaccumulate.	14 Dec 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
Soda Ash or Sodium Carbonate (Na2CO3),	Newpark Drilling Fluids	Fluid pH Control (increase)	0.050	**Acute Toxicity:** Component 1: Sodium Carbonate Oral (rat) LD50 > 2000 mg/kg Dermal (rat) LD50 > 2000 mg/kg Inhalation (rat) LC50> 2000 mg/m³ **Chronic Toxicity:** Not classified as a mutagen. Not classified as a carcinogen. Not classified as a reproductive toxin. **Ecotoxicity:** Fish (Lepomis macrochirus) LC50 = 300 mg/l (96 h) Crustaceans (Ceriodaphnia dubia) EC50 = 200 - 227 mg/l (48 h) **Degradability and bioaccumulative potential:** Not applicable for inorganic substances. Not expected to bioaccumulate.	16 Dec 2022

Product Name	Supplier	Purpose	Volume in System (%)	Toxicity and Ecotoxicity	SDS
Hydrochloric Acid	Telford	Fluid pH Control (decrease)	0.013	**Acute toxicity:** Component 1 Hydrochloric Acid: Inhalation (rat) LC50: 3124 ppm/1hr[2] Oral (rat) LD50: 900 mg/kg[2] Irritation Eye (rabbit): 5mg/30s - mild Component 2 Titanium Oral (rat) LD50: >2000 mg/kg[1 **Chronic toxicity:** data not available **Ecotoxicity:** Component 1 Hydrochloric Acid: Fish LC50 70.057mg/L (96 h) Fish EC50 0.014000mg/L (9.33 h) Fish NOEC 10mg/L (0.08 h) Algae or other aquatic plants EC50 344.947mg/L (96 h) Component 2 TTitanium Algae or other aquatic plants EC50 >100mg/L (4.5 h) Crustacean NOEC 1mg/L (48 h) **Degradation and bioaccumulative potential:** Biodegradation not available and bioaccumulation potential low Log KOW 0.5392	31 May 2022

A.2.5 Contingency Chemical List

Chemicals within Products	CAS number	Mass fraction (%)
Potassium Chloride	7447-40-7	13.7129

Chemicals within Products	CAS number	Mass fraction (%)
Sodium Hydroxide	1310-73-2	0.0254
2-(2-butoxyethoxy)ethanol	112-34-5	0.1098
Amines, N-tallow alkyltrimethylenedi-, ethoxylated	61790-85-0	0.1098
cyclohexylamine	108-91-8	0.0366
Organic Fibre(s)	9004-34-6	0.4248
Cellulose	9004-34-6	0.4317
Quartz (Silica Crystalline)	14808-60-7	0.0036
Calcium Carbonate	471-34-1	0.3551
Polyacrylic Polymer	9003-01-4	0.0000
1,2,4-Trimethylbenzene	95-63-6	0.0027
Cinnamaldehyde	104-55-2	0.0700
Citric Acid	77-92-9	0.1440
Formic Acid	64-18-6	0.1500
Heavy Aromatic Naphtha	64742-94-5	0.0020
Isopropanol	67-63-0	0.0200
Methanol	67-56-1	0.0020
Naphthalene	91-20-3	0.0027
N-Benzyl-Alkylpyridinium Chloride	68909-18-2	0.0020
Hydrochloric Acid	7647-01-0	0.0033
Sodium carbonate anhydrous	497-19-8	0.0500
Sodium erythorbate	6381-77-7	0.0200
Tar Bases, Quinoline Derivatives, Benzyl Chloride-Quat	72480-70-7	0.0700

Safety Data Sheets

SAFETY DATA SHEET
SODIUM CITRATE 30% (W/W)
REVISION 2, DATE 28 FEB 2023

1. IDENTIFICATION

Product Name	**Sodium Citrate 30% (w/w)**
Other Names	No Data Available
Uses	Food.
Chemical Family	No Data Available
Chemical Formula	Unspecified
Chemical Name	Sodium citrate, aqueous solution
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)	Not Scheduled

Globally Harmonised System

Hazard Classification	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Signal Word	None

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Water	H2O	7732-18-5	70 % w/w
Sodium citrate, dihydrate	Unspecified	6132-04-3	30 % w/w

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Get medical advice/attention if you feel unwell.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.
Advice to Doctor	Treat symptomatically.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Non-flammable.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Use any means suitable for extinguishing surrounding fire.
Fire and Explosion Hazard	Not considered to be a fire or explosion hazard. Containers may explode when heated. Fire may produce irritating and/or toxic fumes, including Carbon monoxide, Carbon dioxide.

Hazardous Products of Combustion	
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing vapours and contact with eyes, skin and clothing. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use. Protect from freezing and physical damage. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Normal room ventilation is adequate.
Personal Protection Equipment	Respiratory protection: In case of inadequate ventilation, wear appropriate respiratory protection (refer to AS/NZS 1715 & 1716). Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses or goggles. Hand protection: Handle with gloves. Recommended: Chemical resistant gloves. Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact.
Special Hazards Precaustions	No information available.

Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Take off contaminated clothing and wash before storage or reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	No information available.
Colour	Colourless
pH	8.51
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	approx. 100 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Miscible with water
Specific Gravity	1.220 - 1.240
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-flammable; Not considered to be a fire or explosion hazard.

Reactions That Release Gases or Vapours	Fire or heat may produce irritating and/or toxic fumes, including Carbon monoxide, Carbon dioxide.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under normal conditions of use and storage.
Conditions to Avoid	Keep away from heat and sources of ignition. Protect from freezing.
Materials to Avoid	Incompatible/reactive with strong oxidisers.
Hazardous Decomposition Products	Fire or heat may produce irritating and/or toxic fumes, including Carbon monoxide, Carbon dioxide.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Information on possible routes of exposure: - Ingestion: Non-toxic. Does not present any significant health hazard. - Eye contact: May cause slight irritation. - Skin contact: May cause slight irritation. - Inhalation: Does not present any significant health hazard. Chronic effects: No information available.
Acute	
Ingestion	Acute toxicity (Oral): COMPONENT: Sodium citrate, dihydrate (CAS No. 6132-04-3): - LD50, Rat: 6,730 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: COMPONENT: Sodium citrate (CAS No. 6132-04-3): - EC50, Daphnia: 655 - 825.9 mg/L
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)
US DOT

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available

UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport
IMDG Code

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport
IATA DGR

Proper Shipping Name	Sodium Citrate 30% (w/w)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Not Hazardous

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (List of Classified Substances)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Taiwan (TCSI)	Not Determined
USA (TSCA)	Not Determined
Mexico (INSQ)	Not Determined

16. OTHER INFORMATION

Related Product Codes	SOCITR1807
Revision	2
Revision Date	28 Feb 2023
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** Square Centimetres **CO2** Carbon Dioxide **COD** Chemical Oxygen Demand **deg C (°C)** Degrees Celcius **EPA (New Zealand)** Environmental Protection Authority of New Zealand **deg F (°F)** Degrees Farenheit **g** Grams **g/cm^3** Grams per Cubic Centimetre **g/l** Grams per Litre **HSNO** Hazardous Substance and New Organism **IDLH** Immediately Dangerous to Life and Health **immiscible** Liquids are insoluable in each other. **inHg** Inch of Mercury **inH2O** Inch of Water **K** Kelvin **kg** Kilogram **kg/m^3** Kilograms per Cubic Metre **lb** Pound **LC50** LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50%

(one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m^3 Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m^3 Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight

SAFETY DATA SHEET

SCAL16157A

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	SCAL16157A
Other means of identification	:	Not applicable.
Recommended use	:	SCALE INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	25.06.2025

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

Precautionary Statements	:	**Prevention:** Wash hands thoroughly after handling. **Response:** Get medical advice/ attention if you feel unwell. **Storage:** Store in accordance with local regulations. **Disposal:** Dispose of contents/ container to an approved incineration plant.
Other hazards	:	Product contains Potassium.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture	:	Mixture

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

In case of eye contact	:	Rinse with plenty of water. Get medical attention if symptoms occur.
In case of skin contact	:	Wash off with soap and plenty of water. Get medical attention if symptoms occur.
If swallowed	:	Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766). Rinse mouth. Get medical attention if symptoms occur.
If inhaled	:	Get medical attention if symptoms occur.

Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Carbon oxides Sulphur oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Wash face, hands and any exposed skin thoroughly after handling.
Conditions for safe storage	:	Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: HDPE (high density polyethylene), Fluoroelastomer, Polypropylene, Stainless Steel 304, Stainless Steel 316L, PTFE, Perfluoroelastomer, CPVC (rigid), Nylon, Plexiglass, Polyvinylchloride (PVC), Polyvinylidene difluoride, Neoprene, EPDM, Nitrile
Unsuitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Carbon Steel C1018, Brass

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection	:	Safety glasses
Hand protection	:	Wear impervious chemical-resistant gloves when handling this product. The following glove types are recommended based on our review of glove manufacturer information and/or other available sources. Nitrile-rubber, Butyl-Rubber, or Neoprene gloves. Other glove types may be used for short term, incidental contact if determined by testing to provide adequate worker protection. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	No personal respiratory protective equipment normally required. If user operations generate significant vapours that cannot be controlled with ventilation or engineering controls, use an approved air-purifying respirator fitted with a gas and vapour cartridge. Use a particulate pre-filter where operations generate significant mists or aerosols. Recommended gas and vapour cartridge: Multi-purpose combination filter. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA or supplied-air respirator should be used. Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Remove and wash contaminated clothing before re-use.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	light yellow
Odour	:	solvent-like
Flash point	:	105 °C, Method: ASTM D 93, Pensky-Martens closed cup
pH	:	5.3,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	MELTING POINT: -9 °C
Initial boiling point and boiling range	:	100 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available

Lower explosion limit	:	no data available
Vapour pressure	:	ca. 0.54 kPa, estimated
Relative vapour density	:	no data available
Relative density	:	1.205 - 1.26, (15.6 °C),
Density	:	10.35 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	7 mm2/s (40 °C), Method: ASTM D 445
Molecular weight	:	no data available
VOC	:	no data available

Note: properties listed in this section may be typical, calculated, or estimated values and should not be used as product specifications or for system design. For product specifications see the COA or Technical Data sheet.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	:	In case of fire hazardous decomposition products may be produced such as: Carbon oxides Sulphur oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Health injuries are not known or expected under normal use.
Skin	:	Health injuries are not known or expected under normal use.
Ingestion	:	Health injuries are not known or expected under normal use.
Inhalation	:	Health injuries are not known or expected under normal use.

Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	No symptoms known or expected.
Skin contact	:	No symptoms known or expected.
Ingestion	:	No symptoms known or expected.
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	No reproductive toxic effects expected.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: Low

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	Harmful to aquatic life.

Product

Toxicity to fish	:	LC50 Gambusia affinis (Mosquito fish): > 1,000 mg/l Exposure time: 96 hrs Test substance: Product
Toxicity to daphnia and other aquatic invertebrates	:	LC50 Palaemonetes africanus: 826 mg/l Exposure time: 48 h Test substance: Product LC50 Desmocaris trispinosa: 78.07 mg/l

Exposure time: 48 h
Test substance: Product

Toxicity to algae : no data available

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	10 - 30%
Soil	:	70 - 90%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 15. REGULATORY INFORMATION

Therapeutic Goods (Poisons Standard) Instrument : No poison schedule number allocated

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
On or in compliance with the active portion of the TSCA inventory.

Canadian Domestic Substances List (DSL)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Australian Inventory of Industrial Chemicals
On the inventory, or in compliance with the inventory

Korea. Korean Existing Chemicals Inventory (KECI)
Not in compliance with the inventory

Japan. ENCS - Existing and New Chemical Substances Inventory
not determined

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
not determined

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

China Inventory of Existing Chemical Substances
not determined

Taiwan Chemical Substance Inventory
not determined

SECTION 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	25.06.2025
Date of first issue	:	22.12.2016
Version Number	:	1.5
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

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

SAFETY DATA SHEET

CORR22363A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	CORR22363A
Other means of identification	:	Not applicable.
Recommended use	:	CORROSION INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	07.09.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 4
Skin corrosion/irritation	:	Category 1B
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1
Reproductive toxicity	:	Category 2

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
Combustible liquid
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.

Precautionary Statements :
Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove

victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	10 - 30
Tall Oil, DETA Imidazoline Acetates	68140-11-4	5 - 10
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	5 - 10
2-Mercaptoethanol	60-24-2	5 - 10
Isopropanol	67-63-0	5 - 10
Benzyl-Dimethyl-Hexadecyl-Ammonium Chloride	122-18-9	1 - 3
Diethylenetriamine	111-40-0	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning

material.

Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen sulfide (H2S) Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazchem Code	:	2X

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	37
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Avoid direct sunlight. At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H2S). Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Isopropanol	67-63-0	TWA	400 ppm 983 mg/m3	AU OEL
		VLE	500 ppm 1,230 mg/m3	AU OEL
Isopropanol	67-63-0	WES-TWA	400 ppm 983 mg/m3	NZ OEL
		WES-STEL	500 ppm 1,230 mg/m3	NZ OEL
Isopropanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m3	NIOSH REL
		STEL	500 ppm 1,225 mg/m3	NIOSH REL
		TWA	400 ppm 980 mg/m3	OSHA Z1
Diethylenetriamine	111-40-0	TWA	1 ppm 4.2 mg/m3	AU OEL
Diethylenetriamine	111-40-0	WES-TWA	1 ppm 4.2 mg/m3	NZ OEL
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m3	NIOSH REL

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear impervious chemical-resistant gloves when handling this product.
The following glove types are recommended based on our review of glove manufacturer information and/or other available sources.
butyl-rubber
Viton® gloves
Other glove types may be used for short term, incidental contact if determined by testing to provide adequate worker protection.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

Use local exhaust ventilation or other engineering controls as necessary to control airborne vapour and mist.
Where concentrations in air may exceed the limits given in this section or when

		significant vapours are generated, use an approved air purifying respirator fitted with a gas and vapour cartridge. Use a particulate pre-filter where operations generate significant mists or aerosols. Recommended gas and vapour cartridge: Organic vapor cartridge. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA or supplied-air respirator should be used.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Clear to slightly hazy yellow
Odour	:	no data available
Flash point	:	88 °C, Method: Pensky-Martens closed cup
pH	:	4.03 - 6.03, (20 °C), Neat
Odour Threshold	:	no data available
Melting point/freezing point	:	Pour point: -10 °C
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	0.9416 - 1.0416, (20 °C),
Density	:	no data available
Water solubility	:	soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	< 60 mPa.s (20 °C)
Viscosity, kinematic	:	< 30 mm2/s (40 °C)
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions. At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H2S).
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	In case of fire, hazardous decomposition products may be produced such as: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen sulfide (H2S) Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	Harmful if swallowed. Causes digestive tract burns.
Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	Suspected of damaging fertility or the unborn child.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: 1,056 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour

Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	Suspected of damaging fertility or the unborn child.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish	:	Tall Oil, DETA Imidazoline Acetates LC50 : > 0.23 mg/l Exposure time: 96 h 2-Mercaptoethanol LC50 Leuciscus idus (Golden orfe): 37 mg/l Exposure time: 96 h Isopropanol LC50 Pimephales promelas (fathead minnow): 9,640 mg/l Exposure time: 96 h Diethylenetriamine LC50 Poecilia reticulata (guppy): 430 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates	:	Tall Oil, DETA Imidazoline Acetates EC50 : 0.72 mg/l Exposure time: 48 h Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride EC50 : 0.0058 mg/l Exposure time: 48 h 2-Mercaptoethanol EC50 Daphnia magna (Water flea): 0.4 mg/l Exposure time: 48 h Isopropanol LC50 Daphnia magna (Water flea): > 10,000 mg/l Diethylenetriamine Daphnia magna (Water flea): 16 mg/l Exposure time: 48 h

Components

Toxicity to algae	:	Tall Oil, DETA Imidazoline Acetates EC50 : 0.17 mg/l Exposure time: 72 h 2-Mercaptoethanol EC50 Desmodesmus subspicatus (green algae): 19 mg/l Exposure time: 72 h Diethylenetriamine EC50 Pseudokirchneriella subcapitata (green algae): 187 mg/l Exposure time: 72 h

Components

Toxicity to bacteria	:	Tall Oil, DETA Imidazoline Acetates 175 mg/l Isopropanol 1,050 mg/l Diethylenetriamine 32.7 mg/l

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	2-Mercaptoethanol NOEC: 0.063 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: High

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s):	:	Quaternary ammonium compounds
UN/ID No.	:	UN 1760
Transport hazard class(es)	:	8
Packing group	:	II
IERG No	:	37
Hazchem Code	:	2X

Air transport (IATA)

UN/ID No.	:	UN 1760
Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s)	:	Quaternary ammonium compounds
Transport hazard class(es)	:	8
Packing group	:	II

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 1760
Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s)	:	Quaternary ammonium compounds
Transport hazard class(es)	:	8
Packing group	:	II
Marine pollutant	:	Tall Oil, DETA Imidazoline Acetates, Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and	:	Schedule 6

Poisons

INTERNATIONAL CHEMICAL CONTROL LAWS :

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
On the inventory, or in compliance with the inventory.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	07.09.2021
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Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

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

SAFETY DATA SHEET

BIOC31150A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	BIOC31150A
Other means of identification	:	Not applicable.
Recommended use	:	BIOCIDE
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	02.06.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral)	:	Category 3
Acute toxicity (Inhalation)	:	Category 3
Skin corrosion/irritation	:	Category 1B
Serious eye damage/eye irritation	:	Category 1
Respiratory sensitization	:	Category 1
Skin sensitization	:	Category 1
Specific target organ toxicity - single exposure	:	Category 2 (Eyes)
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Toxic if swallowed or if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.
May cause damage to organs (Eyes).

Precautionary Statements : **Prevention:**
Do not breathe dust/fume/gas/mist/vapours/spray. Wear protective gloves/ protective clothing/ eye protection/ face protection. In case of inadequate

ventilation wear respiratory protection. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical advice/ attention. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Glutaraldehyde	111-30-8	30 - 60
Methanol	67-56-1	5 - 10

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention immediately.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.
Hazchem Code	:	2X

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	37
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Teflon (PTFE), Natural rubber, Viton, Polypropylene, Stainless Steel 304, Stainless Steel 316L, PTFE, Epoxyresin coating, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Aluminum, Carbon Steel C1018

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Glutaraldehyde	111-30-8	Peak limit	0.1 ppm 0.41 mg/m3	AU OEL
Glutaraldehyde	111-30-8	WES-Ceiling	0.05 ppm 0.21 mg/m3	NZ OEL
Glutaraldehyde	111-30-8	Ceiling	0.2 ppm 0.8 mg/m3	NIOSH REL
		Ceiling	0.05 ppm	ACGIH
Methanol	67-56-1	TWA	200 ppm 262 mg/m3	AU OEL
		VLE	250 ppm 328 mg/m3	AU OEL
Methanol	67-56-1	WES-TWA	200 ppm 262 mg/m3	NZ OEL
		WES-STEL	250 ppm 328 mg/m3	NZ OEL
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		STEL	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Nitrile
Fluoroelastomer
Neoprene
butyl-rubber
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.
When workers are facing concentrations above the exposure limit they must use

		appropriate certified respirators. Organic vapour type
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Colorless - Yellow
Odour	:	Pungent
Flash point	:	100 °C, minimum
pH	:	3.0 - 5.0,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	Freezing Point: -21 °C
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	2.0 kPa, (20 °C),
Relative vapour density	:	1.1, (20 °C) (Air = 1)
Relative density	:	1.13, (20 °C),
Density	:	9.39 lb/gal 1.13 g/cm3
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	15.4 mPa.s (20 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	In case of fire, hazardous decomposition products may be produced such as: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	May cause blindness if swallowed. Toxic if swallowed. Causes digestive tract burns.
Inhalation	:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Toxic if inhaled. May cause nose, throat, and lung irritation. May cause respiratory tract irritation.
Chronic Exposure	:	May cause damage to organs.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough, May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: 260.87 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: 0.5303 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin	:	no data available

sensitization

Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	No reproductive toxic effects expected.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	May cause damage to organs. May cause respiratory irritation.
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish	:	Glutaraldehyde LC50 Oncorhynchus mykiss (rainbow trout): 0.8 mg/l Exposure time: 96 h Methanol LC50 : 15,400 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates	:	Glutaraldehyde EC50 Daphnia magna (Water flea): 0.35 mg/l Exposure time: 48 h Methanol EC50 : > 10,000 mg/l Exposure time: 48 h

Components

Toxicity to algae	:	Glutaraldehyde EC50 Scenedesmus quadricauda (Green algae): 0.6 mg/l Exposure time: 72 h NOEC Scenedesmus quadricauda (Green algae): 0.025 mg/l Exposure time: 72 h

Methanol
EC50 : 22,000 mg/l
Exposure time: 72 h

Components

Toxicity to bacteria : Methanol
> 1,000 mg/l

Components

Toxicity to fish (Chronic toxicity) : Glutaraldehyde
NOEC: 1.6 mg/l
Exposure time: 97 d
Species: Oncorhynchus mykiss (rainbow trout)

Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Glutaraldehyde
NOEC: 5 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: High

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S
Technical name(s):	:	Glutaraldehyde
UN/ID No.	:	UN 2922
Transport hazard class(es)	:	8, 6.1
Packing group	:	II
IERG No	:	37
Hazchem Code	:	2X

Air transport (IATA)

UN/ID No.	:	UN 2922
Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S
Technical name(s)	:	Glutaraldehyde
Transport hazard class(es)	:	8, 6.1
Packing group	:	II

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 2922
Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S
Technical name(s)	:	Glutaraldehyde
Transport hazard class(es)	:	8, 6.1
Packing group	:	II
Marine pollutant	:	Glutaraldehyde

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
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Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	02.06.2021
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Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

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

SAFETY DATA SHEET

CORR11447A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	CORR11447A
Other means of identification	:	Not applicable.
Recommended use	:	CORROSION INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	23.03.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Skin corrosion/irritation	:	Category 2
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.

Precautionary Statements :
Prevention:
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ eye protection/ face protection.
Response:
IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture	:	Mixture

Chemical Name	CAS-No.	Concentration: (%)
Tall Oil, DETA Imidazoline Acetates	68140-11-4	5 - 10
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	1 - 5
2-Mercaptoethanol	60-24-2	1 - 5
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact	:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
In case of skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
If swallowed	:	Rinse mouth. Get medical attention if symptoms occur. Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).
If inhaled	:	Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazchem Code : ●3Z

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No : 47

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8. A respirator suitable for H2S may be necessary in the event of a spill. Cover spilled material with a H2S scavenger if available (Hydrogen peroxide, Triazine, Glyoxal).

Environmental precautions : Do not allow contact with soil, surface or ground water.

Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling : Avoid contact with skin and eyes. Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Toxic hydrogen sulfide gas may accumulate in the headspace of containers during storage. Containers should be opened cautiously and only in well ventilated areas.

Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers. Avoid direct sunlight. A component of this product may degrade leading to the production of hydrogen sulfide (H2S). Do not store at elevated temperature. Keep in a cool, well-ventilated place.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Nitrile rubber

		PVC Butyl rubber Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Before opening containers and using this product, attach and wear a hydrogen sulfide (H2S) monitor in good working condition. Hydrogen sulfide gas accumulates in the headspace of containers of this product. Respiratory protection is not expected to be necessary in well-ventilated areas. However, if after a thorough hazard assessment respiratory protection is deemed necessary, an appropriate H2S respirator must be utilized. Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	amber
Odour	:	hydrocarbon-like
Flash point	:	> 93.3 °C
pH	:	4.5,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	0.98 - 1.02, (15.6 °C),
Density	:	no data available
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-	:	no data available

octanol/water		
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	3.9 %

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	A component of this product may degrade leading to the production of hydrogen sulfide (H2S).
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes skin irritation. May cause allergic skin reaction.
Ingestion	:	May be harmful if swallowed.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Allergic reactions
Ingestion	:	No symptoms known or expected.
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	Suspected of damaging fertility or the unborn child.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	May cause damage to organs through prolonged or repeated exposure.
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish	:	Tall Oil, DETA Imidazoline Acetates LC50 : > 0.23 mg/l Exposure time: 96 h 2-Mercaptoethanol LC50 Leuciscus idus (Golden orfe): 37 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other	:	Tall Oil, DETA Imidazoline Acetates

aquatic invertebrates	EC50 : 0.72 mg/l Exposure time: 48 h 2-Mercaptoethanol EC50 Daphnia magna (Water flea): 0.4 mg/l Exposure time: 48 h

Components

Toxicity to algae	:	Tall Oil, DETA Imidazoline Acetates EC50 : 0.17 mg/l Exposure time: 72 h 2-Mercaptoethanol EC50 Desmodesmus subspicatus (green algae): 19 mg/l Exposure time: 72 h NOEC Desmodesmus subspicatus (green algae): 1.7 mg/l Exposure time: 72 h

Components

Toxicity to bacteria	:	Tall Oil, DETA Imidazoline Acetates 175 mg/l

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	2-Mercaptoethanol NOEC: 0.063 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using level III fugacity mathematical models developed by the US EPA. The model assumes a steady state condition where the total input and output have equilibrated. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to

disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s):	:	Imidazoline Salts
UN/ID No.	:	UN 3082
Transport hazard class(es)	:	9
Packing group	:	III
IERG No	:	47
Hazchem Code	:	●3Z
Special precautions for user	:	Dangerous goods of Class 9 (Miscellaneous - not fire risk substance, not combustible liquid) are incompatible in a placard load with any of the following: Class 1 Explosives

Air transport (IATA)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Imidazoline Salts
Transport hazard class(es)	:	9
Packing group	:	III

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Imidazoline Salts
Transport hazard class(es)	:	9
Packing group	:	III
Marine pollutant	:	Imidazoline Salts

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
On the inventory, or in compliance with the inventory.

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Korea. Korean Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory.

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory.

China Inventory of Existing Chemical Substances
On the inventory, or in compliance with the inventory.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	23.03.2021
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

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

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **ANCOR 1**

Synonyms CORROSION INHIBITOR

1.2 Uses and uses advised against

Uses BRINE ● CORROSION INHIBITOR ● DRILLING FLUID ADDITIVE ● OIL AND GAS INDUSTRY

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Serious Eye Damage / Eye Irritation: Category 2A

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H319 Causes serious eye irritation.

Prevention statements

P264 Wash thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

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 statements
None allocated.

Disposal statements
None allocated.

2.3 Other hazards
No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
TRIETHANOLAMINE	102-71-6	203-049-8	68 to 72%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	28 to 32%

4. FIRST AID MEASURES

4.1 Description of 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 Type A (Organic vapour) 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. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed
Over exposure may result in irritation to the eyes, nose and respiratory system. May cause allergic contact dermatitis.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains or waterways.

5.2 Special hazards arising from the substance or mixture
Combustible. May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters
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.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

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. Ventilate area where possible. 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 cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

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, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Triethanolamine	SWA [AUS]	--	5	--	--

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 vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS LIQUID
Odour	SLIGHT ODOUR
Flammability	CLASS C2 COMBUSTIBLE
Flash point	> 100°C
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Relative density	1.1
Solubility (water)	SOLUBLE

9.1 Information on basic physical and chemical properties

Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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

Hazardous polymerisation is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), nitrites, heat and ignition sources.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

May be harmful if swallowed, in contact with skin, and/or if inhaled.
Toxicity Data available for the ingredient:
TRIETHANOLAMINE (102-71-6):
LD50 (Ingestion): 2200 mg/kg (rabbit)
LD50 (Intraperitoneal): 1450 mg/kg (mouse)
LD50 (Skin): > 20 mL/kg (rabbit)
TDLo (Ingestion): 16 g/kg/64 weeks (mouse - cancer)

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
TRIETHANOLAMINE	6400 mg/kg (rat)	> 2000 mg/kg (rabbit)	--

Additional ingredient toxicity values:

TRIETHANOLAMINE (102-71-6)
LD50 (intraperitoneal) 1450 mg/kg (mouse)
TDLo (oral) 16 g/kg/64 weeks (mouse - cancer)

Skin Contact may result in irritation, redness and rash.

Eye Contact may result in irritation, lacrimation, pain and redness.

Sensitisation Triethanolamine has been reported to cause allergic contact dermatitis. It is not known to cause respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Triethanolamine is not classifiable as to its carcinogenicity to humans (IARC Group 3). Considering the animal studies conducted, there is no evidence of carcinogenicity through the oral route and equivocal evidence of carcinogenicity through the dermal route. The available data do not warrant hazard classification.

Reproductive Not classified as a reproductive toxin.

STOT - single Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.

exposure

STOT - repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration Not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 (shrimp): > 100 ppm.

12.2 Persistence and degradability

In soil and water, triethanolamine will biodegrade fairly rapidly following acclamation (half-life in the order of days to weeks).

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

In soil, residual triethanolamine may leach to groundwater.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reduce with sodium thiosulphate/ bisulphite (not strong reducing agent), acidify with 3M sulphuric acid. Scoop into a container of water and neutralise with soda ash. Absorb with sand or similar and dispose of to an approved landfill site. 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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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

Poison schedule Classified as a Schedule 5 (S5) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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 form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **IDCIDE-20**

Synonyms IDCIDE 20

1.2 Uses and uses advised against

Uses BIOCIDE ● DRILLING FLUID ADDITIVE ● WATER TREATMENT

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Acute Toxicity: Oral: Category 4
Skin Corrosion/Irritation: Category 2
Skin Sensitisation: Category 1
Serious Eye Damage / Eye Irritation: Category 2A

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Prevention statements

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash 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/protective clothing/eye protection/face protection/hearing protection.

Response statements

P301 + P312	IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321	Specific treatment is advised - see first aid instructions.
P330	Rinse mouth.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage statements

None allocated.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE(2:1)	55566-30-8	259-709-0	18 to 25%
WATER	7732-18-5	231-791-2	Remainder

4. FIRST AID MEASURES

4.1 Description of 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 Type A (Organic vapour) 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. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).

First aid facilities Eye wash facilities should be available.

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.

5. FIRE FIGHTING MEASURES

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 carbon oxides and hydrocarbons when heated to decomposition. May evolve carbon oxides, sulphur oxides and phosphates when heated to decomposition.

5.3 Advice for firefighters

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.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

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. Ventilate area where possible. 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 cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

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, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Large storage areas should have appropriate ventilation systems.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

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.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Wear coveralls. In a laboratory situation, wear a laboratory coat.
Respiratory	Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS TO PALE YELLOW LIQUID
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	> 100°C
Melting point	< 0°C
Evaporation rate	AS FOR WATER
pH	3.0 to 3.5
Vapour density	NOT AVAILABLE
Relative density	1.08
Solubility (water)	SOLUBLE
Vapour pressure	18 mm Hg @ 20°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	> 60 % (Water)

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Harmful if swallowed.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE(2:1)	248 mg/kg (rat)	> 2000 mg/kg (rat)	5.5 mg/L/4hrs (rat)

Additional ingredient toxicity values:

TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE(2:1) (55566-30-8)

TDLo (oral) 650 mg/kg/13 weeks - intermittent (rat)

Skin Contact may result in irritation, redness, pain and rash.

Eye	Contact may result in irritation, lacrimation, pain and redness.
Sensitisation	May cause an allergic skin reaction. This product is not classified as a respiratory sensitiser.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Over exposure may result in respiratory irritation, nausea, dizziness, drowsiness and headache.
STOT - repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

75% TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8):
LC50 (Rainbow Trout) = 119 mg/L/96 hr
LC50(Bluegill Sunfish) = 93 mg/L/ 96 hr
EC50 (Daphnia Magna) = 19 mg/L/48 hr
LC50 (Brown Shrimp) = 340 mg/L/96 hr
LC50 (Mysid Shrimp) = 9.5 mg/L/96 hr
LC50 (Sheepshead Minnow) = 94 mg/L/96 hr
LC50 (Jevenile Plaice) = 86 mg/L/96 hr

Waste Water management
EC50 (Activated Sludge) = 24 mg/L/3 hr

12.2 Persistence and degradability

This product is readily biodegradable.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For large quantities, contact the manufacturer/supplier for additional information. Prevent contamination of drains and waterways as aquatic life may be threatened and environmental damage may result.
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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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 form of product, 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: form of product; 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 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^3	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **SALT**

Synonyms BUTCHERS SALT ● FLOSSY SALT ● HALITE ● NACL ● SODIUM CHLORIDE

1.2 Uses and uses advised against

Uses CHLORIDE SOURCE ● 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

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
SODIUM CHLORIDE	7647-14-5	231-598-3	>98%
INORGANIC SALT(S)	-	-	<0.8%
WATER	7732-18-5	231-791-2	<0.8%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed
Under normal conditions of use, adverse health effects are not anticipated. This product is generally considered to be of low toxicity.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

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
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.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate fire protection systems.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

No exposure standards have been entered for this product.

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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	TRANSLUCENT TO WHITE GRANULES OR POWDER
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	1413°C
Melting point	801°C
Evaporation rate	NOT AVAILABLE
pH	7 (1 % Solution)
Vapour density	NOT AVAILABLE
Relative density	2.163
Solubility (water)	357 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid) and alkalis (e.g. sodium hydroxide).

10.6 Hazardous decomposition products
May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity May be harmful if swallowed in large quantities. Repeated ingestion of excessive amounts of sodium chloride may cause disturbance of body electrolyte and fluid balance.
LC50 (Inhalation): > 42000 mg/m3/1 hour (rat)
LD50 (Ingestion): 3000 mg/kg (rat)
LD50 (Skin): > 10000 mg/kg (rabbit)

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
SODIUM CHLORIDE	3000 mg/kg (rat)	> 10000 mg/kg (rabbit)	> 42000 mg/m³/1 hour (rat)

Additional ingredient toxicity values:

SODIUM CHLORIDE (7647-14-5)

LD50 (intraperitoneal)	2602 mg/kg (mouse)
LD50 (intravenous)	645 mg/kg (mouse)
LD50 (subcutaneous)	3000 mg/kg (mouse)
LDLo (intravenous)	300 mg/kg (guinea pig)
LDLo (oral)	8000 mg/kg (rabbit)
LDLo (subcutaneous)	2160 mg/kg (guinea pig)
TDLo (oral)	12357 mg/kg (human)

Skin Contact may result in mild irritation and rash.

Eye Contact may cause discomfort, lacrimation and redness.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity No evidence of mutagenic effects.

Carcinogenicity No evidence of carcinogenic effects.

Reproductive No relevant or reliable studies were identified.

STOT - single exposure Not classified as causing organ damage from single exposure.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic Toxicity: LC50 (water flea) is 2122 mg/L/48 hours; LC50 (fathead minnow) is 6.57 g/L/96 hours.

12.2 Persistence and degradability
Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential
Not expected to bioaccumulate.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **SODIUM SULPHITE**

Synonyms SODIUM SULFITE

1.2 Uses and uses advised against

Uses ANTIOXIDANT ● FOOD PRESERVATIVE ● LABORATORY REAGENT ● PAPER INDUSTRY ● PHOTOGRAPHIC DEVELOPER ● REDUCING AGENT ● WATER TREATMENT

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

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Acute Toxicity: Oral: Category 4
Serious Eye Damage / Eye Irritation: Category 1
Contact with acids liberates toxic gas.

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

AUH031	Contact with acids liberates toxic gas.
H302	Harmful if swallowed.
H318	Causes serious eye damage.

Prevention statements

P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTRE or doctor/physician.
P330	Rinse mouth.

Storage statements

None allocated.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM SULPHITE	7757-83-7	231-821-4	>97%
SODIUM SULPHATE	7757-82-6	231-820-9	<2.5%
SODIUM CARBONATE	497-19-8	207-838-8	<0.1%
WATER	7732-18-5	231-791-2	<0.1%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.
Skin	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.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Urgent hospital treatment is likely to be needed. If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower are recommended.

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.

5. FIRE FIGHTING MEASURES

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 sulphur oxides and sodium oxides when heated to decomposition.

5.3 Advice for firefighters

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.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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. Check regularly for leaks or spills.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Sodium Carbonate (total dust)	SWA [AUS]	--	10	--	--

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.

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 Full-face Class P3 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE CRYSTALLINE SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE

9.1 Information on basic physical and chemical properties

Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	9.0 to 10.5
Vapour density	NOT AVAILABLE
Relative density	2.6
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity
Contact with acids liberates toxic gas.

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 heat, sparks, open flames and other ignition sources. Avoid exposure to air and moisture. Sensitive to air and moisture.

10.5 Incompatible materials
Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid). Strong reducing agent.

10.6 Hazardous decomposition products
May evolve sulphur oxides and sodium oxides when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Harmful if swallowed.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
SODIUM SULPHITE	820 mg/kg (mouse); 3560 mg/kg (rat)	> 2000 mg/kg (rat)	> 5500 mg/m3/4hrs (rat)
SODIUM SULPHATE	5989 mg/kg (mouse)	--	--
SODIUM CARBONATE	> 2000 mg/kg (rat) (AICIS)	> 2000 mg/kg (rat) (AICIS)	> 2000 mg/m³ (rat) (AICIS)

Additional ingredient toxicity values:

SODIUM SULPHITE (7757-83-7)

LD50 (intraperitoneal)	950 mg/kg (mouse)
LD50 (intravenous)	175 mg/kg (mouse)
LDLo (intravenous)	400 mg/kg (cat)
LDLo (oral)	2825 mg/kg (rabbit)
LDLo (subcutaneous)	600 mg/kg (rabbit)

SODIUM SULPHATE (7757-82-6)

LD50 (intravenous)	1220 mg/kg (rabbit)
LDLo (intravenous)	1220 mg/kg (mouse)
TDLo (oral)	14 g/kg (mouse - 8-12 days pregnant)
TDLo (subcutaneous)	806 mg/kg/26 weeks intermittently (mouse)

SODIUM CARBONATE (497-19-8)

LD50 (intraperitoneal)	117 mg/kg (mouse)
LD50 (subcutaneous)	2210 mg/kg (mouse)

Skin Contact may result in irritation, redness, rash and dermatitis.

Eye Contact may result in irritation, lacrimation, pain, redness and possible serious eye damage.

Sensitisation Some individuals are hypersensitive to sulphites and may experience adverse reactions following exposure. Individuals known to be hypersensitive or with existing respiratory problems (eg asthma) are advised to avoid exposure.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT - single exposure Over exposure may result in mucous membrane irritation of the respiratory tract, with coughing.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No information provided.

12.2 Persistence and degradability
Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential
This product does not bioaccumulate.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
Avoid contamination of drains and waterways.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Cover spill with soda ash or sodium bicarbonate. Mix and spray with water, may be effervescent. Wait until reaction is complete, scoop into a large beaker and cautiously add equal volume of sodium hypochlorite (reaction may be vigorous). Add more water, stir and allow to stand (~1hr). Dilute and neutralise. Absorb with sand/similar dispose of to an approved landfill site, or alternatively (for small amounts) flush to sewer with large excess of water.

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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.

WORKPLACE CONTROLS AND PRACTICES: Unless a less toxic chemical can be substituted for a hazardous substance, ENGINEERING CONTROLS are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

Section 1. Identification

Product identifier : CRW24340 CORROSION INHIBITOR

Product code : CRW24340

ADG : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Ethoxylated amine, Quaternary ammonium salt)

Product type : Liquid.

Identified uses : Hydrotest Corrosion inhibitor.

Supplier's details : Baker Hughes, Australia
631 Karel Avenue,
Jandakot,
Western Australia 6164,
Australia

Tel: 1800 199 059
Fax: 1800 020 115

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Asia Pacific Region):
- Australia: (02) 9037 2994
- Brunei: +(65)-31581349 (Mandarin/English)
- China: 4001-204937 (Mandarin) *
- Hong Kong: 800-968-793 (Cantonese) *
- Indonesia: 001-803-017-9114 (Bahasa Indonesian) *
- Japan: 0800-300-5842 (Japanese)
- Malaysia: 1-800-815-308 (Bahasa Malay) *
- New Zealand: 9801 0034
- Philippines: 1-800-1-116-1020 (Tagalog) *
- PNG: +(61) 2 9037 2994
- Singapore: 800-101-2201 (Mandarin) *
- South Korea: 00-308-13-2549 (Korean) *
- Taiwan: 00801-14-8954 (Mandarin) *
- Thailand: 001-800-13-203-9987 (Thai) *
- Vietnam: +(84)-838012436 (Vietnamese)

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

* Number can only be dialled in-country

Section 2. Hazard(s) identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
SKIN CORROSION/IRRITATION - Category 1B
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2

GHS label elements

Hazard pictograms :

GHS05 GHS07 GHS09

Section 2. Hazard(s) identification

Signal word : DANGER

Hazard statements : H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H400 - Very toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves, protective clothing and eye or face protection. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Response : Collect spillage. IF INHALED: Immediately call a POISON CENTER or doctor. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Precautionary statements (Code) : -, P280, P273, P270, P264, P391, P304 + P310, P301 + P310, P330, P331, P303 + P361 + P353, P310, P363, P305 + P351 + P338, P310, -, P501

Supplemental label elements : Not applicable.

Other hazards which do not result in classification : None known.

Additional information

Mixing of chemicals may create a reaction hazardous to one's health, to the environment, or a potential fire hazard.

Section 3. Composition and ingredient information

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
ammonium hydrogensulphite	≥10 - ≤30	10192-30-0
Amines, N-tallow alkyltrimethylenedi-, ethoxylated	≥10 - <25	61790-85-0
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl,chlorides	≤10	68424-85-1
propane-1,2-diol	≤10	57-55-6
2-(2-butoxyethoxy)ethanol	≤10	112-34-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

The total concentration of ingredients in this product, reported or not in this section, is 100%.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Call a poison center or physician. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:,pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : Adverse symptoms may include the following:,stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Hazchem code : 2X

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls and personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
propane-1,2-diol	**Safe Work Australia (Australia, 10/2022).** TWA: 10 mg/m³, 0 times per shift, 8 hours. Form: Particulate TWA: 150 ppm, 0 times per shift, 8 hours. Form: Vapor and particulates TWA: 474 mg/m³, 0 times per shift, 8 hours. Form: Vapor and particulates
2-(2-butoxyethoxy)ethanol	**ACGIH TLV (United States, 1/2023).** TWA: 10 ppm 8 hours. Form: Inhalable fraction and vapor

Biological exposure indices

No exposure indices known.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls and personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Information on basic physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Colour : Golden brown

Odour : Characteristic.

Odour threshold : Not available.

pH : 5 to 7 [Conc. (% w/w): 100%]

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Closed cup: Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : May be combustible at high temperature.

Lower and upper explosion limit/ flammability limit : Not available.

Vapour pressure : Not available.

Relative vapour density : Not available.

Section 9. Physical and chemical properties and safety characteristics

Relative density : 1.065 to 1.105 (20°C)

Solubility(ies) :

Media	Result
cold water	Easily soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

Other information

Pour point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidising materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Additional information

Material compatibility：
Suitable:
- Metals: 304 Stainless steel, 316 Stainless steel
- Plastics: Polyethylene, Polypropylene
- Elastomers: Buna N (rubber), PTFE
Not suitable:
- Metals: Carbon steel.
- Elastomers: Viton®

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	LD50 Dermal	Rabbit	3412 mg/kg	-
	LD50 Oral	Rat	397.5 mg/kg	-
propane-1,2-diol	LD50 Dermal	Rabbit	20800 mg/kg	-
	LD50 Oral	Mouse	22000 mg/kg	-
	LD50 Oral	Rat	20 g/kg	-

Section 11. Toxicological information

2-(2-butoxyethoxy)ethanol	LD50 Dermal LD50 Oral	Rabbit Rat	2700 mg/kg 4500 mg/kg	- -

Conclusion/Summary : May be harmful if ingested. Can cause target organ damage.

Irritation/Corrosion

Skin : Causes pain and burns in contact with skin. May cause permanent skin damage.

Eyes : Risk of serious damage to eyes. May cause eye burns and permanent eye injury.

Respiratory : No known significant effects or critical hazards.

Sensitisation

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:,pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : Adverse symptoms may include the following:,stomach pains

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity : Very toxic to aquatic organisms. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Product/ingredient name	Result	Species	Exposure
Amines, N-tallow alkyltrimethylenedi-, ethoxylated	Acute LC50 2723 mg/l Marine water	Crustaceans - *Corophium Volutator*	10 days
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	Acute EC50 0.016 mg/l Fresh water	Crustaceans	48 hours
	Acute IC50 0.03 mg/l Fresh water	Algae	96 hours
	Acute LC50 0.515 mg/l Fresh water	Fish	96 hours
2-(2-butoxyethoxy)ethanol	Acute LC50 1300000 µg/l Fresh water	Fish - *Lepomis macrochirus*	96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
propane-1,2-diol	-1.07	-	Low
2-(2-butoxyethoxy)ethanol	1	-	Low

Section 13. Disposal considerations

Disposal methods : Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Transport hazard class(es)	PG*	Label
ADR/RID	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Ethoxylated amine, Quaternary ammonium salt)	8	III	
ADG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Ethoxylated amine, Quaternary ammonium salt)	8	III	
IMDG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Ethoxylated amine, Quaternary ammonium salt)	8	III	
IATA	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Ethoxylated amine, Quaternary ammonium salt)	8	III	

PG* : Packing group

Regulatory information	Environmental hazards	Additional information
ADR/RID Class	Yes.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Hazchem code** 2X
ADG Class	Yes.	**Hazchem code** 2X The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
IMDG Class	Yes.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules** F-A S-B **IMDG Code Segregation group** SGG1 - Acids
IATA Class	No.	The environmentally hazardous substance mark may appear if required by other transportation regulations.

Additional information**: A • in the Hazchem code indicates that Alcohol Resistant Foam is the preferred extinguishing medium. If not available, use the extinguishing medium indicated by the number in the Hazchem code.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines and Poisons

5

Model Work Health and Safety Regulations - Scheduled Substances

Australia inventory (AIIC) : All components are listed or exempted.

References : **National Code of Practice for the Control of Workplace Hazardous Substances.**

National Code of Practice for the Labelling of Workplace Substances.
National Code of Practice for the Preparation of Material Safety Data Sheets.
Approved Criteria for Classifying Hazardous Substances.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Any other relevant information

History

Date of printing : 19 February 2024.

Date of issue/Date of revision : 19 February 2024

Date of previous issue : 6 January 2023

Version : 5

Key to abbreviations : ADG = Australian Dangerous Goods
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations

Procedure used to derive the classification

Section 16. Any other relevant information

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 1B	Calculation method
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Disclaimer

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

SAFETY DATA SHEET

Revision date: 19-Jul-2021

Revision Number 1

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name CA370FE

Product Code(s) 000000069021

Other means of identification

Synonyms Manufactured exclusively for Condor Energy Services by Fusion Technologies (Australia) Pty Ltd

Recommended use of the chemical and restrictions on use

Recommended use Iron control additive.

Uses advised against No information available.

Supplier
Fusion Technologies Australia Pty Ltd
ABN: 50 636 538 960
Street Address: 7 Noble Street
Bridgeman Downs QLD 4035
Australia

Telephone number: +61 (0)460 047 656
Website: www.fusiontechinc.net

Emergency telephone number

Emergency telephone number **1800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS)

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

SIGNAL WORD
Not Hazardous

Label elements

Hazard statements
None

Other hazards which do not result in classification
Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Weight-%
Sodium salt of organic acid	-	70-100%
Non-hazardous ingredients	Proprietary	Balance

4. FIRST AID MEASURES

Description of first aid measures

Emergency telephone number Poisons Information Center, Australia: 13 11 26
Poisons Information Center, New Zealand: 0800 764 766

Inhalation Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician.

Eye contact Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin contact Take off contaminated clothing. Wash skin with soap and water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Do NOT induce vomiting. Drink 1 or 2 glasses of water. Get medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media Water spray or fog is preferred; if water not available use dry chemical, CO2 or regular foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical Fine dust dispersed in air may ignite.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Remove all sources of ignition.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover powder spill with plastic sheet or tarp to minimize spreading. Keep out of drains, sewers, ditches and waterways.

Methods for cleaning up Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal. Avoid generation of dust. Vacuum or sweep material and place in a disposal container. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid breathing dust or spray mist. Avoid generation of dust.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in a dry, cool and well-ventilated place. Store away from sources of heat or ignition.

Incompatible materials Strong oxidizing agents.

Poisons Schedule (SUSMP) None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for particulates:

Dusts not otherwise classified: 8hr TWA = 10 mg/m^3

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, DUST MASK.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

Hand protection Wear suitable gloves.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

Environmental exposure controls No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Crystalline Powder
Color	White
Odor	Odourless
Odor threshold	No information available.

Property	Values	Remarks • Method
pH	5.5 - 8.0	None known
pH (as aqueous solution)	No data available	None known
Melting point / freezing point	169 - 172°C	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	Soluble in water 160 g/L at 20°C	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity No information available.

Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Conditions to avoid Heat, flames and sparks. Dust formation.

Incompatible materials

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products

Hazardous decomposition products Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

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

Eye contact Mild eye irritation. Dust contact with the eyes can lead to mechanical irritation.

Skin contact May cause irritation.

Ingestion May cause gastrointestinal discomfort if consumed in large amounts.

Symptoms No information available.

Numerical measures of toxicity - Product Information

Numerical measures of toxicity - Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium salt of organic acid	> 5 g/kg (Rat)	-	-

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity The environmental impact of this product has not been fully investigated. Keep out of waterways.

Persistence and degradability

Persistence and degradability No information available.

Bioaccumulative potential

Bioaccumulation No information available.

Mobility

Mobility in soil No information available.

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION

ADG
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

IATA
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

IMDG
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

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

National regulations

Australia
Not classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS)

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

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

International Inventories
AICS Complies.

Legend:
- Australian Inventory of Industrial Chemicals

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

Reason(s) For Issue: First Issue Primary SDS

Issuing Date: 19-Jul-2021

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:
The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since The Supplier cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Supplier representative or The Supplier at the contact details on page 1.

The Supplier's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet

SAFETY DATA SHEET

Revision date: 22-Jul-2021

Revision Number 1

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name CF210PH

Product Code(s) 000000069031

Other means of identification

Recommended use of the chemical and restrictions on use

Recommended use Buffer solution.

Uses advised against No information available.

Supplier
Fusion Technologies Australia Pty Ltd
ABN: 50 636 538 960
Street Address: 7 Noble Street
Bridgeman Downs QLD 4035
Australia

Telephone number: +61 (0)460 047 656
Website: www.fusiontechinc.net

Emergency telephone number

Emergency telephone number **1800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

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

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3

SIGNAL WORD
Warning

Label elements

Exclamation mark

Hazard statements
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves / protective clothing / eye protection / face protection
Avoid breathing dust / fume / gas / mist / vapours / spray
Use only outdoors or in a well-ventilated area
Precautionary Statements - Response
IF exposed or concerned
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification
May be harmful if swallowed

Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Weight-%
Citric acid	77-92-9	30-60%
Non-hazardous ingredients	Proprietary	Balance

4. FIRST AID MEASURES

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Emergency telephone number Poisons Information Center, Australia: 13 11 26
Poisons Information Center, New Zealand: 0800 764 766

Inhalation	Remove to fresh air. Call a physician if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	Wash with soap and water. Take off contaminated clothing and wash before reuse. Call a physician if symptoms occur.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.
Self-protection of the first aider	Avoid contact with skin, eyes, and clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms	Burning sensation. Prolonged contact may cause redness and irritation.

Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media	Dry chemical, CO2, sand, earth, water spray or regular foam.
Unsuitable extinguishing media	No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical	No information available.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required.
Other information	Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions	See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

Methods for cleaning up Cover liquid spill with sand, earth or other non-combustible absorbent material. Sweep up and shovel into suitable containers for disposal. Use personal protective equipment as required. Prevent product from entering drains. Neutralise residues with lime or soda ash. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

General hygiene considerations Avoid contact with skin, eyes, and clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials Alkalis. Strong oxidizing agents. Metals.

Poisons Schedule (SUSMP) None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits No value assigned for this specific material by Safe Work Australia.

Appropriate engineering controls

Engineering controls Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES.

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields. Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

Hand protection Wear suitable gloves.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

Environmental exposure controls No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear
Color	Light yellow
Odor	None
Odor threshold	No information available.

Property	**Values**	**Remarks • Method**
pH	1.3	None known
pH (as aqueous solution)	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	1.2	None known
Water solubility	Miscible in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity Reacts with alkalis. Reacts with unlined mild steel or galvanised steel to produce hydrogen.

Chemical stability

Stability Stable under normal conditions.

Explosion data
Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Conditions to avoid

Conditions to avoid None known based on information supplied.

Incompatible materials

Incompatible materials Alkalis. Strong oxidizing agents. Metals.

Hazardous decomposition products

Hazardous decomposition products Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation May cause irritation of respiratory tract.

Eye contact Causes serious eye irritation. May cause redness, itching, and pain.

Skin contact Causes mild skin irritation. Prolonged contact may cause redness and irritation.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Symptoms May cause redness and tearing of the eyes. Prolonged contact may cause redness and irritation.

Numerical measures of toxicity - Product Information
No information available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Citric acid	= 3000 mg/kg (Rat)	> 2000 mg/kg (Rat)	-

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation May cause skin irritation. Classification based on data available for ingredients.

Serious eye damage/eye irritation Causes serious eye irritation. Classification based on data available for ingredients.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity The environmental impact of this product has not been fully investigated.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Citric acid	-	LC50: =1516mg/L (96h, Lepomis macrochirus)	-	EC50: =120mg/L (72h, Daphnia magna)

Persistence and degradability

Persistence and degradability Biodegradable.

Bioaccumulative potential

Bioaccumulation Bioaccumulation is not expected.

Component Information

Chemical name	Partition coefficient
Citric acid	-1.72

Mobility

Mobility in soil No information available.

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION

ADG
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

IATA
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

IMDG
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

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

National regulations

Australia
Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

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

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

International Inventories
AICS This material is listed on the Australian Inventory of Chemical Substances (AICS) or has been assessed under the National Industrial Chemicals (Notification and Assessment) Act 1989 as amended.

Legend:
- Australian Inventory of Industrial Chemicals

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

Reason(s) For Issue: First Issue Primary SDS

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:
The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since The Supplier cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Supplier representative or The Supplier at the contact details on page 1.

The Supplier's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **CAUSTIC SODA**

Synonyms SODIUM HYDROXIDE SOLID

1.2 Uses and uses advised against

Uses MANUFACTURE OF CHEMICALS ● REAGENT ● SCRUBBING AGENT

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Skin Corrosion/Irritation: Category 1A
Serious Eye Damage / Eye Irritation: Category 1

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

Prevention statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

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.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTRE or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.

Storage statements

P405	Store locked up.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM HYDROXIDE	1310-73-2	215-185-5	>99%

4. FIRST AID MEASURES

4.1 Description of 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 an Air-line respirator where an inhalation risk exists. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns and eye damage.

4.3 Immediate medical attention and special treatment needed

CORROSIVE POISONING TREATMENT: Immediate treatment preferably in a hospital is mandatory. 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. Immediately dilute the corrosive substance by having the patient drink milk or water. If the trachea has been damaged tracheostamy 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.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire. Use carbon dioxide or suitable dry chemical extinguisher. Do NOT use water.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve flammable hydrogen gas in contact with some metals. Direct contact with water can produce a violent exothermic reaction.

5.3 Advice for firefighters

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.

5.4 Hazchem code

2X

2 Fine Water Spray.

X Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Allow only trained personnel wearing appropriate protective equipment to be involved in spill response. Avoid accidents, clean up immediately. Increase ventilation. Avoid walking through spilled product as it is slippery when spilt. Isolate the danger area. Use clean, non-sparking tools and equipment. Shut off all possible sources of ignition.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Mechanically collect as much of the spill as possible. Absorb with sand, earth or clay. Transfer to suitable, labelled, corrosion-resistant containers and dispose of promptly as hazardous waste. Spill on areas other than pavement, dirt or sand may be handled by removing the affected soils and placing into approved containers.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Do not smoke, eat or drink when handling product. Product can react violently with water and acids. Caustic solution generates heat when further diluted with water. Concentrations greater than 40%, the heat generated can raise temperatures above the boiling point resulting in sporadic, violent eruptions or spattering. Emergency showers and eye-washes must be available. When used in its various applications, the product must be prevented from coming into uncontrolled direct contact with other products such as acids and metals. Never neutralise the solid product.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Store away from aluminium, tin, zinc and alloys (bronzes), chrome and lead. Protect from damp and kept apart from acids, halogenated hydrocarbons, nitroparaffins, etc. The floor must be waterproof and anti-slip. A water supply or source must be provided in the place of storage. Emergency showers and eye-washes must be available. Special conditions: Prevent the product from becoming damp or erated. Hygroscopic product. Becomes carbonated in contact with the air or moisture.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Sodium hydroxide (peak limitation)	SWA [AUS]	--	2 (Peak)	--	--

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 a faceshield and dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Wear coveralls and rubber boots and a PVC apron.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear an Air-line respirator or a Full-face Class P3 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE DELIQUESCENT PEARLS
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	1390°C
Melting point	318°C
Evaporation rate	NOT AVAILABLE
pH	13.5 (1 % solution)
Vapour density	NOT AVAILABLE
Relative density	2.12
Solubility (water)	1110 kg/m³ @ 20°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Highly exothermal reaction with strong acids. Reacts dangerously with acetic acid, allyl chloride, chlorine trifluoride, chloroform, methylic alcohol, chloronitrotoluene, chlorosulphonic acid, glyoxal, cyanohydrin, hydrochloric acid, hydrofluoric acid, hydroquinone, nitric acid, sulphuric acid and oleum, nitropropane, phosphorous, propiolactone, phosphorous pentoxide, tetrachlorobenzene, tetrahydrofuran, etc. Caustic soda forms salts with nitromethane and nitroparaffins that explode on impact. Heat is generated when mixed with water. Spattering and boiling can occur. Caustic soda solution reacts readily with various reducing sugars (ie: fructose, glactose, maltose, dry whey solids) to produce carbon monoxide. Caustic soda forms salts with nitromethane and nitroparaffins that explode on impact. Reacts with aluminium, tin, zinc and their alloys, copper, lead, etc. giving off hydrogen.

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), metals, heat and ignition sources.

10.6 Hazardous decomposition products

Reacts with aluminium, tin, zinc and their alloys, copper, lead, etc. giving off hydrogen. When the product decomposes, toxic sodium oxide gases are evolved.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

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 burns with corrosive tissue damage. Upon dilution, the potential for corrosive effects may be reduced.

SODIUM HYDROXIDE (1310-73-2):
LD50 (Intraperitoneal): 40 mg/kg (mouse)
LDLo (Ingestion): 1.57 mg/kg (human)

Additional ingredient toxicity values:

SODIUM HYDROXIDE (1310-73-2)

LD50 (intraperitoneal)	40 mg/kg (mouse)
LDLo (oral)	500 mg/kg (rabbit)

Skin

Causes severe burns. Contact may result in irritation, redness, pain, rash, dermatitis and skin burns.

Eye

Causes severe burns. Contact may result in irritation, lacrimation, pain, redness and corneal burns with possible serious eye damage.

Sensitisation

Not classified as causing skin or respiratory sensitisation.

Mutagenicity

Insufficient data available to classify as a mutagen. Both the in vitro and the in vivo genetic toxicity tests indicated no evidence of mutagenic activity. Furthermore the substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason additional testing is considered unnecessary (EU RAR, 2007).

Carcinogenicity

Not classified as a carcinogen. Insufficient data available to classify as a carcinogen. Systemic carcinogenicity is not expected to occur because the substance is not expected to be systemically available in the body under normal handling and use conditions.

Reproductive

Not classified as a reproductive toxin. Insufficient data available to classify as a reproductive toxin. The substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason it can be stated that the substance will not reach the foetus nor reach male and female reproductive organs. The substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason additional testing is considered unnecessary.

STOT - single exposure

Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.

STOT - repeated exposure

Not classified as causing organ damage from repeated exposure.

Aspiration

This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

EC50 Ceriodaphnia: 40 mg/L.

No other valid studies available. The hazard of NaOH for the environment is caused by the hydroxyl ion (pH effect). For this reason the effect of NaOH on the organisms depends on the buffer capacity of the aquatic or terrestrial ecosystem (see also 3.1.2). Also the variation in acute toxicity for aquatic organisms can be explained for a significant extent by the variation in buffer capacity of the test medium. LC50 values ranged between 33 and 189 mg/L.

12.2 Persistence and degradability

Readily biodegradable. NaOH is a strong alkaline substance that dissociates completely in water to Na+ and OH-. High water solubility and low vapour pressure indicate that NaOH will be found predominantly in aquatic environment. This implies that it will not adsorb on particulate matter or surfaces. Atmospheric emissions as aerosols are rapidly neutralized by carbon dioxide and the salts will be washed out by rain.

12.3 Bioaccumulative potential

Does not bioaccumulate. Considering its high water solubility, NaOH is not expected to bioconcentrate in organisms. In addition, sodium is a naturally-occurring element that is prevalent in the environment and to which organisms are exposed regularly, for which they have some capacity to regulate the concentration in the organism.

12.4 Mobility in soil

High water solubility and mobility

12.5 Other adverse effects

WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required). The product can be neutralised using highly diluted hydrochloric acid, which should be added very slowly by specialised personnel wearing proper protection. Never neutralise the solid product.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1823	1823	1823
14.2 Proper Shipping Name	SODIUM HYDROXIDE, SOLID	SODIUM HYDROXIDE, SOLID	SODIUM HYDROXIDE, SOLID
14.3 Transport hazard class	8	8	8
14.4 Packing Group	II	II	II

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code 2X

GTEPG 8A1

EmS F-A, S-B

15. REGULATORY INFORMATION

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

Poison schedule Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **CIRCAL**

Synonyms CALCIUM CARBONATE ● LIMESTONE ● MARBLE ● OMYACARB ● RHEOCARB

1.2 Uses and uses advised against

Uses DRILLING FLUID ADDITIVE ● WEIGHTING AGENT

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
CALCIUM CARBONATE	471-34-1	207-439-9	>96%
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<1%

4. FIRST AID MEASURES

4.1 Description of 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. 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 Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed
May cause irritation to the eyes, skin and respiratory system.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

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.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions
Prevent product from entering drains and waterways.

6.3 Methods of cleaning up
If spilt, collect and reuse where possible. If reuse is not possible, contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

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 uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Calcium carbonate (Limestone, Marble, Whiting)	SWA [AUS]	--	10	--	--
Quartz (respirable dust)	SWA [AUS]	--	0.05	--	--
Quartz (respirable dust) (Precautionary advice)	WorkSafe VIC	--	0.02	--	--

Biological limits No Biological Limit Value allocated.

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	When using large quantities or where heavy contamination is likely, 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	825°C
Evaporation rate	NOT AVAILABLE
pH	9
Vapour density	NOT AVAILABLE
Relative density	2.7
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	840°C
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Calcium carbonate reacts with acids and acidic salts to generate gaseous carbon dioxide with effervescence (bubbling). The reaction with concentrated solutions of acids is rapid and exothermic. The effervesence can create extensive foaming. Ignites on contact with fluorine.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid), fluorine, aluminium (hot) and ammonium salts. Incompatible with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity This product is expected to be of low toxicity. Based on available data, the classification criteria are not met. LD50 (Ingestion) = 6450 mg/kg (rat).

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
CALCIUM CARBONATE	> 2000 mg/kg (rat)	> 2000 mg/kg (rat)	> 3.0 mg/L

Skin Not classified as a skin irritant. Contact may result in mild irritation, redness and rash.

Eye Contact may result in irritation, lacrimation, pain and redness.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen. Crystalline silica is classified as carcinogenic to humans (IARC Group 1).

Reproductive Not classified as a reproductive toxin.

STOT - single exposure Not classified as causing organ damage from single exposure. However, over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure. Chronic exposure to respirable silica may result in pulmonary fibrosis (silicosis). However, given the low levels present, over exposure is not anticipated.

Aspiration Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

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.

12.2 Persistence and degradability

Dissolved calcium carbonate dissociates into calcium and carbonate ions. Calcium ions will be assimilated by living organisms in the water and the carbonate will become part of the carbon cycle.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

Due to its limited solubility, calcium carbonate precipitates and deposits on the sediment.

12.5 Other adverse effects

Avoid contamination of drains and waterways.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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.

EXPOSURE CONTROL: If utilised in a closed system the potential for over exposure is reduced. If not used in a closed system, local exhaust ventilation is recommended to control exposure. Provide eye wash and safety shower in close proximity to points of potential exposure. Where the potential for an inhalation risk exists, an approved respirator may be required. Do not eat, store, consume food, tobacco or drink in areas where product is used.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **DYNAFIBER (TM) AP (F, M, C)**

Synonyms DYNAFIBER ● NDFT 376 ● NDFT 377

1.2 Uses and uses advised against

Uses LOST CIRCULATION MATERIAL

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
ORGANIC FIBRE(S)	9004-34-6	232-674-9	100%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.

First aid facilities Normal washroom facilities should be available.

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.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains or waterways.

5.2 Special hazards arising from the substance or mixture
Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters
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.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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, heat or ignition sources and foodstuffs. Ensure containers are adequately 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.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Cellulose (paper fibre) (a)	SWA [AUS]	--	10	--	--

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 explosion proof 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	Not required under normal conditions of use.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	YELLOW TO BROWN SOLID
Odour	SLIGHT ODOUR
Flammability	COMBUSTIBLE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	7 to 8
Vapour density	NOT AVAILABLE
Relative density	0.9 to 1.2
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity This product is expected to be of low acute toxicity. Under normal conditions of use, adverse health effects are not anticipated.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
ORGANIC FIBRE(S)	> 5000 mg/kg (rat)	> 2000 mg/kg (rabbit)	> 5800 mg/m³/4 hours (rat)

Skin Not classified as a skin irritant. Skin irritation is not anticipated under normal conditions of use.

Eye Not classified as an eye irritant. Eye irritation is not anticipated under normal conditions of use.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT - single exposure Not classified as causing organ damage from single exposure.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reuse or recycle where possible. Alternatively, ensure product is covered with moist soil to prevent dust generation and dispose of to an approved landfill site. Contact the manufacturer/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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES: Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: Strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

COMBUSTIBLE - EXPLOSIVE CARBONACEOUS DUST: Carbonaceous/organic dusts have the potential, with dispersion, to present an explosion hazard if an ignition source exists. All equipment used to handle, transfer or store this product MUST BE cleaned thoroughly prior to cutting, welding, drilling or exposure to any other form of heat or ignition sources. If bulk stored, containers should be ventilated on a routine basis to avoid vapour accumulation (where applicable, eg for flocculants).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **XANTHAN GUM (P)**

Synonyms NEWZAN D ● VISCO XC 84 ● XANTHAN GUM (BIOPOLYMER)

1.2 Uses and uses advised against

Uses DRILLING FLUID ADDITIVE ● VISCOSITY MODIFIER

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

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
XANTHAN GUM	11138-66-2	234-394-2	>87%
WATER	7732-18-5	231-791-2	<13%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Ingestion is considered unlikely due to product form.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains or waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Finely divided dust may form explosive mixtures with air.

5.3 Advice for firefighters

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.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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 and tightly closed when not in use.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

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.

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	Wear a Class P1 (Particulate) respirator. Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	LIGHT BEIGE POWDER
Odour	SLIGHT ODOUR
Flammability	COMBUSTIBLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Relative density	1.5
Solubility (water)	MISCIBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products
May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low acute toxicity. Under normal conditions of use, adverse health effects are not anticipated. LD50 (oral) > 1000 mg/kg (mouse) LD50 (oral) > 45,000 mg/kg (rat) LD50 (oral) > 20,000 mg/kg (dog) LD50 (intraperitoneal): > 50 mg/kg (mouse) LD50 (intravenous): 100-250 mg/kg (mouse)
Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No relevant or reliable studies were identified.
STOT - single exposure	Not classified as causing organ damage from single exposure.
STOT - repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

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
No information provided.

12.3 Bioaccumulative potential
Not expected to bioaccumulate.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
No information provided.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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 form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **POTASSIUM CHLORIDE**

Synonyms KCL ● MURIATE OF POTASH ● POTASH ● SYLVITE

1.2 Uses and uses advised against

Uses DRILLING FLUID ADDITIVE ● FERTILISER ● INHIBITOR

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
POTASSIUM CHLORIDE	7447-40-7	231-211-8	>97%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

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 (potassium oxides, chlorides) when heated to decomposition.

5.3 Advice for firefighters
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.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

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 disposal. Avoid generating dust.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

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 uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

No exposure standards have been entered for this product.

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.

PPE

Eye / Face	At high dust levels, wear dust-proof goggles.
Hands	With prolonged use, wear PVC or rubber or cotton gloves.
Body	With prolonged use, wear coveralls.
Respiratory	At high dust levels, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	1413°C
Melting point	773°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Relative density	2.0
Solubility (water)	340 g/L @ 20°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Potassium chloride is not in general strongly reactive. Violent reaction with BrF3 and with a mixture of sulfuric acid potassium permanganate mixture (NTP, 1992). Reacts with concentrated sulfuric acid to generate fumes of hydrogen chloride. Incompatible with oxidising agents.

10.6 Hazardous decomposition products

May evolve toxic gases (potassium oxides, chlorides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity May be harmful if swallowed in large quantities. Additional toxicity data for potassium chloride:
LD50 (Intraperitoneal): 620 mg/kg (mouse)
LD50 (Intravenous): 117 mg/kg (mouse)
LDLo (Ingestion): 20 mg/kg (man)
LDLo (Intraperitoneal): 900 mg/kg (guinea pig)
LDLo (Intravenous): 77 mg/kg (guinea pig)

LDLo (Subcutaneous): 2120 mg/kg (frog)
TDLo (Ingestion): 60 mg/kg/days (woman)

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
POTASSIUM CHLORIDE	2600 mg/kg (rat)	--	--

Skin Not classified as a skin irritant. Contact may result in mild irritation and rash.

Eye Contact may cause discomfort, lacrimation and redness.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity No evidence of mutagenic effects.

Carcinogenicity No evidence of carcinogenic effects.

Reproductive No relevant or reliable studies were identified.

STOT - single exposure Acute potassium poisoning via ingestion is rare as a large single dose usually induces vomiting, and potassium is rapidly excreted by the body, however this product does have the potential to cause cardiovascular disorders.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

In short-term acute toxicity tests with fish, daphnia and algae the following results were found (lowest test result values): Ictalurus punctulus 48h-LC50 = 720 mg/l; Daphnia magna: 48h-LC50 = 177 mg/l; Nitzschia linearis: 120 h-EC50 = 1337 mg/l. A chronic reproductive test with the invertebrate Daphnia magna gave a LOEC of 101 mg/l. All the studies compiled on the acute and chronic aquatic toxicity were > 100 mg/L. Thus it is concluded that KCl is not hazardous to freshwater organisms. Taking into considerations the background concentrations of KCl in seawater (380 mg/l K+ and 19,000 mg/l Cl-), it is concluded that there is no reason for further investigations of KCl on marine species. The low concern for the environment is supported by the absence of a bioaccumulation potential for the substance.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

Does not bioaccumulate.

12.4 Mobility in soil

No impact if small amount is released to the soil.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect and place in sealable containers and dispose of to an approved landfill site. 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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, 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 form of product, 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: form of product; 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 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/m³	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

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

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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **KWIKSEAL (FINE/MED/COARSE)**

Synonyms KWIK SEAL (FORMERLY) ● KWIKSEAL NS ● MEDIUM KWIKSEAL

1.2 Uses and uses advised against

Uses 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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 GHS 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
WOOD, WOOD FIBERS, GROUND HULLS OR SHELLS	-	-	Not Available
SYNTHETIC FLAKES	-	-	Not Available

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Normal washroom facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed
Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

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
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.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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 and tightly closed when not in use.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Wood dust	SWA [Proposed]	--	0.5	--	--
Wood dust (certain hardwoods such as beech & oak)	SWA [AUS]	--	1	--	--
Wood dust (soft wood)	SWA [AUS]	--	5	--	10

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	At high dust levels, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WOODY BROWN SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Relative density	0.24 - 0.36
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low acute toxicity. Under normal conditions of use, adverse health effects are not anticipated.
Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No relevant or reliable studies were identified.
STOT - single exposure	Not classified as causing organ damage from single exposure.
STOT - repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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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[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **SODA ASH**

Synonyms SODA ASH DENSE ● SODIUM CARBONATE

1.2 Uses and uses advised against

Uses DRILLING AID

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 http://www.newpark.com

1.4 Emergency telephone numbers

Emergency 1800 127 406 (Australia); +64 4 917 9888 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Serious Eye Damage / Eye Irritation: Category 1
Specific Target Organ Toxicity (Single Exposure): Category 3 (Respiratory Irritation)

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Prevention statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTRE or doctor/physician.

Storage statements

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM CARBONATE	497-19-8	207-838-8	>97%

4. FIRST AID MEASURES

4.1 Description of 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. Apply artificial respiration if not breathing.

Skin 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.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities should be available.

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.

5. FIRE FIGHTING MEASURES

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

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.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

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 disposal. Avoid generating dust.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

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. Check regularly for leaks or spills.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Sodium Carbonate (total dust)	SWA [AUS]	--	10	--	--

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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	854°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
	2.533

9.1 Information on basic physical and chemical properties

Relative density	
Solubility (water)	170 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

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 heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity May be harmful if swallowed.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
SODIUM CARBONATE	> 2000 mg/kg (rat) (AICIS)	> 2000 mg/kg (rat) (AICIS)	> 2000 mg/m³ (rat) (AICIS)

Additional ingredient toxicity values:

SODIUM CARBONATE (497-19-8)

LD50 (intraperitoneal) 117 mg/kg (mouse)

LD50 (subcutaneous) 2210 mg/kg (mouse)

Skin Contact may result in irritation, redness, rash and dermatitis.

Eye Contact may result in irritation, lacrimation, pain, redness and possible serious eye damage.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT - single exposure Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.

STOT - repeated exposure Not classified as causing organ damage from repeated exposure. Carbonate ions are neutralised under physiological conditions to form bicarbonate ions and/or carbon dioxide, which are major products of all human metabolic activities; therefore, systemic toxicity is not expected.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Fishes, Lepomis macrochirus, LC50, 96 h, 300 mg/l. Crustaceans, Ceriodaphnia dubia, EC50, 48 h, 200 - 227 mg/l.

12.2 Persistence and degradability

Not applicable for inorganic substances. The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

If sodium carbonate is emitted to soil it can escape to atmosphere as carbon dioxide, precipitate as a metal carbonate, form complexes or stay in solution.

12.5 Other adverse effects

WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. 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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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 Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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: form of product; 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 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/m³	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

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.

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[End of SDS]

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SDS No: 702

Version: V.0.0.4

TelChem Hydrochloric Acid 26 – 28%

Telford Industries

Safety Data Sheet according to WHS and ADG requirements

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	TelChem Hydrochloric Acid 26 – 28%
Chemical Name	Hydrochloric Acid 26 – 28 %
Synonyms	Muriatic Acid
Proper shipping name	HYDROCHLORIC ACID
Chemical formula	HCl
Other means of identification	Not Available

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

Relevant Identified Uses	Acidising of petroleum wells, Boiler scale removal, Chemical intermediate, Ore reduction, Pickling and metal cleaning, Alcohol denaturant, pH adjusting of swimming pool water.

Details of the supplier of the safety data sheet

Company Name	**Telford Industries**
Address	**7 Valentine Street Kewdale WA 6105 Australia**
Telephone	**+61 8 9353 2053**
Website	**https://www.telfordindustries.com.au/**
Email	**info@telfordindustries.com.au**

Emergency telephone number

Association/Organisation	**Not Available**
Emergency telephone numbers	**1800 429 628**
Other Emergency telephone numbers	**1800 HAZMAT**

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

Poisons Schedule	**S6**
Classification	Metal Corrosion Category 1, Acute Toxicity (Inhalation) Category 2, Skin Corrosion/Irritation Category 1A, Serious Eye Damage Category 1

Label Elements

GHS label elements	
SIGNAL WORD	**DANGER**

Hazard statement(s)

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H330	Fatal if inhaled.

Precautionary statement(s) Prevention

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P270	Do not eat, drink or smoke when using this product
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P234	Keep only in original container.
P284	Wear respiratory protection.

Precautionary statement(s) Response

P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Precautionary statement(s) Storage

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

CAS No	% [weight]	Name
7647-01-0	26	hydrochloric acid
Not Available	<0.1	silica
7440-32-6	<1	titanium
7732-18-5	balance	water

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ➢ Immediately hold eyelids apart and flush the eye continuously with running water. ➢ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ➢ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ➢ Transport to hospital or doctor without delay. ➢ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ➢ Immediately flush body and clothes with large amounts of water, using safety shower if available. ➢ Quickly remove all contaminated clothing, including footwear. ➢ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ➢ Transport to hospital, or doctor.
Inhalation	➢ If fumes or combustion products are inhaled remove from contaminated area. ➢ Lay patient down. Keep warm and rested. ➢ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ➢ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ➢ Transport to hospital, or doctor, without delay.
Ingestion	➢ For advice, contact a Poisons Information Centre or a doctor at once. ➢ Urgent hospital treatment is likely to be needed. ➢ If swallowed do NOT induce vomiting. ➢ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ➢ Observe the patient carefully. ➢ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ➢ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ➢ Transport to hospital or doctor without delay.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes.
- DO NOT use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

Extinguishing Media

- Water spray or fog
- Foam

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	➢ Alert Fire Brigade and tell them location and nature of hazard. ➢ Wear full body protective clothing with breathing apparatus. ➢ Prevent, by any means available, spillage from entering drains or water course. ➢ Use fire fighting procedures suitable for surrounding area. ➢ Do not approach containers suspected to be hot. ➢ Cool fire exposed containers with water spray from a protected location. ➢ If safe to do so, remove containers from path of fire. ➢ Equipment should be thoroughly decontaminated after use. ➢ May evolve toxic gases (chlorine) when heated to decomposition.
Fire/Explosion Hazard	➢ Non combustible. ➢ Not considered to be a significant fire risk. ➢ Acids may react with metals to produce hydrogen, a highly flammable and explosive gas. ➢ Heating may cause expansion or decomposition leading to violent rupture of containers. ➢ May emit corrosive, poisonous fumes. May emit acrid smoke. Decomposition may produce toxic fumes of: hydrogen chloride
HAZCHEM	2R

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	➢ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. ➢ Check regularly for spills and leaks. ➢ Clean up all spills immediately. ➢ Avoid breathing vapours and contact with skin and eyes. ➢ Control personal contact with the substance, by using protective equipment. ➢ Contain and absorb spill with sand, earth, inert material or vermiculite. ➢ Wipe up. ➢ Place in a suitable, labelled container for waste disposal.
Major Spills	Chemical Class: acidic compounds, inorganic For release onto land: recommended sorbents listed in order of priority. SORBENT TYPE | RANK | APPLICATION | COLLECTION | LIMITATIONS

LAND SPILL – SMALL

foamed glass - pillows	1	throw	pitchfork	R, P, DGC, RT
expanded mineral - particulate	2	shovel	shovel	R, I, W, P, DGC
foamed glass - particulate	2	shovel	shovel	R, W, P, DGC

LAND SPILL – MEDIUM

expanded mineral -particulate	1	blower	skiploader	R, I, W, P, DGC
foamed glass- particulate	2	blower	skiploader	R, W, P, DGC
foamed glass - particulate	3	throw	skiploader	R, W, P, DGC

Legend

DGC: Not effective where ground cover is dense
R; Not reusable
I: Not incinerable
P: Effectiveness reduced when rainy
RT: Not effective where terrain is rugged
SS: Not for use within environmentally sensitive sites W: Effectiveness reduced when windy
Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;
R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue (see Section 13 for specific agent).
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	➢ DO NOT allow clothing wet with material to stay in contact with skin ➢ Avoid all personal contact, including inhalation. ➢ Wear protective clothing when risk of exposure occurs. ➢ Use in a well-ventilated area. ➢ WARNING: To avoid violent reaction, **ALWAYS** add material to water and **NEVER** water to material. Avoid smoking, naked lights or ignition sources. ➢ Avoid contact with incompatible materials. ➢ When handling, DO NOT eat, drink or smoke. ➢ Keep containers securely sealed when not in use. ➢ Avoid physical damage to containers. ➢ Always wash hands with soap and water after handling. ➢ Work clothes should be laundered separately. Launder contaminated clothing before re-use. ➢ Use good occupational work practice. ➢ Observe manufacturer's storage and handling recommendations contained within this SDS. ➢ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Other Information	➢ Store in original containers. ➢ Keep containers securely sealed. ➢ Store in a cool, dry, well-ventilated area. ➢ Store away from incompatible materials and foodstuff containers. ➢ Protect containers against physical damage and check regularly for leaks. ➢ Observe manufacturer's storage and handling recommendations contained within this SDS.

Conditions for safe storage, including any incompatibilities

Suitable Container	➢ DO NOT use aluminium or galvanised containers ➢ Check regularly for spills and leaks ➢ Lined metal can, lined metal pail/ can. ➢ Plastic pail. ➢ Polyliner drum. ➢ Packing as recommended by manufacturer. ➢ Check all containers are clearly labelled and free from leaks.
Storage Incompatibility	➢ Inorganic acids neutralise chemical bases (for example: amines and inorganic hydroxides) to form salts - neutralisation can generate dangerously large amounts of heat in small spaces. ➢ The dissolution of inorganic acids in water or the dilution of their concentrated solutions with additional water may generate significant heat. ➢ The addition of water to inorganic acids often generates sufficient heat in the small region of mixing to cause some of the water to boil explosively. The resulting "bumping" can spatter the acid. ➢ Inorganic acids react with active metals, including such structural metals as aluminum and iron, to release hydrogen, a flammable gas. ➢ Inorganic acids react with cyanide compounds to release gaseous hydrogen cyanide. ➢ Inorganic acids generate flammable and/or toxic gases in contact with dithiocarbamates, isocyanates, mercaptans, nitrides, nitriles, sulfides, and strong reducing agents. Additional gas-generating reactions occur with sulfites, nitrites, thiosulfates (to give H2S and SO3), dithionites (SO2), and even carbonates. ➢ Reacts vigorously with alkalis. ➢ Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air. ➢ Contact with acids, organics, reducing agents (eg. amines), metallic powders and heat sources produces toxic fumes of chlorine. May be decomposed by hot water releasing chlorine fumes.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material Name	TWA	STEL	Peak	Notes
Australia Exposure Standards	hydrochloric acid	Hydrogen chloride	Not Available	Not Available	7.5 mg/m3 / 5 ppm	Not Available
Australia Exposure Standards	titanium	Fume	2 mg/m3	Not Available	Not Available	Not Available

EMERGENCY LIMITS

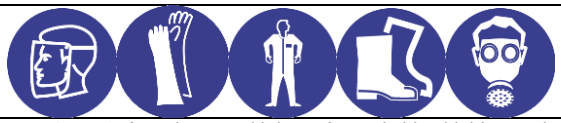
Ingredient	Material Name	TEEL-1	TEEL-2	TEEL-3
hydrochloric acid	Hydrogen chloride; (Hydrochloric acid)	Not Available	Not Available	Not Available
hydrochloric acid	Deuterochloric acid; (Deuterium chloride)	1.8 ppm	22 ppm	100 ppm
titanium	Titanium	30 mg/m3	330 mg/m3	2,000 mg/m3

Ingredient	Original IDLH	Revised IDLH
hydrochloric acid	100 ppm	50 ppm
silica	Not Available	Not Available
titanium	Not Available	Not Available
water	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

Personal Protection	
Eye and Face protection	➢ Safety glasses with imperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure. ➢ Chemical goggles whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted. ➢ Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes. ➢ Alternatively a gas mask may replace splash goggles and face shields.
Skin protection	See Hand protection below
Hands/feet protection	➢ Elbow length PVC gloves ➢ Wear chemical protective gloves, e.g. PVC. ➢ Wear safety footwear or safety gumboots, e.g. Rubber ➢ When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots. ➢ Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
Body protection	See Other protection below
Other protection	➢ Overalls. ➢ PVC Apron. ➢ PVC protective suit may be required if exposure severe. ➢ Eyewash unit. ➢ Ensure there is ready access to a safety shower.
Thermal hazards	Not Available

Respiratory protection

Type B-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Colourless to slightly yellow corrosive liquid with a pungent acidic odour; miscible with water.

Physical state	Liquid	**Flash point (°C)**	Not Applicable
Odour	Not Available	**Evaporation rate**	Not Available
Odour threshold	Not Available	**Flammability**	Not Applicable
Relative density (water=1)	1.13	**Upper Explosive Limit (%)**	Not Applicable
Colour	Colourless - slightly yellow	**Lower Explosive Limit (%)**	Not Applicable
pH (as supplied)	< 1	**Vapour pressure (kPa)**	Not Available
Melting point/Freezing point (°C)	< -10	**Solubility in water (g/L)**	Miscible
Initial boiling point and boiling range (°C)	> 100	**Vapour density (Air = 1)**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	Contact with alkaline material liberates heat
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7

Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Acidic corrosives produce respiratory tract irritation with coughing, choking and mucous membrane damage. Symptoms of exposure may include dizziness, headache, nausea and weakness. Hydrogen chloride (HCl) vapour or fumes present a hazard from a single acute exposure. Exposures of 1300 to 2000 ppm have been lethal to humans in a few minutes. Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects; these may be fatal. Inhalation of the vapour is hazardous and may even be fatal.
Ingestion	Ingestion of acidic corrosives may produce circumoral burns with a distinct discolouration of the mucous membranes of the mouth, throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.
Skin Contact	Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation. Direct eye contact with acid corrosives may produce pain, lachrymation, photophobia and burns. Mild burns of the epithelia generally recover rapidly and completely. Severe burns produce long-lasting and possible irreversible damage. The appearance of the burn may not be apparent for several weeks after the initial contact. The cornea may ultimately become deeply vascularised and opaque resulting in blindness.
Chronic	Repeated or prolonged exposure to acids may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Chronic minor exposure to hydrogen chloride (HCl) vapour or fume may cause discolouration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes. Repeated exposures of animals to concentrations of about 34 ppm HCl produced no immediate toxic effects. Workers exposed to hydrochloric acid suffered from gastritis and a number of cases of chronic bronchitis have also been reported. Repeated or prolonged exposure to dilute solutions of HCl may cause dermatitis.

Product Name	**TOXICITY**	**IRRITATION**
TelChem Hydrochloric Acid 26 – 28 %	Not Available	Not Available
hydrochloric acid	Inhalation (rat) LC50: 3124 ppm/1hr[2] Oral (rat) LD50: 900 mg/kg[2]	Eye (rabbit): 5mg/30s - mild
titanium	Oral (rat) LD50: >2000 mg/kg[1]	Not Available
Water	Oral (rat) LD50: >90000 mg/kg[2]	Not Available

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

HYDROCHLORIC ACID	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. For acid mists, aerosols, vapours; Data from assays for genotoxic activity in vitro suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.
HYDROCHLORIC ACID & TITANIUM & WATER	No significant acute toxicological data identified in literature search.

Acute Toxicity	✓	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	✓	**Reproductivity**	⊘
Serious Eye Damage/Irritation	✓	**STOT – single exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT – repeated exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✗ *– Data available but does not fill the criteria for classification*
✓ *– Data required to make classification available*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
hydrochloric acid	LC50	96	Fish	70.057mg/L	3
hydrochloric acid	EC50	96	Algae or other aquatic plants	344.947mg/L	3
hydrochloric acid	EC50	9.33	Fish	0.014000mg/L	4
hydrochloric acid	NOEC	0.08	Fish	10mg/L	4
titanium	EC50	4.5	Algae or other aquatic plants	>100mg/L	2
titanium	NOEC	48	Crustacean	1mg/L	2
Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*				

Ecotoxicity

Prevent, by any means available, spillage from entering drains or water courses.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
hydrochloric acid	LOW	LOW
water	LOW	LOW

Bio accumulative potential

Ingredient	Bioaccumulation
hydrochloric acid	LOW (Log KOW = 0.5392)
water	LOW (Log KOW = -1.38)

Mobility in Soil

Ingredient	Mobility
hydrochloric acid	LOW (KOC = 14.3)
water	LOW (KOC = 14.3)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product/Packaging disposal	➢ Containers may still present a chemical hazard/ danger when empty. ➢ Return to supplier for reuse/ recycling if possible. Otherwise: ➢ If container can't be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ➢ Where possible retain label warnings and SDS and observe all notices pertaining to the product. ➢ Recycle wherever possible. ➢ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ➢ Treat and neutralise at an approved treatment plant. Treatment should involve: Neutralisation with soda-ash or soda-lime followed by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material). ➢ Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	NO
HAZCHEM	2R

Land transport (ADG)

UN Number	1789	
UN proper shipping name	HYDROCHLORIC ACID	
Transport Hazard class(es)	Class	8
	Sub Risk	Not Applicable
Packing group	II	
Environmental Hazard	Not Applicable	
Special precautions for user	Special provisions	Not Applicable
	Limited quantity	1 L

Air transport (ICAO-IATA / DGR)

UN Number	1789	
UN proper shipping name	HYDROCHLORIC ACID	
Transport Hazard class(es)	ICAO/IATA Class	8
	ICAO/IATA Sub Risk	Not Applicable
Packing group	II	
Environmental Hazard	Not Applicable	
Special precautions for user	Special provisions	Not Applicable
	Cargo Only Packing Instructions	Not Available
	Cargo Only Maximum Qty/Pack	Not Available
	Passenger and Cargo Packing Instructions	851

	Passenger and Cargo Maximum Qty/Pack	1 L
	Passenger and Cargo Limited Quantity Packing Instructions	Y840
	Passenger and Cargo Limited Maximum Qty / Pack	0.5 L

Sea transport (IMDG-Code / GGVSee)

UN Number	1789	
UN proper shipping name	HYDROCHLORIC ACID	
Transport Hazard class(es)	IMDG Class	8
	IMDG Sub Risk	Not Applicable
Packing group	II	
Environmental Hazard	Not Applicable	
Special precautions for user	EMS, Fire	F-A
	EMS, Spillage	S-B

Transport in bulk according to Annex II of MARPOL and the IBC code

Source	Product Name	Pollution Category	Ship Type
IMO MARPOL (Annex II) – List of Noxious Liquid Substances Carried in Bulk	Hydrochloric acid	Z	3

SECTION 15 REGULATORY INFORMATION

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

HYDROCHLORIC ACID (7647-01-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)
Australia Hazardous Substances Information System - Consolidated Lists

TITANIUM (7440-32-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards
International Air Transport Association (IATA) Dangerous Goods Regulations Prohibited List Passenger and Cargo Aircraft
Australia Inventory of Chemical Substances (AICS)

WATER (7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (titanium; hydrochloric acid; water)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (titanium; water)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

Name	CAS No		
PC—TWA	Permissible Concentration-Time Weighted Average	**PC—STEL**	Permissible Concentration-Short Term Exposure Limit
IARC	International Agency for Research on Cancer	**ACGIH**	American Conference of Governmental Industrial Hygienists
STEL	Short Term Exposure Limit	**TEEL**	Temporary Emergency Exposure Limit
IDLH	Immediately Dangerous to Life or Health Concentrations	**OSF**	Odour Safety Factor
NOAEL	No Observed Adverse Effect Level	**LOAEL**	Lowest Observed Adverse Effect Level
TLV	Threshold Limit Value	**LOD**	Limit Of Detection
OTV	Odour Threshold Value	**BCF**	BioConcentration Factors
BEI	Biological Exposure Index		

END OF SDS