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WAITSIA-02

WELL INTERVENTION AND PRODUCTION TESTING

SUMMARY DOCUMENT

PERMIT: L1

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1.0 CONTACT DETAILS

Regulatory & Community Affairs Manager

AWE Perth Pty Ltd

Level 3, 1101 Hay Street

WEST PERTH WA 6005

Phone: 08 9480 1300

2.0 PURPOSE

The purpose of this document is to provide an outline of the proposed Waitsia-02 well intervention and production testing activities and disclosure of the associated down-hole chemical use.

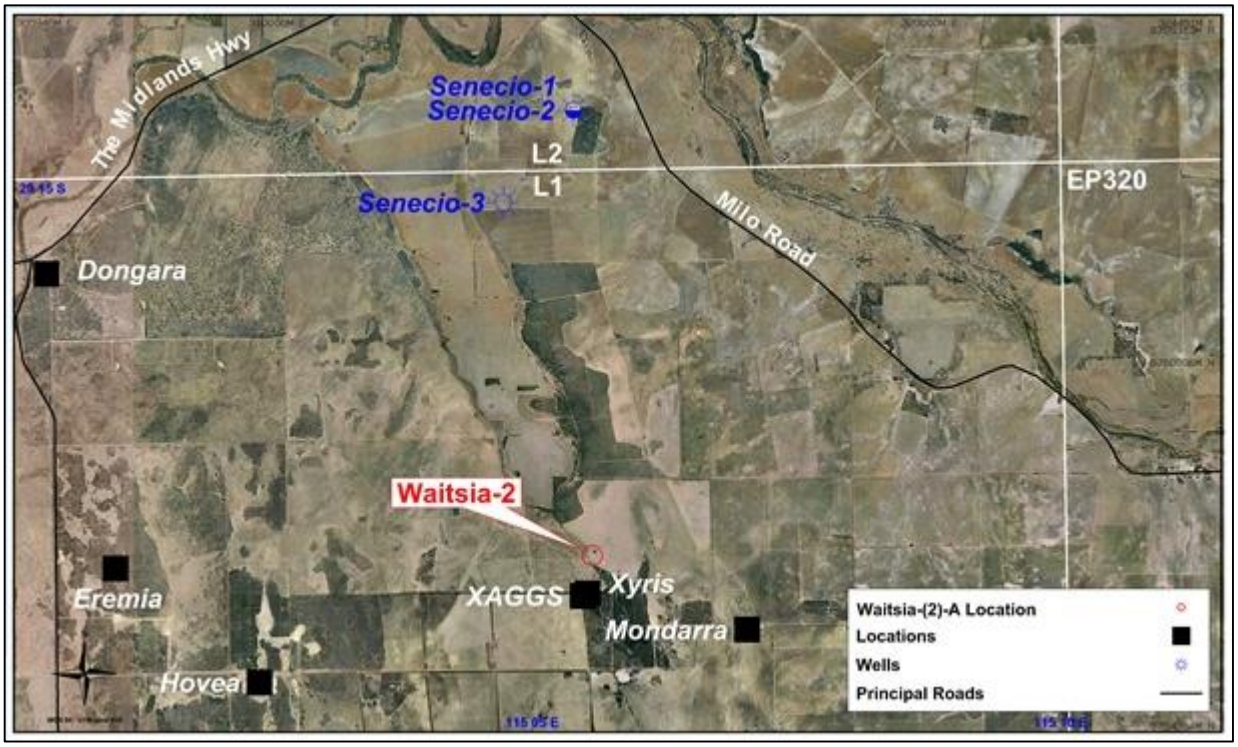
3.0 ACTIVITY LOCATION

The Waitsia-02 well site, located within Permit L1, is about 16.3 km south east of Dongara and 300 km north of Perth, Western Australia (Figure 1). The proposed Waitsia-02 site is located within cleared agricultural land (private) in the northern Perth Basin.

The Waitsia-02 wellhead location is:

Surface Location:	Latitude: 29 18’ 7.01” S	Long: 115 05’ 35.85” E
Surface Location:	Easting: 314 811m E	Northing: 6 757 052m S

Figure 1 Waitsia-02 location



4.0 DESCRIPTION OF THE ENVIRONMENT

A detailed description of the existing physical, biological, social, cultural and economic environment in the L1 Production Licence area is included within the accepted EP. Table 1 presents a summary of the receiving environment within the vicinity of the Waitsia-02 well location.

Table 1 Description of receiving environment

Aspect	Description
Soil and Landform	Plateau residuals, very gently to gently inclined hillcrest and hill slopes; pale sandy gravels, shallow gravel over duricrust, gravelly pale deep sand, pale and yellow deep sands supporting heath. Project area within previously disturbed agricultural land.
Vegetation	Surrounding vegetation degraded by grazing.
Fauna	Farming land with livestock grazing predominates. Introduced mammals (black rat, rabbits, foxes, feral cats) and Western Grey Kangaroos may occur in the area. Various bird species found within area.
Social	Agricultural land use. No residence within 3.7 km of well site.
Cultural	No culturally significant sites within the project area.
Economic	Broad hectare cropping and grazing activities, oil and gas, tourism are the typical commercial activities in the area.

Distance to sensitive receivers	• Private residence locations in relation to Waitsia-02:
	  ○ 4.45 km NW
	  ○ 3.7 km SW
	  ○ 3.7 km NE
	  ○ 4.2 km SE
	• Towns: Dongara is located approximately 16.3 km north west of the Waitsia-02 well site. The Irwin town ship is located approximately 9 km north of Waitsia-02.
	• Water course: Ejarno Spring is the nearest water body located approximately 1.3 km south of the site.

5.0 DESCRIPTION OF ACTIVITY

5.1 Waitsia-02 well background

Waitsia-02 well (Figure 1) was drilled during June-August 2015 within Production Licence L1. The well was drilled to a total depth of 3,530 m Measured Depth below Rotary Table (MDRT).

The Waitsia-02 well was tested through a Diagnostic Fracture Injection Test (DFIT) completed August 2016.

5.1.1 Waitsia-02 well test activities

If further evaluation through well testing is pursued, the additional evaluation phases of the Waitsia-02 well operations would commence in 2017 as soon as reasonably possible subject to equipment availability and receiving all regulatory approvals. These would be expected to continue over a period of 3-4 months into Q3/Q4 of 2017 with actual duration determined based on the acquired evaluation data. This would include operations such as wellbore clean-out, completion installation and removal, well test operations, logging evaluation, and other associated well intervention activities as specified in the well completion and testing programme to complete this evaluation phase of the project.

AWE will engage a work-over rig contractor (contractor to be confirmed) to manage the recompletion and a well test contractor (contractor to be confirmed) to manage well testing activities for the Waitsia-02 well intervention and well testing program. DMIRS would be advised of both contractors prior to the commencement of the activity.

The general operational sequence anticipated for this evaluation process is as follows:

- Install a well completion to test the zones of interest
- Clean up and test the target intervals
    - Run gauges and evaluation logs as required
    - Lift assist if required
    - If required, reconfigure the completion to evaluate target intervals
- Potentially re-complete the well for either future gas testing or testing operations
- Maintain and/or rehabilitate the well location following the completion of operations based on the outcome of the evaluation phase.

Further technical details are supplied to the DMIRS Petroleum Branch within the Completion and Well Testing Program.

5.2 Products, additives, chemicals and other substances disclosure

The DMIRS set out the requirements for chemical disclosure within the Chemical Disclosure Guideline released August 2013. The guideline details the chemical disclosure requirements for products, additives, chemicals and other substances used ‘down-hole’ in petroleum or geothermal related activities regulated under regulation 15(9) of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012.

The chemical disclosure tables cover the following ‘down-hole’ activities:

- Well Intervention Activities (Well testing)

The proposed chemicals are based on previous well test programs and may be subject to change, the DMIRS will be notified of any variations prior to commencement via submission of a bridging document.

Contingent volumes are provided for within the Chemical Disclosure tables (Attachment 1) as highlighted in grey. The Safety Data Sheets (SDSs) for the chemicals associated with the Waitsia-03 activities are provided for within Attachment 2. Note: Where an SDS provided differs from the supplier, the product is considered the equivalent.

5.3 Demobilisation, suspension and rehabilitation

Upon completion of the activities the well testing equipment will be demobilised from the Waitsia-02 site and the well suspended.

There are no immediate plans to rehabilitate the Waitsia-02 well site. At which point that the well has been decommissioned, the surrounding lease area will be rehabilitated in accordance with the requirements set out within the accepted Waitsia-02 EP.

6.0 ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT

A risk review was conducted by project management, well intervention, and environmental personnel. The key risks associated with the proposed activity are summarised below:

- Vehicle accident (Chemical spill): Transport of fuel and chemicals to site, (ranked as Medium 5).
- Physical presence: Worst case scenario well blow out, including fire. Due to poor well control, or safety measure failure (ranked as Medium 5).
- Physical presence/Socio economic: uncontrolled fire due to on-site activities during operations (ranked as Medium 5).
- Bushfire: Uncontrolled fire due to on-site activities during summer months (ranked as Medium 5).

7.0 IMPLEMENTATION STRATEGY

The implementation strategy outlined in the accepted EP [HSE-E-90] Rev 4 is applicable to the proposed activity. The aspects include:

- Systems, practices and procedures
- Roles and responsibilities of personnel
- Training and competencies
- Monitoring, auditing, management of non-conformance and review
- Emergency response (including oil spill contingency plan)
- Record keeping
- Reporting

8.0 REPORTING

The incident and routine reporting requirements as required under the applicable legislation is summarised within Table 2, AWE will adhere to these reporting requirements as they apply

to well intervention activities and as outlined within the approved Waitsia-02 Environment Plan (EP) [HSE-E-090] Rev 4.

Table 2 Summary of reporting requirements

Report	Legislative Requirement	Frequency
DMP PEB AER (Section 11.5)	PGER (Environment) 2012 Regulation 16	Annually
Reportable Incident Reports (Section 11.3.1)	PGER (Environment) 2012 Regulation 28 & 29	Within two hours of incident followed by a detailed written report within 3 days.
Recordable Incident Reports (Section 11.3)	PGER (Environment) 2012 Regulation 30	Monthly (within 15 days of the end of the reporting period)
Emissions and Discharges (Section 11.4)	PGER (Environment) 2012 Regulation 33	Quarterly (within 15 days of the end of the reporting period)
NPI Reporting	National Environment Protection Measures (Implementation) Act 1998	Annually (30 September)
Clean Energy Regulator (CER) NGER Reporting	National Greenhouse and Energy Reporting Act 2007	Annually (31 October)

9.0 CONSULTATION

Consultation for the proposed activity is listed in Table 3. AWE commits to ongoing consultation during the Waitsia-02 well testing activity. AWE will consult the community and neighbouring landowners in regards to proposed activities and be available throughout the course of activities to field any inquiries or respond to any issues should they arise.

Table 3 Consultation summary

Stakeholders	Issues and resolution
DMIRS (Petroleum Division)	Preparation and submission of technical program prior to commencement of activity.
DMIRS (Environmental Branch)	Waitsia-02 Environment Plan (EP) [HSE-E-090] Rev 4 accepted by the DMP 13 May 2016.
	Preparation and submission of this document to DMIRS.
Landowners, lessee and surrounding residents	30/10/2014 – AWE acquired the 4,642 hectare arable land holding within which the Waitsia-02 well is located. AWE leases the land to a local family owned agricultural business.
	<u>Planned:</u> - Prior to commencement, the lessee and surrounding potentially impacted residents will be advised of the activity and its timing.

Stakeholders	Issues and resolution
DFES	06/03/2017 - AWE notified Department of Fire & Emergency Services - DFES) of the upcoming drilling and well test campaign.
	03/05/2017 – AWE submitted the Application form for *Bush Fires Act 1954* – Section 22C (Total Fire Ban) and/or Section 25A (R&PBT) Exemption for the planned Waitsia-02 flaring activities.
Shire of Irwin Chief Fire Warden	20/03/2017 – AWE notified Irwin Shire Chief Fire Warden of the upcoming drilling and well test campaign.
	<u>Planned:</u> Prior to the commencement of any flaring operations, the Chief Fire Warden will be engaged to provide project input from a fire risk mitigation perspective.
Department of Water and Environmental Regulation (DWER)	<u>Planned:</u> Advise DWER Prior to the commencement of any flaring operations.
Shire of Irwin	15/02/2017 – Provided a Fire Prevention Management Plan to Shire of Irwin – Manager of Planning Services.
	06/03/2017 – AWE Irwin Shire Community Emergency Services Manager)of the upcoming drilling and well test campaign.
	<u>Planned:</u> • Two weeks prior to the scheduled flow-test, provide an update to the Shire of Irwin. • Shire of Irwin Chief Fire Warden notification.
Broader community residents and other stakeholders	Residents of the Shire of Irwin are kept informed of AWE activities through the Community Roundtable and AWE's Mid west website. Information about the flow test will be provided at the next roundtable meeting (e.g. upcoming meeting is tentatively scheduled for September) and through the website which includes a newsfeed subscription option. Nearest residents and people regularly working in the vicinity of the flow test will be advised directly of the flow test activities planned including the timing.

ATTACHMENTS

Attachment 1
Chemical Disclosure Tables

A. SYSTEM DETAILS:	
OPERATOR:	AWE
PROJECT / WELL:	Waitsia-02
SYSTEM:	WIA fluids
TOTAL VOLUME OF SYSTEM (m^3):	600

B. PRODUCT LIST

Trade name	Supplier	Purpose	Toxicity & Eco toxicity Info	% Product in system fluid	SDS Attached
Water	N/A	Base Fluid	-	79.37%	N/A
Potassium Chloride	Newpark	Shale swelling inhibition (smectite & illite clays)	Toxicity Data Ictalurus punctulus 48h-LC50 = 720 mg/l; Daphnia magna: 48h-LC50 = 177 mg/l; Nitzschia linear is: 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.	3%	Yes
Sodium Chloride	Newpark	Weighting Agent	Toxicity Data This product is expected to be of low toxicity. LC50 (Inhalation): > 42000 mg/m3/1 hour (rat) LD50 (Ingestion): 3000 mg/kg (rat) LD50 (Skin): > 10000 mg/kg (rabbit) Ecotoxicity - LC50 (water flea) is 2122 mg/L/48 hours;, LC50 (fathead minnow) is 6.57 g/L/96 hours. Biodegradability does not pertain to inorganic substances.	16%	Yes
Caustic Soda	Newpark	pH control-prevents bacteria & corrosion.	Toxicity Data Ecotoxicity - LD50 (Intraperitoneal): 40 mg/kg (mouse), LDLo (Ingestion): 1.57 mg/kg (human) Toxicity - EC50 Ceriodaphnia: 40 mg/L. Does not bioaccumulate.	0.04%	Yes
Sodium Sulphite	Newpark	Oxygen Scavenger	Toxicity Data Oral Toxicity (LD50) Dermal Toxicity (LD50) Inhalation Toxicity (LC50) SODIUM SULPHITE 820 mg/kg (mouse) SODIUM SULPHATE 5989 mg/kg (mouse) SODIUM CARBONATE 4090 mg/kg (rat) > 2000 mg/kg (rabbit) 800 mg/m³/2 hours SODIUM SULPHITE (7757-83-7)	0.3%	Yes

B. PRODUCT LIST					
Trade name	**Supplier**	**Purpose**	**Toxicity & Eco toxicity Info**	**% Product in system fluid**	**SDS Attached**
			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) Biodegradability does not pertain to inorganic substances. OCNS category (actual or equivalent chemical) and Registration number. E-3448		
Ancor-1	Newpark	Corrosion Inhibitor	Toxicity Data 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) Ecotoxicity - LC50 (shrimp): > 100 ppm. Not expected to bioaccumulate	1%	Yes
Idcide-20	Newpark	Biocide/Prevents bacterial contamination of the mud	Constituent 1 – (10-25%) 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 Constituent 2 – (Remainder) No Hazard	0.14%	Yes

B. PRODUCT LIST					
Trade name	**Supplier**	**Purpose**	**Toxicity & Eco toxicity Info**	**% Product in system fluid**	**SDS Attached**
MEG	Recochem	Antifreeze	Toxicity data LC50 (Inhalation): 10 876 mg/kg (rat) LD50 (Ingestion): 1650 mg/kg (cat) LD50 (Skin): 9530 ug/kg (rabbit) LDLo (Ingestion): 398 mg/kg (human) TCLo (Inhalation): 10,000 mg/m3 (human - cough) TDLo (Ingestion): 5500 mg/kg (child - anaesthesia) Ecotoxicity LC50 (Aquatic species): >100mg/L/96hrs. Non hazardous to aquatic organisms. Biodegradation/bioaccumulation: Ethylene glycol will mainly exist in the vapour phase in the ambient atmosphere where it will be degraded by reaction with hydroxyl radicals. Expected to be very highly mobile in soil. Not anticipated to volatilise from moist soil or water surfaces. Biodegradation in both soil and water is expected to be a major fate process for this compound. Not expected to bio-concentrate in aquatic organisms.	0.15%	Yes
Total				100.00%	
CONTINGENCY PRODUCT LIST					
TEA	Newpark	Corrosion Inhibitor	Constituent 1 – (>60%) May be harmful if swallowed, in contact with skin, and/or if inhaled. LD50 (oral) = 2200 mg/kg (rabbit). Constituent 2 – (10-<30%) LD50, Rat, 1,975.31 mg/kg Calculated. For the major component(s): LD50, Rabbit, > 8,200 mg/kg Acute inhalation toxicity : LC0, Rat, male, 4 Hour, Aerosol, 3.35 mg/l, LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 1,460 mg/l, OECD Test Guideline 203 or Equivalent Acute toxicity to aquatic invertebrates : EC50, Daphnia magna (Water flea), static test, 48 Hour, 55 mg/l, OECD Test Guideline 202 or Equivalent. Acute toxicity to algae/aquatic plants : ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 2.2 mg/l, OECD Test Guideline 201 or Equivalent. Toxicity to bacteria : EC50, Respiration inhibition, 3 Hour, > 1,000 mg/l, activated sludge test (OECD 209). Constituent 3 – (<10%) Rat; male; LD50 = 1.19 (0.79 - 1.80) ml/kg; slope = 3.84, Rat; female; LD50 = 1.07 (0.72 - 1.59) ml/kg; slope = 4.96 Rabbit; male; LD50 = 2.46 (1.76 - 3.39) ml/kg; slope = 5.60; 24 h occluded. Rabbit; female; LD50 = 2.83 (1.61 - 4.98) ml/kg; slope = 3.89; 24 h occluded.	1%	Yes

B. PRODUCT LIST					
Trade name	**Supplier**	**Purpose**	**Toxicity & Eco toxicity Info**	**% Product in system fluid**	**SDS Attached**
Incorr	Newpark	Corrosion Inhibitor	Toxicity data Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivs. Residues CAS No. 68909-77-3 Acute oral toxicity: LD50 (Rat): > 2000 mg/kg Acute dermal toxicity: Causes skin irritation LC50 (Fish): > 100 mg/l EC50 (Daphnia magna): > 100 mg/l EC50 (Alga): > 100 mg/l *Acetic acid CAS No. 64-19-7* Acute oral toxicity: LD50 (Mouse): 4960 mg/kg Acute inhalation toxicity: LC50 (Mouse) 1h: 5620 ppm Acute dermal toxicity: Skin Rabbit 4h: Slightly irritant LC50 (Fish) 96h: > 1000 mg/l EC50 (Daphnia magna) 48h: > 1000 mg/l EC50 (Alga) 72h: > 1000 mg/l Mixture Toxicity Acute oral toxicity: LD50 (Rat): > 2000 mg/kg Biodegradation/bioaccumulation: Biodegradation value: 35.1%, 28 time/days (OECD 306)	0.5%	Yes
Brine-Pac XT	Baker	Corrosion Inhibitor	Acute toxicity LD50 Oral Rat 1950 mg/kg Acute LC50 3290000 µg/l Fresh water Fish - Pimephales promelas 96 hours Bioaccumulative potential LogPow 0.318, Potential low. No known significant effects or critical hazards.	0.25%	Yes
Total				2.25%	

C. Chemical List (Chemicals within fluid system identified in Table B)		
Chemicals Name	**CAS number**	**Mass fraction (%)**
Water	7732-18-5	79.37%
Water in product	7732-18-5	0.40575%
Sodium Chloride	7647-14-5	16.00%
Potassium Chloride	7447-40-7	3.00%

C. Chemical List (Chemicals within fluid system identified in Table B)		
Chemicals Name	**CAS number**	**Mass fraction (%)**
Sodium Hydroxide	1310-73-2	0.0392%
Silica	7631-86-9	0.0008%
Sodium Carbonate	497-19-8	0.00075%
Sodium Sulphite	7757-83-7	0.291%
Sodium Sulphate	7757-82-6	0.0075%
Triethanolamine	102-71-6	0.7%
Tetrakis(Hydroxymethyl) Phosphonium Sulphate	55566-30-8	0.035%
Ethylene Glycol	107-21-1	0.15%
Poly(oxy-1,2-ethanediyl), alphahydro-omegahydroxy-, mono[2- (4,5-dihydro-2-nortalloilalkyl-1H-imidazol-1-yl)ethyl] ethers	68909-09-1	0.05%
Ethanol, 2,2'-oxybis-,reaction products with ammonia,morpholine derivs. Residues	68909-77-3	0.05%
Acetic acid	64-19-7	0.025%
Triethanolamine	102-71-6	0.6%
Diethanolamine	111-42-2	0.3%
Ethanolamine	141-42-5	0.1%
2-Methyl-3-butyn-2-ol	115-19-5	0.25%
Total		101.375%

Attachment 2
Safety Data Sheets

SAFETY DATA SHEET

EC 1272/2008 Regulation

INCORR

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY		
1.1. Substance Identification		
Product Name:	**INCORR**	
1.2. Substance Use		
Application:	Corrosion inhibitor for drilling fluids	
1.3. Company Identification		
Name:	Newpark Drilling Fluids S.p.A.	
Address:	Via Salaria 1313/C	
City/Country:	00138 ROMA (Italy)	
Phone numbers:	+39 06 885611386 / +39 06 885611324 / +39 06 8856111	
Fax:	+39 06 8889363	
1.4. Emergency Phone Numbers		
+39 06 885611386	+39 06 885611324	+39 06 8856111
1.5. Responsible Person E-Mail Address		
e-mail:	laboratorio.roma@newpark.com	

2. HAZARDS IDENTIFICATION		
2.1. Substance/Mixture Classification		
Indication of hazards specific for human health and environment:		
THE SUBSTANCE/MIXTURE IS CLASSIFIED AS DANGEROUS IN ACCORDANCE TO FOLLOWING REGULATIONS		
Classifications according to EC Regulation n. 1272/2008 - (CLP)		
	**GHS07**	**Skin Irr. 2** H315: Causes skin irritation
	**GHS05**	**Eye Dam. 1** H318: Causes serious eye damage
	**GHS07**	**Skin Sens. 1B** H317: May cause an allergic skin reaction

2.2. Label Elements	
Label according to EC Regulation n. 1272/2008 (CLP)	
Hazards Identification:	 **GHS05**  **GHS07**
	Skin Irr. 2 H315: Causes skin irritation
	Eye Dam. 1 H318: Causes serious eye damage
	Skin Sens. 1B H317: May cause an allergic skin reaction
Precautionary Statements:	P264: Wash with plenty of water and soap after handling P272: Contaminated work clothing should not be allowed out of the workplace P280: Wear protective gloves/protective clothing/eye protection/face protection P310: Immediately call a POISON CENTER/doctor P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P333+P313: If skin irritation or rash occurs: Get medical advice/attention
Disposal	P501: Dispose of contents/container as per regulations
2.3. Other Hazards	
N.a.	

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Chemical Properties of Substance or Mixture

Composition:	Mixture
Contains:	As per following table
Molecular Formula:	- - -
EC Number:	- - -
CAS Number:	- - -
UN Number:	- - -
REACH Number:	- - -

3.2. Information on ingredients

Name	CAS No.	EC No.	Q.ty	Classification	Symbols	Hazard Statements
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivs. Residues	68909-77-3	272-712-1	> 10%	**Skin Irr. 2**	 **GHS07**	H315
				Eye Dam. 1	 **GHS05**	H318
				Skin Sens. 1B	 **GHS07**	H317
Poly(oxy-1,2-ethanediyl), alpha-hydro-omega-hydroxy-, mono[2-(4,5-dihydro-2-nortall-oil alkyl-1H-imidazol-1-yl)ethyl] ethers	68909-09-1	- - -	5-10%	**Eye Irr. 2**	 **GHS07**	H319
				Skin Irr. 2		H315
Acetic acid	64-19-7	200-580-7	1-5%	**Flam Liq. 3**	 **GHS02**	H226
				Skin Corr. 1A	 **GHS05**	H314

4. FIRST AID MEASURES	
4.1. Description of First Aid Measures	
General information:	In case of diseases, get medical attention. Show to the doctor this Material Safety Data Sheet
After inhalation:	Remove casualty to fresh air and keep warm and at rest
After skin contact:	Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap. Remove contaminated clothing immediately and dispose off safely
After eye contact:	After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately. Protect uninjured eye
After swallowing:	Do not under any circumstances induce vomiting. Seek immediately medical advice
Other information:	N.a.
4.2. Main symptoms and effects, both acute and delayed	
Symptoms:	N.a.
4.3. Indication of any immediate medical attention and special treatment needed	
Medical surveillance:	Medical surveillance during job not required. In case of disease or accident, consult immediately a doctor and show him this MSDS
Special intervention means:	N.a.

5. FIREFIGHTING MEASURES	
5.1. Extinguishing Media	
Precautions in case of fire:	In case of fire respect the following instructions:
Suitable extinguishing media:	In case of fire use: Water, CO2
Unsuitable extinguishing media:	Not known
Hazards arising from combustion:	Do not inhale explosion and combustion gases
Special firefighting equipment:	Use suitable breathing apparatus. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Move undamaged containers from immediate hazard area if it can be done safely

6. ACCIDENTAL RELEASE MEASURES	
6.1. Personal Precautions	
Protective equipment:	Wear personal protective equipment (gloves, goggles, coverall). Remove persons to safety
Emergency procedures:	Move unprotected people to a safe place
6.2. Environmental Precautions	
Containment media:	Suitable material for taking up: absorbing material, organic, sand
Containment methods:	Wash with plenty of water
Additional information:	Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains. Retain contaminated washing water and dispose it. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities

7. HANDLING AND STORAGE	
7.1. Precautions for Handling	
Precautions for handling:	Avoid contact with skin and eyes, inhalation of vapors and mists. Do not use empty container before they have been cleaned. Before making transfer operations, assure that there are not any incompatible material residuals in the containers
7.2. Precautions for Storage	
Storage conditions:	Keep away from food, drink and feed
Storage area specifications:	Adequate ventilation in working area
Containers specifications:	Plastic drums
Incompatibility:	Keep away from food, drink and feed
7.3. Particular Uses:	
Particular uses:	N.a.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION		
8.1. Exposure Limits		
Mixture		
TLV_{Celing}:		- - -
TLV_{STEL}:		- - -
TLV_{TWA}:		- - -
Biological limit:		- - -
8.2. Professional Exposure Controls		
Plant protections:		General ventilation is recommended
Collective protections:		Provide adequate ventilation
Individual protections:	Respiratory:	Use adequate protective respiratory equipment
	Eyes:	Use close fitting safety goggles
	Hand:	Chemical-resistant protective gloves
	Body:	Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton
8.3. Environmental Exposure Controls		
Exposure Scenarios:		N.a.

9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1. General Information	
Form:	Liquid (20°C)
Appearance:	Liquid
Color:	N.a.
Odor:	Slight
Olfactory threshold:	N.a.
9.2. Information about Health, Safety and Environment	
pH:	7.0-9.0
Melting point:	N.a.
Boiling temperature:	ca. 100°C
Flash point:	> 100°C
Flammability (solid, gas):	N.a.
Auto ignition temperature:	N.a.
Decomposition temperature:	N.a.
Danger of explosion:	N.a.
Upper flammability limit:	N.a.
Lower flammability limit:	N.a.
Vapor pressure:	N.a.
Density at 20°C:	N.a.
Apparent density (20°C):	N.a.
Relative density:	0.95 - 1.05 kg/l
Vapor density:	N.a.
Evaporation rate:	N.a.
Solubility in water (20°C):	Soluble
Distribution coefficient (n-Octanol):	N.a.
Viscosity:	N.a.
9.3. Other Information	
Other information:	N.a.

10. STABILITY AND REACTIVITY	
10.1. Reactivity	
Conditions to be avoided:	Stable under normal conditions
10.2. Chemical Stability	
Incompatible materials:	Strong oxidizers
Possibility of dangerous reactions:	Stable under normal conditions
10.3. Hazardous Decomposition Products	
Other information	Not known

11. TOXICOLOGICAL INFORMATION	
11.1. Acute Toxicity	
Substance Toxicity	*Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivs. Residues CAS No. 68909-77-3*
Acute oral toxicity:	LD50 (Rat): > 2000 mg/kg
Acute inhalation toxicity:	N.a.
Acute dermal toxicity:	Causes skin irritation
Substance Toxicity	*Acetic acid CAS No. 64-19-7*
Acute oral toxicity:	LD50 (Mouse): 4960 mg/kg
Acute inhalation toxicity:	LC50 (Mouse) 1h: 5620 ppm
Acute dermal toxicity:	Skin Rabbit 4h: Slightly irritant
Mixture Toxicity	
Acute oral toxicity:	LD50 (Rat): > 2000 mg/kg
Acute inhalation toxicity:	N.a.
Acute dermal toxicity:	N.a.
11.2. Corrosively	
Skin:	N.a.
Eyes:	N.a.
11.3. Primary Irritability	
Skin:	Causes skin irritation
Eyes:	Causes serious eye damage
11.4. Harmfulness	
Ingestion:	N.a.
Inhalation:	N.a.
11.5. Sensitization	
Skin:	N.a.
Eyes:	N.a.

12. ECOLOGICAL INFORMATION	
12.1. Toxicity	
Substance	*Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivs. Residues CAS No. 68909-77-3*
Toxicity in the water:	LC50 (Fish): > 100 mg/l EC50 (Daphnia magna): > 100 mg/l EC50 (Alga): > 100 mg/l
Toxicity in the air:	N.a.
Toxicity in the soil:	N.a.
Substance	*Acetic acid CAS No. 64-19-7*
Toxicity in the water:	LC50 (Fish) 96h: > 1000 mg/l EC50 (Daphnia magna) 48h: > 1000 mg/l EC50 (Alga) 72h: > 1000 mg/l
Toxicity in the air:	N.a.
Toxicity in the soil:	N.a.
12.2. Persistence and Degradability	
Other information:	N.a.
12.3. Bio cumulative Potential	
Other information:	N.a.
12.4. Mobility in Soil	
Other information:	N.a.
12.5. Results of PBT e vPvB Assessment	
PBT:	N.a.
vPvB:	N.a.
12.6. Other Adverse Effects	
Other information:	N.a.

13. DISPOSAL CONSIDERATIONS	
13.1. Waste Treatment Methods	
Advices	If possible recover the product, otherwise dispose of in authorized landfill or incineration in accordance with local regulation
Waste code:	N.a.
13.2. Packaging Disposal Methods	
Advices:	Dispose of in according to local and national regulations
Other recommendations:	N.a.

14. TRANSPORT INFORMATION	
14.1. Land/Rail Transport (ADR/RID)	
UN Number:	No dangerous goods under transport regulations
UN shipping norms:	N.a.
Hazard class:	N.a.
Packaging group:	N.a.
Dangers for the environment:	N.a.
14.2. Maritime Transport (IMDG)	
IMDG Class:	No dangerous goods under transport regulations
Marine pollutant:	N.a.
14.3. Air Transport (ICAO-TI and IATA-DGR)	
ICAO Class:	No dangerous goods under transport regulations
IATA Class:	N.a.
14.4. Bulk Transport	
Annex II of MARPOL73/78:	No dangerous goods under transport regulations
IBC Code:	N.a.

15. REGULATORY INFORMATION
15.1. Health, Safety and Environment Regulations/Legislation Specific for the Substance or Mixture
D.Lgs. 3/2/1997 n. 52 (Classification, packaging and labeling of hazardous substances)
D.Lgs. 14/3/2003 n. 65 (Classification, packaging and labeling of hazardous mixtures)
D.Lgs. 2/2/2002 n. 25 (Risks due to chemical agents during the work)
D.M. Lavoro 26/02/2004 (Professional exposure limits)
D.M. 03/04/2007 (Implementation of the Directive n. 2006/8/CE)
CE Regulation n. 1907/2006 (REACH)
CE Regulation n.1272/2008 (CLP)
CE Regulation n.790/2009 (adaptation to technical and scientific progress of CLP Regulation)
CE Regulation nº 453/2010 (Modification of REACH Regulation)
Directive 1999/45/CE (DSP)
Directive 67/548/CEE (DPP)

16. OTHER INFORMATION

16.1. Main Bibliographic Sources

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition – Van Nostrand Reinold

Istituto Superiore di Sanità - Inventario Nazionale Sostanze Chimiche

ACGIH - Threshold Limit Values - 2009 edition

16.2. Declarations

This sheet completes the technical bulletin without to substitute it. 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 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.

This material safety datasheet only contains information relating to health and safety. The product has to be used in applications consistent with Newpark Drilling Fluids S.p.A. technology. Individuals handling this product should be informed of the safety precautions and should have access to this information.

This safety data sheet has been completely updated in compliance to Regulation 453/2010/EU.

This MSDS cancels and replaces any preceding release.

16.3. Abbreviations and Acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
GHS: Globally Harmonized System of Classification and Labeling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
ACGIH: American Conference of Industrial Hygienists
EC50: median effective concentration
LC50: median lethal concentration
LD50: median lethal dose
NOEC: no observable effect concentration
PNEC: predicted no-effect concentration
PBT: persistent, bio accumulative, toxic chemicals
vPvB: very persistent, very bio accumulative chemicals
TLV-TWA: Threshold limit value – Time weighted average; professional exposure limit average on 8 hours
TLV-STEL: Threshold limit value – Short Term exposure limit ; professional exposure limit at short term
TLV–C : Threshold limit value – Ceiling

16.4. Other Information

Full text of Hazard statements used in the previous sections

H226: Flammable liquid and vapour
H314: Causes severe skin burns and eye damage
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H319: Causes serious eye irritation

Full text of Precautionary statements used in the previous sections

P264: Wash with plenty of water and soap after handling
P272: Contaminated work clothing should not be allowed out of the workplace
P280: Wear protective gloves/protective clothing/eye protection/face protection
P310: Immediately call a POISON CENTER/doctor
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P333+P313: If skin irritation or rash occurs: Get medical advice/attention
P501: Dispose of contents/container as per regulations

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **IDCIDE-20**

Synonym(s) IDCIDE 20

1.2 Uses and uses advised against

Use(s) 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 www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS classification
Skin Sensitization: Category 1
Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A

2.2 Label elements

Signal word **WARNING**

Pictograms

Hazard statement(s)

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Prevention statement(s)

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P302 + P352	IF ON SKIN: Wash with plenty of soap and 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.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362	Take off contaminated clothing and wash before re-use.

Storage statement(s)
None allocated.

Disposal statement(s)
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	Identification	Classification		Content
		GHS	Risk	
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE	CAS: 55566-30-8 EC: 259-709-0	Not Available	Not Available	18 to 25%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	Not Available	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. 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 Poison 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. 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. Clear area of all unprotected personnel. Ventilate area where possible.

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.

7.3 Specific end use(s)
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 a faceshield and splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Not required under normal conditions of use.
Respiratory	Not required under normal conditions of use.

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
Specific gravity	1.08
Solubility (water)	SOLUBLE

9.1 Information on basic physical and chemical properties

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 (eg. hypochlorites) and acids (eg. nitric acid).

10.6 Hazardous decomposition products

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

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary	May be harmful - irritant. This product has the potential to cause adverse health effects with over exposure. Upon dilution, the potential for adverse health effects may be reduced.
Eye	Irritant. Contact may result in irritation, lacrimation, pain and redness.
Inhalation	Low to moderate irritant. Over exposure to vapours may result in irritation of the nose and throat, with coughing. High level exposure may result in dizziness, nausea and headache. Due to the low vapour pressure, an inhalation hazard is not anticipated with normal use.
Skin	Irritant. Contact may result in irritation. May cause sensitisation by skin contact.
Ingestion	May be harmful. Ingestion may result in gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhoea.
Toxicity data	TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8) LD50 (ingestion) 248 mg/kg (rat) TDLo (ingestion) 650 mg/kg/13 weeks - intermittent (rat)

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 larger amounts, contact the manufacturer for additional information. Prevent contamination of drains or 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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes	Xi	Irritant
Risk phrases	R36/38	Irritating to eyes and skin.
	R43	May cause sensitisation by skin contact.
Safety phrases	S23	Do not breathe gas/fumes/vapour/spray (where applicable).
	S24/25	Avoid contact with skin and eyes.
	S36	Wear suitable protective clothing.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

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.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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Revision: 2
SDS date: 28 July 2014

[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **CAUSTIC SODA**

Synonym(s) SODA LYE • SODIUM HYDROXIDE SOLID

1.2 Uses and uses advised against

Use(s) 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 www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS classification Skin Corrosion/Irritation: Category 1A

2.2 Label elements

Signal word **DANGER**

Pictograms

Hazard statement(s)

H314	Causes severe skin burns and eye damage.

Prevention statement(s)

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.

Response statement(s)

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

Storage statement(s)

P405	Store locked up.

Disposal statement(s)

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	Identification	Classification		Content
		GHS	Risk	
SODIUM HYDROXIDE	CAS: 1310-73-2 EC: 215-185-5	Skin Corr. 1A, H314	C;R35	>98%
SILICA, AMORPHOUS	CAS: 7631-86-9 EC: 231-545-4	Not Available	Not Available	0.003%

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 Poison 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.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (nitrogen oxides). May evolve flammable ammonia and hydrogen gas 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

2X

2 Water Fog (or fine water spray if fog unavailable)

X Full protective clothing including Self Contained Breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

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

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.

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. Store between 15°C and 25°C. Unsuitable storage containers: aluminium, tin or zinc.

7.3 Specific end use(s)
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Fumed silica (respirable dust)	SWA (AUS)	--	2	--	--
Sodium hydroxide (peak limitation)	SWA (AUS)	--	2	--	--

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
Specific gravity	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

9.2 Other information

% Volatiles	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 (eg. hypochlorites), acids (eg. nitric acid), metals, heat and ignition sources.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	No known toxicity data is available for this product. Based on available data, the classification criteria are not met.
Skin	Causes severe burns. Contact may result in irritation, redness, pain, rash, dermatitis and possible burns.
Eye	Causes severe burns. Contact may result in irritation, lacrimation, pain, redness and corneal burns with possible permanent damage.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Insufficient data available to classify as a carcinogen.
Reproductive	Insufficient data available to classify 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 effects 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
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 for additional information.

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	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].	
Hazard codes	C	Corrosive
Risk phrases	R35	Causes severe burns.
Safety phrases	S1/2	Keep locked up and out of reach of children.
	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	S37/39	Wear suitable gloves and eye/face protection.
	S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
Inventory listing(s)	**AUSTRALIA: AICS (Australian Inventory of Chemical Substances)** All components are listed on AICS, or are exempt.	

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGE (TWA) or WES (WORKPLACE EXPOSURE STANDARD) (NZ): 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).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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Revision: 2
SDS date: 19 August 2014

[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **ANCOR 1**

Synonym(s) CORROSION INHIBITOR

1.2 Uses and uses advised against

Use(s) 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 www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Serious Eye Damage / Eye Irritation: Category 2A

2.2 Label elements

Signal word **WARNING**

Pictogram(s)

Hazard statement(s)

H319 Causes serious eye irritation.

Prevention statement(s)

P264 Wash thoroughly after handling.

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

Response statement(s)

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 statement(s)

None allocated.

Disposal statement(s)

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 Poison 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 and 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. Store as a Class C1 Combustible Liquid (AS1940).

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/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. If spraying, wear a Type A-Class P1 (Organic gases/vapours and Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS LIQUID
Odour	SLIGHT ODOUR
Flammability	CLASS C1 COMBUSTIBLE
Flash point	> 100°C
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	1.1
Solubility (water)	SOLUBLE
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

9.1 Information on basic physical and chemical properties

Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	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 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), 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)
Skin	Contact may result in mild irritation, redness, pain and rash.
Eye	Contact may result in irritation, lacrimation, pain and redness. May result in burns with prolonged contact.
Sensitization	Triethanolamine has been reported to cause allergic contact dermatitis. It is not known to cause respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Triethanolamine is not classifiable as to its carcinogenicity to humans (IARC Group 3).
Reproductive	Insufficient data available to classify 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 effects from repeated exposure.
Aspiration	This product is 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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R36 Irritating to eyes.

Safety phrases S36 Wear suitable protective clothing.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/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 **TRIETHANOLAMINE**

Synonym(s) RHEOCHEM TRIETHANOLAMINE

1.2 Uses and uses advised against

Use(s) CHEMICAL INTERMEDIATE • LABORATORY REAGENT • SOLVENT

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 number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS classification Serious Eye Damage / Eye Irritation: Category 1
Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2

2.2 Label elements

Signal word **DANGER**

Pictograms

Hazard statement(s)

H318 Causes serious eye damage.
H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

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.
P314 Get medical advice/attention if you feel unwell.

Storage statement(s)

None allocated.

Disposal statement(s)

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	Identification	Classification		Content
		GHS	Risk	
TRIETHANOLAMINE	CAS: 102-71-6 EC: 203-049-8	Not Available	Not Available	>60%
DIETHANOLAMINE	CAS: 111-42-2 EC: 203-868-0	Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT RE 2, H373	Xn;R22, Xi;R38, Xi;R41, Xn;R48/22	10 to <30%
ETHANOLAMINE	CAS: 141-43-5 EC: 205-483-3	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Acute Tox. 4, H332	Xn;R20/21/22, C;R34	<10%

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 Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Rinse mouth out with water and give plenty of water to drink.

First aid facilities No information provided.

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. 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. Store as a Class C2 Combustible Liquid (AS1940).

7.3 Specific end use(s)
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Diethanolamine (h)	SWA (AUS)	3	13	--	--
Ethanolamine	SWA (AUS)	3	7.5	6	15
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. If spraying, wear a Type A-Class P1 (Organic gases/vapours and Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	CLEAR LIQUID
Odour	MILD AMMONIACAL ODOUR
Flammability	CLASS C2 COMBUSTIBLE
Flash point	190°C

9.1 Information on basic physical and chemical properties

Boiling point	335°C
Melting point	12°C
Evaporation rate	< 0.01 (n-Butyl acetate = 1)
pH	10.5 (1 % Solution)
Vapour density	4.80 (Air = 1)
Specific gravity	1.12
Solubility (water)	SOLUBLE
Vapour pressure	< 1 kPa @ 20°C
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	375°C
Decomposition temperature	NOT AVAILABLE
Viscosity	450 cP @ 25°C
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	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 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 (eg. hypochlorites), acids (eg. nitric acid), nitrites, heat and ignition sources. Also incompatible with organic anhydrides, isocyanates, vinyl acetate, acrylates, substituted allyls, alkylene oxides, epichlorohydrin, aldehydes, copper, brass and aluminium.

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. LD50 (oral) = 2200 mg/kg (rabbit).
Skin	Contact may result in mild irritation, redness, pain and rash.
Eye	Contact may result in irritation, lacrimation, pain and redness. May result in burns with prolonged contact.
Sensitization	Triethanolamine has been reported to cause allergic contact dermatitis in humans. It is not known to cause respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Triethanolamine and diethanolamine are not classifiable as to carcinogenicity to humans (IARC Group 3).
Reproductive	Insufficient data available to classify 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	Diethanolamine may cause damage to organs (liver) through prolonged and repeated exposure.
Aspiration	This product is not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

The substance is expected to be readily biodegradable according to the AS 4351 Part 2 test method.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

In soil and water, triethanolamine will biodegrade fairly rapidly following acclamation (half-life in the order of days to weeks). In soil, residual triethanolamine may leach to groundwater. LC50 (shrimp): > 100 ppm.

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 approved landfill site. Contact the manufacturer for additional information.

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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes	Xi	Irritant
	Xn	Harmful
Risk phrases	R41	Risk of serious damage to eyes.
	R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
Safety phrases	S25	Avoid contact with eyes.
	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	S39	Wear eye/face protection.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
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
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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Revision: 2
SDS date: 25 July 2014

[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **SODIUM SULPHITE**

Synonym(s) SODIUM SULFITE

1.2 Uses and uses advised against

Use(s) 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 number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

Signal word

None allocated.

Pictograms

None allocated.

Hazard statement(s)

AUH031 Contact with acids liberates toxic gas

Prevention statement(s)

None allocated.

Response statement(s)

None allocated.

Storage statement(s)

None allocated.

Disposal statement(s)

None allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Identification	Classification		Content
		GHS	Risk	
SODIUM CARBONATE	CAS: 497-19-8 EC: 207-838-8	Eye Irrit. 2A, H319	Xi;R36	<0.1%
SODIUM SULPHITE	CAS: 7757-83-7 EC: 231-821-4	Not Available	Not Available	>97%
SODIUM SULPHATE	CAS: 7757-82-6 EC: 231-820-9	Not Available	Not Available	<2.5%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	Not Available	<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 Poison 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 toxic gases (sulphur 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. 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 use(s)

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
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
Specific gravity	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

9.1 Information on basic physical and chemical properties

Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	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 (eg. hypochlorites) and acids (eg. nitric acid). Sensitive to air and moisture.

10.6 Hazardous decomposition products

May evolve toxic gases (sulphur oxides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary

May be harmful. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. Some individuals are hypersensitive to sulphites and may experience respiratory problems following exposure. Individuals known to be hypersensitive or with existing respiratory problems (eg asthma) are advised to avoid exposure.

Eye

Low irritant. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and possible corneal damage.

Inhalation

Low irritant. Over exposure may result in mucous membrane irritation of the respiratory tract, with coughing. Some individuals are hypersensitive to sulphites, and may experience asthma like symptoms (wheezing and shortness of breath) immediately following exposure.

Skin

Low irritant. Contact may result in irritation, redness, rash and dermatitis.

Ingestion

May be harmful. Ingestion may result in gastrointestinal irritation, nausea and vomiting. Well tolerated due to the oxidation of sulphites in the body to sulphates, however with large quantities sulphurous acid is formed. Some individuals may have an allergic reaction. The acute oral LD50 (male rat) is 3.56 g/kg/14 days.

Toxicity data

SODIUM CARBONATE (497-19-8)

LC50 (inhalation)	800 mg/m³/2 hours (guinea pig)
LD50 (ingestion)	4090 mg/kg (rat)
LD50 (intraperitoneal)	117 mg/kg (mouse)
LD50 (subcutaneous)	2210 mg/kg (mouse)

SODIUM SULPHITE (7757-83-7)

LD50 (ingestion)	820 mg/kg (mouse)
LD50 (intraperitoneal)	950 mg/kg (mouse)
LD50 (intravenous)	175 mg/kg (mouse)
LDLo (ingestion)	2825 mg/kg (rabbit)
LDLo (intravenous)	400 mg/kg (cat)
LDLo (subcutaneous)	600 mg/kg (rabbit)

SODIUM SULPHATE (7757-82-6)

LD50 (ingestion)	5989 mg/kg (mouse)
LD50 (intravenous)	1220 mg/kg (rabbit)
LDLo (intravenous)	1220 mg/kg (mouse)
TDLo (ingestion)	14 g/kg (mouse - 8-12 days pregnant)

SODIUM SULPHATE (7757-82-6)
TDLo (subcutaneous) 806 mg/kg/26 weeks intermittently (mouse)

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 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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes T Toxic

Risk phrases R31 Contact with acids liberates toxic gas.

Safety phrases

S25	Avoid contact with eyes.
S46	If swallowed, contact a doctor or Poisons Information Centre immediately and show container or label.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

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 method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
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
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
1.4	Standard SDS Review
1.3	Standard SDS Review
1.2	Standard SDS Review Standard SDS Review
1.1	Standard SDS Review
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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Revision: 1.4
SDS date: 20 June 2014

[End of SDS]

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **SALT**

Synonym(s) FLOSSY SALT • HALITE • NACL • SODIUM CHLORIDE

1.2 Uses and uses advised against

Use(s) 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 number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Identification	Classification		Content
		GHS	Risk	
SODIUM CHLORIDE	CAS: 7647-14-5 EC: 231-598-3	Not Available	Not Available	>98%
INORGANIC SALT(S)	Not Available	Not Available	Not Available	<0.8%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	Not Available	<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 Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

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. 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 use(s)

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
Specific gravity	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

9.2 Other information

% Volatiles	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 (eg. hypochlorites), acids (eg. nitric acid) and alkalis (eg. sodium hydroxide).

10.6 Hazardous decomposition products
May evolve toxic gases when strongly heated.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low 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 and rash.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects 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 if additional information is 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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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Revision: 2
SDS date: 24 July 2014

[End of SDS]

Safety Data Sheet

BRINE-PAC™ XT

1 . Identification of the material and supplier

Product identifier : BRINE-PAC™ XT

Product code : 5007DF

ADG : ALCOHOLS, N.O.S. (2-methylbut-3-yn-2-ol)

Product type : Liquid.

Identified uses : Corrosion inhibitor

Supplier's details : Baker Hughes
Level 14, 216 St Georges Terrace
Perth
Western Australia 6000

Tel: +618 9215 0601
Fax: +618 9215 0698

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

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

2 . Hazards identification

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY (oral) - Category 4
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :

Signal word : DANGER

Hazard statements : H225 - Highly flammable liquid and vapour.
H302 - Harmful if swallowed.
H318 - Causes serious eye damage.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Butyl rubber gloves.. Wear eye or face protection: Recommended: Chemical splash goggles.. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.

Response : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF IN EYES: Immediately call a POISON CENTER or physician.

Storage : Keep cool.

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

Precautionary statements (Code) : P280, P210, P241, P303 + P361 + P353, P305 + P310, P235, P501

2 . Hazards identification

Supplemental label elements : Not applicable.

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

3 . Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	% (w/w)	CAS number
2-methylbut-3-yn-2-ol	60 - 100	115-19-5

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

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

4 . First aid measures

Description of necessary first aid measures

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

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention if adverse health effects persist or are severe. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : 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. 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 : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

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

Ingestion : stomach pains

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

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

4 . First aid measures

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)

5 . Firefighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Hazchem code : •3Y

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. Shut off all ignition sources. No flares, smoking or flames in hazard area. 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).

Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.

6 . Accidental release measures

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

7 . Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. 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 segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

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

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2-methylbut-3-yn-2-ol	**TRGS900 AGW (Germany, 3/2015).** TWA: 3 mg/m³ 8 hours. PEAK: 6 mg/m³ 15 minutes. TWA: 0.9 ppm 8 hours. PEAK: 1.8 ppm 15 minutes.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

8 . Exposure controls/personal protection

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

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. Recommended: Chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Recommended: > 8 hours (breakthrough time): Butyl rubber gloves.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

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. Recommended: No personal respiratory protective equipment normally required.

9 . Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Colour : Colourless.

Odour : Floral.

Odour threshold : Not available.

pH : 5

Melting point : 2.6°C (36.7°F)

Boiling point : 104°C (219.2°F)

Flash point : Closed cup: 20°C (68°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Lower: 1.8%
Upper: 16.6%

Vapour pressure : 2 kPa (15 mm Hg)

Vapour density :

9 . Physical and chemical properties

2.49 [Air = 1]

Relative density : 0.87

Solubility : Partially soluble in the following materials: cold water.

Partition coefficient: n-octanol/water : 0.32

Auto-ignition temperature : 380°C (716°F)

Decomposition temperature : Not available.

Viscosity : Not available.

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 : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.

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

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

11 . Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-methylbut-3-yn-2-ol	LD50 Oral	Rat	1950 mg/kg	-

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

Irritation/Corrosion

Conclusion/Summary

Skin : No known significant effects or critical hazards.

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

Respiratory : No known significant effects or critical hazards.

Sensitisation

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

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

Carcinogenicity

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

Reproductive toxicity

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

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Not available.			

Specific target organ toxicity (repeated exposure)

11 . Toxicological information

Name	Category	Route of exposure	Target organs
Not available.			

Aspiration hazard

Name	Result
Not available.	

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : pain,watering,redness

Inhalation : No specific data.

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

Ingestion : stomach pains

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

12 . Ecological information

Toxicity : No known significant effects or critical hazards.

Product/ingredient name	Result	Species	Exposure
2-methylbut-3-yn-2-ol	Acute LC50 3290000 µg/l Fresh water	Fish - Pimephales promelas	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

12 . Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
2-methylbut-3-yn-2-ol	0.318	-	low

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Disposal methods : Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Transport hazard class(es)	PG*	Label
ADR/RID	UN1987	ALCOHOLS, N.O.S. (2-methylbut-3-yn-2-ol)	3	III	
ADG	UN1987	ALCOHOLS, N.O.S. (2-methylbut-3-yn-2-ol)	3	III	
IMDG	UN1987	ALCOHOLS, N.O.S. (2-methylbut-3-yn-2-ol)	3	III	
IATA	UN1987	ALCOHOLS, N.O.S. (2-methylbut-3-yn-2-ol)	3	III	

PG* : Packing group

Regulatory information	Environmental hazards	Additional information
ADR/RID Class	No.	**Hazchem code** 3Y
ADN Class	No.	**Hazchem code** •3Y
IMDG Class	No.	-
IATA Class	No.	-

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

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

14 . Transport information

Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not regulated.

Model Work Health and Safety Regulations - Scheduled Substances

Australia inventory (AICS) : 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 (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

16 . Other information

History

Date of printing : 14 December 2016.

Date of issue/Date of revision : 14 December 2016

Date of previous issue : No previous validation

Version : 1

Key to abbreviations : ADG = Australian Dangerous Goods
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
NOHSC = National Occupational Health and Safety Commission
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations

Procedure used to derive the classification

Classification	Justification
Flam. Liq. 2, H225	On basis of test data
Acute Tox. 4, H302	Calculation method
Eye Dam. 1, H318	Calculation method

16 . Other information

References : Not available.

Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

NEWPARK DRILLING FLUIDS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **POTASSIUM CHLORIDE**

Synonym(s) KCL • MURIATE OF POTASH • POTASH • SYLVITE

1.2 Uses and uses advised against

Use(s) 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 www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Identification	Classification		Content
		GHS	Risk	
POTASSIUM CHLORIDE	CAS: 7447-40-7 EC: 231-211-8	Not Available	Not Available	>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 Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

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.

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 use(s)
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
Specific gravity	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

9.2 Other information

% Volatiles	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

Incompatible (potentially explosive) with oxidising agents (eg. hypochlorites).

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. Oral Toxicity: An oral LD50 in rats of 2600 mg/kg was reported for potassium chloride.
Skin	Not classified as a skin irritant. Contact may result in mild irritation and rash.
Eye	Not classified as an eye irritant. Contact may cause mild irritation and lacrimation.

Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
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 effects 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	Collect and place in sealable containers and dispose of to an approved landfill site. Contact the manufacturer for additional information.
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 Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
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
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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Revision: 2
SDS date: 25 July 2014

[End of SDS]

MATERIAL SAFETY DATA SHEET

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: MONO ETHYLENE GLYCOL (MEG)

Company: Recochem Inc. ABN: 69 010 485 999
Address : 1809 Lytton Road, Lytton, Queensland 4178
Phone: (07) 3308 5200 Fax: (07) 3308 5201
Emergency Telephone Number: (07) 3308 5200 Day, After Hours 1300 131 001

Other Names: Glycol, MEG, Ethylene Diol, 1,2-Ethanediol
Manufacturer's Product Code: 19950
Recommended Use: Radiator Antifreeze Coolant Base Fluid

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO CRITERIA OF WORKSAFE AUSTRALIA
NOT A DANGEROUS GOODS ACCORDING TO THE CRITERIA OF THE ADG CODE

Symbol: Xn - Harmful
Risk Phrases: R22 - Harmful if swallowed
Safety Phrases: S2 - Keep out of the reach of children

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients

Chemical Entity	*CAS Number*	*Proportion (%)*
Ethylene Glycol	107-21-1	100

SECTION 4 FIRST AID MEASURES

FIRST AID TREATMENT

Swallowed: If swallowed, do NOT induce vomiting. Have conscious person drink several glasses of water or milk. SEEK IMMEDIATE MEDICAL ATTENTION.
Eye: If in eyes, hold eyes open, flood with water for at least 15 minutes. If irritation persists seek medical attention.
Skin: If skin contact occurs, wash skin thoroughly with water and follow by washing with soap if available. If irritation persists, seek medical attention.
Inhaled: Remove victim from exposure if safe to do so. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

First Aid facilities: Potable water should be available to rinse eyes or skin. Provide eye baths and safety showers.
Advice to Doctor: Treat symptomatically.
Additional Information: None available.

SECTION 5 FIRE FIGHTING MEASURES

Suitable Extinguishing Media: For a small fire use dry chemicals, carbon dioxide, water spray or foam. For large fires use water spray or fog. Do not use water jet.
Hazards from combustion products: Carbon dioxide and carbon monoxide.
Precautions for Fire Fighters and Special Protective Equipment: Wear full protective clothing and self-contained breathing apparatus.
Additional Information: When heated to decomposition, emits acrid smoke and irritating fumes. Not a product presenting risks of explosion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Observe all local and national regulations.

Spills and Disposal, Methods and Materials for Containment and Clean Up Procedures: For small spills, dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. For large spills, absorb with an inert material and put the spilled material in an appropriate waste disposal container. Dispose of in accordance with regional regulations.

SECTION 7 HANDLING AND STORAGE

Precautions for Safe Handling and Storage: Avoid contact with eyes, skin and clothing. DO NOT ingest. Avoid breathing dust, keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Do not eat, drink or smoke in contaminated areas. Before eating, drinking or smoking, remove contaminated clothing and wash hands. Do not store near strong oxidants. Keep container in a cool, well-ventilated area. Avoid all possible sources of ignition. Do not store near strong oxidisers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards: National Occupational Health & Safety Commission (NOHSC) Worksafe Australia has set an exposure standard of 52mg/m3 (20ppm) TWA (vapour), 104mg/m3 (40ppm) STEL (vapour) and 10mg/m3 TWA (particulate).
Biological Limit Values: No biological limit allocated.

Personal Protective Equipment:
Respiratory Protection: Wear appropriate respirator when ventilation is inadequate.
Hand Protection: Use solvent resistant gloves (nitrile, PVC or neoprene).
Eye Protection: Wear safety goggles.
Protective Clothing: No special protection is ordinarily required beyond standard issue work clothes.
Engineering Controls: Ensure that adequate ventilation is provided. Maintain air concentrations below recommended exposure standards. Avoid generating and inhaling mists.

SECTION 9 IDENTIFICATION

PHYSICAL DESCRIPTION / CHEMICAL PROPERTIES

Appearance	Clear colourless viscious liquid
Odour	None
Vapour Pressure (mmHg @ 20°C):	0.06
Vapour Density (air = 1)	2.1
Boiling Point (°C):	197
Freezing/Melting Point (°C):	-13
Solubility in Water	Soluble in water, methanol, diethyl ether
Specific Gravity (g/ml @ 15°C):	1.115 – 1.125
Flashpoint (°C):	116.1 (Closed Cup)
Flammability Limits (%):	3.2 – 15.3
Auto Ignition Temperature (°C):	412
Percent Volatiles	0

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of use.
Conditions to Avoid: No additional remark.
Incompatible Materials: Strong oxidising agents, acids, alkalis.
Hazardous Decomposition Products: Burning can produce carbon monoxide and/or carbon dioxide.

SECTION 11 TOXOCOLOGICAL INFORMATION

HEALTH EFFECTS
Acute:
Swallowed: Hazardous in case of ingestion.
Eye: Contact may cause eye irritation.
Skin: Irritant – prolonged contact may cause dermatitis.

Inhaled: Inhalation should be minimal since vapours are unlikely due to physical properties. Inhalation may cause irritation to lung.

Chronic: Toxic to kidneys and liver.

Toxicity to Animals:

Acute oral toxicity (LD50): 4700mg/kg (Rat)
Acute dermal toxicity (LD50): 9530 mg/kg (Rabbit)

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity:

Fish	: Low toxicity: LC/EC/IC50 > 100mg/l
Aquatic Invertebrates	: Low toxicity: LC/EC/IC50 > 100mg/l
Algae	: Low toxicity: LC/EC/IC50 > 100mg/l
Microorganisms	: Low toxicity: LC/EC/IC50 > 100mg/l

Mobility: Miscible with water.

Persistance/degradability: Biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal Methods: Ensure waste disposal conforms to local waste disposal regulations.

SECTION 14 TRANSPORT INFORMATION

UN Number:	Non Regulated	Proper Shipping Name:	N/A
Class:	N/A	Subsidiary Risk:	N/A
Packing Group:	N/A	Hazchem Code:	N/A
Special Precautions for User:			

SECTION 15 REGULATORY INFORMATION

Poisons Schedule : 6
AICS : Listed
Dangerous Goods Initial Emergency Response Guide (SAA/SNZ HB76:2010) : N/A

SECTION 16 OTHER INFORMATION

Further Information may be obtained by contacting Recochem on (07) 3308 5200

The information sourced for the preparation of this document was correct and complete at the time or writing to the best of the writer's knowledge. The document represents the commitment to the company's responsibilities surrounding the supply of this product, undertaken in good faith. This document should be taken as a safety guide for the product and its recommended uses but is in no way an absolute authority. Please consult the relevant legislation and regulations governing the use and storage of this type of product.