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Woodada-02 Well Intervention Activity Environmental Summary Document

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1.0 CONTACT DETAILS

Regulatory and 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 environmental summary document of the Woodada-02 diagnostic activity and disclosure of down-hole chemical use.

3.0 ACTIVITY LOCATION

The proposed Well Intervention Activity (WIA) is located at the Woodada-02 well. The Woodada-02 well head is located within Permit L4, within Unallocated Crown Land (UCL) north of Lake Logue Nature Reserve.

Surface location: 29°47'37.47"S 115° 9'12.63"E

Woodada-02 is situated approximately 12 km NW of Eneabba, with lease access off Coolimba Eneabba Road. Attachment-1 shows the Woodada area location map.

4.0 GENERAL DESCRIPTION OF EXISTING ENVIRONMENT

4.1 Natural environment

The North Perth Basin has a Mediterranean-type climate characterised by seasonal patterns of hot, dry summers and mild, wet winters. The area is subject to high wind speeds, dust storms, lightning storms, high summer temperatures and low winter night temperatures.

Annual rainfall averages approximately 465 mm near the coast but tapers off to around 335 mm 100 km inland. Generally 55% of annual rainfall occurs between April and September with the wetter months being June and July.

The soils consist of calcareous and siliceous sand underlain by aeolianite, which is often exposed. The North Perth Basin is situated entirely within the Geraldton Sandplains Biogeographical Region. Within this region, three broad physiographical units are recognised; the Swan Coastal Plain, the Arrowsmith Region and the Dandaragan Plateau. The areas in which WIA will be undertaken will generally be located entirely within the Swan Coastal Plain unit, which forms an elongated strip approximately 40 km wide running along the coast.

Groundwater and surface water drainage is westward but the Irwin River valley to the north of the region is the only major coordinated drainage indentation. A number of swamps surrounded by dense scrub, frequent limestone outcrops and the occasional laterite outcrop are the other major features in the region. The sub-surface geology of the area consists of the Late Jurassic Yarragadee Formation, which is overlain by Tertiary Sediments. Groundwater is present in the Tertiary Sediments and the Yarragadee Formation, and the groundwater level is near, or at surface in the aforementioned swamps and low lying areas, following the surface topography, but with lower relief.

Various smaller channels exist to the south of the region including Stockyard Gully and Eneabba Creek flowing into Stockyard Gully Cave and Lake Logue. After exceptional rainfall these drainage flows cause extensive flooding. The natural hydrological flow in the south of the region has been altered due to artificial drain construction and extensive clearing in the catchments of Stockyard Gully and Eneabba Creek.

This has resulted in increased runoff and rising salt in the region, changing the quantity and quality of water flow into Stockyard Gully and Lake Indoon.

The north Perth basin is located within the Irwin Botanical District (Northern Sandplains Region), within the Southwest Botanical Province as defined by Beard (1976). Under the Interim Biogeographic Regionalisation for Australia (IBRA) (Environment Australia 2000), the area lies on the Geraldton Sandplain, which is described as 'mainly proteaceous scrub-heaths, rich in endemics, on the sandy earths of an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata'.

4.2 Lake Logue Nature Reserve

The Woodada-02 well site is located within Unallocated Crown Land (UCL) north of the Lake Logue Nature Reserve in Permit area L4. Lake Logue is the largest feature of the Lake Logue-Indoon System, which includes a number of shallow seasonal wetlands and intermittent creeks and drainage lines. Lake Logue has a surface area of 425 hectares and fills only occasionally, following heavy rain in the catchment. The lake is fed by fresh surface water and has been known to reach a depth of over two metres. When dry, approximately three quarters of its bed is covered by low grasses and shrubs while the remainder is wooded (DEC 2009).

4.3 Social Environment

The surroundings are a populated region with limited settlement, transport or communications infrastructure. The townships of Dongara/Port Denison, Leeman and Eneabba are the largest population centres in the vicinity of the proposal.

The region is relatively undeveloped, comprising of small coastal settlements that are economically dependent on fishing, agriculture, tourism, mining and natural gas / oil production. Dongara/Port Denison is a rock lobster fishing port.

Land use within the surrounding region is pastoral, consisting of wheat, sheep and cattle farming. The bushland areas of the region support seasonal honey production and commercial wildflower harvesting.

5.0 DESCRIPTION OF ACTIVITY

5.1 Summary

Woodada-2 was drilled in June 1980 to TD 2,460m MDRT with 178mm (7") production casing shoe at 2,448m MDRT. Well was shut in on 7th April 1983 due to water breakthrough. A flowing gradient survey and temperature log was also carried out with the source of water ingress noted at 2,350m MDRT.

It is thought that the well has been suspended and the aim of this diagnostic investigation is to confirm the integrity of the production casing and to tag the existing HUD. Latest well integrity report on September 2016 described that there was a pressure reading of 4.0kPa (0.6psi) on the 178mm (7") production casing and 76kPa (11psi) on the 244mm (9-5/8") surface casing.

Phase 1- Integrity Test

a. Take sonolog.
b. Conduct integrity test on production casing.

Phase 2 – Wireline Ops

a. Rig up wireline. Perform drift and tag wireline depth.
b. Contingent-If the integrity test on the production casing fails, a CBL and temperature log will be run to determine the source of the leak path.

The well schematic is shown within Attachment 2. The expected start date for the activity is during 2017 dependent on regulatory approvals and equipment availability.

5.2 Site preparation and earthwork

The chemicals required for the operation will be stored and handled as follows:

- A PIG® Lease Liner (polypropylene composite) (Liner thickness: 97 mil = 2.54mm) (maximum infiltration rate: 10^{-9} m/s) would be in place for each well and used as a means of secondary containment for the returned fluids expected as part of the well decommissioning activity. The PIG® Lease Liner is four times more puncture resistant than commonly used HDPE liners, and its nonslip surface helps prevent slips and falls. The liner is a 3 layer polypropylene composite consists of three barrier films sandwiched by double layers of needle punched geotextile with heat fused surfaces.
- The WIA fluids will be mixed onsite within a water cart or storage vessel with secondary containment (PIG® Lease Liner) to capture any spillage should it occur. The chemicals will be stored within the portable bunded chemical storage as described above. The process of mixing chemicals on location will be supervised by site personnel.
- Chemical storage will be within a 20 ft internally bunded Dangerous Goods container. Storage of flammable or combustible liquids will be designed to contain not less than 110% of the volume of the largest storage vessel, and at least 25% of the total volume of substances stored.
- Liquid hydrocarbon products (i.e. lubricants) would be storage within bunded pallets or 20 ft internally bunded Dangerous Goods container designed to contain not less than 110% of the volume of the largest storage vessel.

5.3 Impacts and Risks of Activity

The risks and impacts associated with by the activity are assessed within Section 6.0 of the accepted EP [HSE-E-75] Rev E.

The major risks associated with this activity are:

- Introduction of weeds (risk analysis ranked this risk as low)
- Disruption of agricultural activities (risk analysis ranked this risk as medium)
- Fuel, oil or chemical spills (risk analysis ranked this risk as low)
- Disposal of waste (risk analysis ranked this risk as low)
- Groundwater contamination (risk analysis ranked this risk as low)

The WIA program will be managed in accordance with the commitments outlined in the AWE Onshore North Perth Basin Well Intervention Activities Environment Plan (EP) [HSE-E-75] Rev E. For the purposed WIA; there are no additional risks or impacts above or beyond the accepted EP [HSE-E-75] Rev E approved 16 December 2013.

5.4 Products, additives, chemicals and other substances disclosure

An objective of this summary document is to disclose products, additives, chemicals and other substances required under the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012.

AWE Limited confirms that all chemicals and substances have been accurately disclosed in Tables 3 (a-c) for its Woodada-02 program. Should further chemicals be required AWE will seek approval from the DMP. The Safety Data Sheets (SDSs) for the down hole chemicals are provided within Attachment 3.

5.5 Water disposal

Excess water is pumped out of onsite storage tanks into a tanker. It is then transported by road to disposal location. The excess water will be disposed of either to an approved water disposed well or an approved evaporation pond (Eremia-04 or Hovea Evaporation Pond).

5.6 Site rehabilitation

Rehabilitation is not part of the proposed WIA scope. Woodada-02 will be suspended decommissioning and subsequent rehabilitation will be covered within further Environmental Bridging documentation.

6.0 IMPLEMENTATION STRATEGY

The implementation strategy outlined in the accepted EP [HSE-E-75] Rev E Section 8.0 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

The objective of this Environmental document is to disclose products, additives, chemicals and other substances (Tables 2 A-C) required under the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012.

7.0 CONSULTATION

Consultation for the WIA is listed in Table 1. AWE commits to ongoing consultation with relevant stakeholder as required during the WIA.

Table 1 Consultation Record

Stakeholders	Issues and resolution
DMP (Resources Branch)	Technical program currently being drafted for submission to the DMP.
DMP (Environmental Branch)	Acceptance of the AWE Onshore North Perth Basin Well Intervention Activities Environment Plan (EP) [HSE-E-75], Rev E December 16th 2013.
Department of Parks and Wildlife (Landowner)	Plan to advise DPaW prior to commencement of operations.

8.0 CHEMICAL DISCLOSURE

Table 2 Intervention Fluid Products, additives, chemicals and other substances

Table 2A System Details

Operator	AWE Perth Pty Ltd
Project/Well	Woodada-02
System	Fluids
Total Volume of System	1000 bbl

Table 2B Product List

Product Name	Supplier	Purpose	Toxicity, Eco toxicity & Biodegradability data	% Product in system fluid	SDS Attached
Water	Town or bore water	Base Fluid	N/A- Natural product.	92.769	Yes
Potassium Chloride (KCl)	New Park Drilling Fluids	Weighting Agent	Acute Toxicity: LD50 (Ingestion): 1500 mg/kg (mouse) LD50 (Intraperitoneal): 620 mg/kg (mouse) Chronic Toxicity: Not listed as a carcinogen. No data available to indicate product or components present at greater than 1% are chronic health hazards. Biodegradation/bioaccumulation: Low bioaccumulation in water/soil. High mobility.	3.880	Yes
Idcide 20	New Park Drilling Fluids	Biocide	Acute 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) = 24mg/L/3 hr. Water: 25% Natural product. Biodegradation/bioaccumulation: No specific studies undertaken to date.	0.090	Yes
Sodium Sulphite	New Park Drilling Fluids	Oxygen Scavenger	Acute Toxicity: *Sodium Sulphite* an ingredient 0-25% Oral (Mouse) LD50: 820mg/kg Water: >80% Natural product. Biodegradation/bioaccumulation: No specific studies undertaken to date.	0.051	Yes

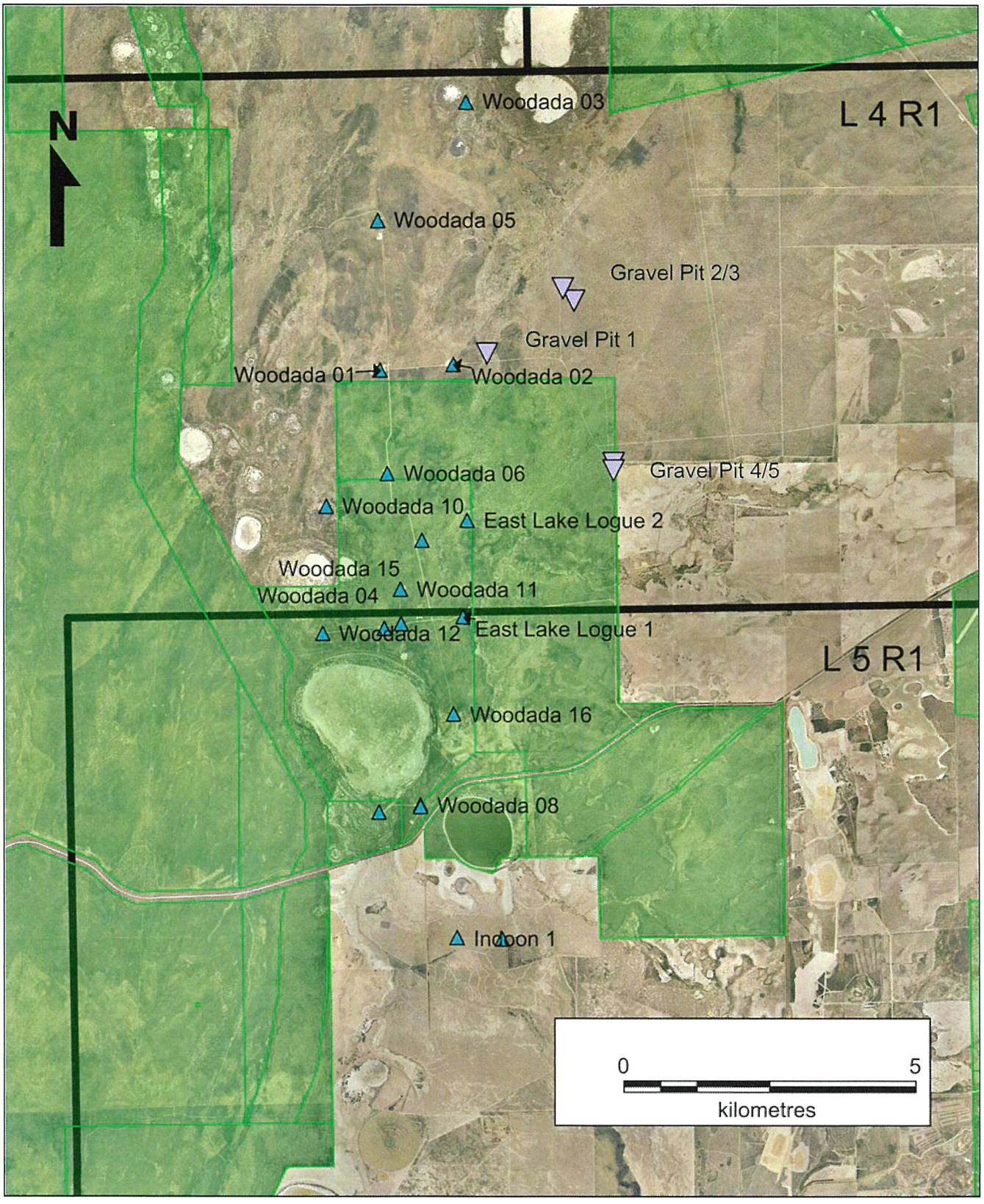
Product Name	Supplier	Purpose	Toxicity, Eco toxicity & Biodegradability data	% Product in system fluid	SDS Attached
Ancor-1 (corrosion inhibitor)	New Park Drilling Fluids	Corrosion Inhibitor	Acute Toxicity- Triethanolamine (68-72%) LD50 (Ingestion): 2200 mg/kg (rabbit) LD50 (Intraperitoneal): 1450 mg/kg (mouse) LD50 (Skin): > 20 mL/kg (rabbit) TDLo (Ingestion): 16 g/kg/64 weeks (mouse - cancer) LC50 (shrimp) : > 100 ppm. Acute Toxicity - Constituent 2 (remainder) Natural product (water). Biodegradation/bioaccumulation: 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.	1.210	Yes
			Total:	100.000	

Table 2C Chemical List

Chemicals Name	CAS number	Mass fraction (%)
Water	7732-18-5	95.419
Potassium Chloride (KCl)	7447-40-7	3.880
THPS (Tetrakis hydroxymethyl phosphonium sulfate)	55566-30-8	0.022
Sodium Sulphite	7757-83-7	<0.04
Sodium Carbonate	497-19-8	<0.001
Sodium Sulphate	7757-82-6	<0.001
Triethanolamine	102-71-6	0.679
	TOTAL:	100.000

ATTACHMENTS

Attachment 1
Location Map



Woodada Gas Field

AWE

Legend

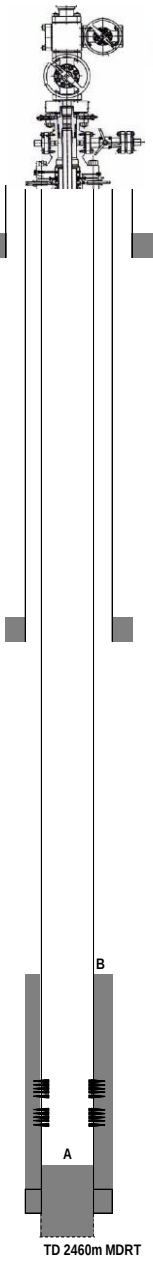
- Nature Reserve
- Wells
- Gravel Pits

Attachment 2
Well Schematic

Woodada-02 Down hole well schematic

Well Type:	Gas	**Slack Off:**		**GL-AMSL:**	37
Supervisor:		**Block Wt:**		**RT-GL:**	5
Current Status:	Shut in	**Dev at Pkr:**		**RT-CF:**	
Created by:	Aaron Anthony	**TD:**	2460m MDRT	**Last Revision Date:**	2-Mar-00
Revision #:	2	**PBTD:**	2423.5		
Revision Date:	7-Dec-15				

Formation	mMDRT	mTVDSS
Yarragadee	65	-23
Cadda	453	-411
Cockleshell Gully Formation	477	-435
Eneabba Member	771	-729
Leseur Sandstone	1243	-1201
Woodada Formation	1396	-1354
Kockatea Shale	1715	-1673
Carynginia Limestone Member	2297	-2255
Irwin River Coal Measures	2419	-2377



Casing Description

Size	String	Thread	Weight / Grade / Range	Depth (mRT)	Remarks
13 3/8"	Conductor	-	101.2kg/m 68# Butt K-55	161.0	
9 5/8"	Surface	-	69.9kg/m 47# N-80	958.0	
7"	Production	-	43.2kg/m 29# N-80	2448.0	

Perforations

Zone	Interval	Type	Remarks
Carryngina Formation	2332-2373	4" hyperjet, 4spf	
Carryngina Formation	2408-2414	4" hyperjet, 4spf	

Tubing String Details (Number from bottom up)

Size/Weight/Grade	89mm (3 1/2") 13.8kg/m (9.3#) N-80 EUE tubing				
No	Description	Length m	Depth mRT	OD mm / in	ID mm / in
	RT-GL	5.000			
	3 1/2" 9.3# N-80 EUE tubing (1 joint)	9.600	5.0	88.90 / 3.5	76.0 / 2.992
	EOT		**14.6**		

A **PBTD at 2423.5m MDRT**

B **Top of cement at 2235m MDRT**

Notes:

General Comments
3 1/2" tubing with 1 joint in hole but no reports to confirm

Attachment 3
SDSs Well Control

RHEOCHEM

MATERIAL SAFETY DATA SHEET

Product Name **ANCOR 1**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**RHEOCHEM LTD**
Address	11 Alacrity Place, Henderson, WA, AUSTRALIA, 6166
Telephone	+61 8 9410 8200
Fax	+61 8 9410 8299
Emergency	1800 127 406 (Australia); 011 64 3 3530199 (International)
Web Site	http://www.rheochem.com.au/
Synonym(s)	CORROSION INHIBITOR
Use(s)	BRINE • DRILLING FLUID ADDITIVE • OIL AND GAS INDUSTRY
SDS Date	28 Jan 2010

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R36 Irritating to eyes.

SAFETY PHRASES

S36 Wear suitable protective clothing.

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN No.	None Allocated	**DG Class**	None Allocated	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
TRIETHANOLAMINE	C6-H15-N-O3	102-71-6	68-72%
WATER	H2O	7732-18-5	remainder

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use a 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.
Advice to Doctor	Treat symptomatically.
First Aid Facilities	Eye wash facilities and safety shower should be available.

RHEOCHEM
A Newpark Company

SAFETY DATA SHEET

Product Name **IDCIDE-20**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**RHEOCHEM LTD**
Address	11 Alacrity Place, Henderson, WA, AUSTRALIA, 6166
Telephone	+61 8 9410 8200
Fax	+61 8 9410 8299
Emergency	1800 127 406 (Australia); 011 64 3 3530199 (International)
Web Site	http://www.rheochem.com.au/
Synonym(s)	IDCIDE 20
Use(s)	BIOCIDE · DRILLING FLUID ADDITIVE · WATER TREATMENT
SDS Date	11 October 2012

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

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.

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN Number	None Allocated	**DG Class**	None Allocated
Packing Group	None Allocated	**Subsidiary Risk(s)**	None Allocated
Hazchem Code	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE	CAS: 55566-30-8 EC: 259-709-0	Not Available	18 - 25%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	Remainder

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. 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.

Advice to Doctor	Treat symptomatically.
First Aid Facilities	Eye wash facilities should be available.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable. May evolve toxic gases if strongly heated. May evolve carbon oxides, sulphur oxides and phosphates when heated to decomposition.
Fire and Explosion	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.
Extinguishing	Use an extinguishing agent suitable for the surrounding fire.
Hazchem Code	None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage	Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Ventilate area where possible. Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

7. STORAGE AND HANDLING

Storage	Store in a cool, dry, well ventilated area, removed from oxidising agents, acids and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.
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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards	No exposure standard(s) allocated.
Biological Limits	No biological limit allocated.
Engineering Controls	Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	Wear splash-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 Type A (Organic vapour) respirator.

9. 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
Vapour pressure	18 mm Hg @ 20°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
% Volatiles	> 60 % (Water)

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to Avoid	Incompatible with oxidising agents (eg. hypochlorites) and acids (eg. nitric acid).
Hazardous Decomposition Products	May evolve carbon oxides, sulphur oxides and phosphates when heated to decomposition.
Hazardous Reactions	Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Low to moderate toxicity - 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	Severe irritant. Contact may result in irritation, lacrimation, pain, redness and blurring or dimness of vision. Prolonged contact may result in corneal burns and possible permanent damage.
Inhalation	Low 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, redness, rash and dermatitis. Prolonged or repeated contact may result in burns. May be absorbed through skin with harmful effects. May cause sensitisation by skin contact.
Ingestion	Low to moderate toxicity. 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

Environment	Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.
Ecotoxicity	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
Persistence/Degradability	This product is readily biodegradable.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	None Allocated	None Allocated	None Allocated
Proper Shipping Name	None Allocated	None Allocated	None Allocated
DG Class/ Division	None Allocated	None Allocated	None Allocated
Subsidiary Risk(s)	None Allocated	None Allocated	None Allocated
Packing Group	None Allocated	None Allocated	None Allocated
Hazchem Code	None Allocated		

15. REGULATORY INFORMATION

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)

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 ChemAlert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

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

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

Revision History

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

Report Status

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

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

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Prepared By

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Email: info@rmt.com.au
Web: www.rmt.com.au

Revision: 1.3
SDS Date: 11 October 2012

End of SDS

5. FIRE FIGHTING MEASURES

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

Fire and Explosion 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.

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

Hazchem Code None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Ventilate area where possible. Contain spillage, then cover / absorb spill with non-combustible absorbant material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Prevent spill entering drains or waterways.

7. STORAGE AND HANDLING

Storage Store in a cool, dry, well ventilated area, removed from oxidising agents, acids, nitrites, 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).

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.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Stds

Ingredient	Reference	TWA		STEL	
Triethanolamine	SWA (AUS)	--	5 mg/m^3	--	--

Biological Limits No biological limit allocated.

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE Wear splash-proof goggles, rubber or PVC gloves and coveralls. 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

Appearance	COLOURLESS LIQUID	**Solubility (water)**	SOLUBLE
Odour	SLIGHT ODOUR	**Specific Gravity**	1.1
pH	NOT AVAILABLE	**% Volatiles**	NOT AVAILABLE
Vapour Pressure	NOT AVAILABLE	**Flammability**	CLASS C1 COMBUSTIBLE
Vapour Density	NOT AVAILABLE	**Flash Point**	> 100°C
Boiling Point	NOT AVAILABLE	**Upper Explosion Limit**	NOT AVAILABLE
Melting Point	NOT AVAILABLE	**Lower Explosion Limit**	NOT AVAILABLE
Evaporation Rate	NOT AVAILABLE		
Autoignition Temperature	NOT AVAILABLE	**Decomposition Temperature**	NOT AVAILABLE
Partition Coefficient	NOT AVAILABLE	**Viscosity**	NOT AVAILABLE

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to Avoid	Incompatible with oxidising agents (eg. hypochlorites), acids (eg. nitric acid), nitrites, heat and ignition sources.
Hazardous Decomposition Products	May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.
Hazardous Reactions	Hazardous polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Slightly corrosive - irritant. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. May cause sensitisation by skin contact. Chronic exposure may result in liver and kidney damage. Upon dilution, the potential for adverse health effects may be reduced.
Eye	Corrosive - irritant. Contact may result in irritation, lacrimation, pain, redness, corneal burns and possible permanent damage.
Inhalation	Slightly corrosive - irritant. Over exposure may result in irritation of the nose and throat, coughing, nausea and inflammation with breathing difficulties. Due to the low vapour pressure, an inhalation hazard is not anticipated with normal use.
Skin	Slightly corrosive. Contact may result in irritation, redness, pain, rash, dermatitis and possible burns. May cause sensitisation by skin contact.
Ingestion	Slightly corrosive. Ingestion may result in ulceration and burns to the mouth and throat, nausea, vomiting, abdominal pain and diarrhoea.
Toxicity Data	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)

12. ECOLOGICAL INFORMATION

Environment	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

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

Shipping Name	None Allocated				
UN No.	None Allocated	**DG Class**	None Allocated	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	None Allocated		

15. REGULATORY INFORMATION

Poison Schedule	Classified as a Schedule 5 (S5) Poison using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).
AICS	All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

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

powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

ABBREVIATIONS:
ACGIH - American Conference of Industrial Hygienists.
ADG - Australian Dangerous Goods.
BEI - Biological Exposure Indice(s).
CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.
CNS - Central Nervous System.
EC No - European Community Number.
HSNO - Hazardous Substances and New Organisms.
IARC - International Agency for Research on Cancer.
mg/m³ - Milligrams per Cubic Metre.
NOS - Not Otherwise Specified.
pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm - Parts Per Million.
RTECS - Registry of Toxic Effects of Chemical Substances.
STEL - Short Term Exposure Limit.
SWA - Safe Work Australia.
TWA - Time Weighted Average.

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

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

Report Status

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

It is based on information concerning the product which has been provided to RMT by the manufacturer 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.

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Prepared By

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SDS Date 28 Jan 2010

End of Report

RHEOCHEM

MATERIAL SAFETY DATA SHEET

Product Name **POTASSIUM CHLORIDE (RHEOCHEM)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**RHEOCHEM LTD**
Address	11 Alacrity Place, Henderson, WA, AUSTRALIA, 6166
Telephone	+61 8 9410 8200
Fax	+61 8 9410 8299
Emergency	1800 127 406 (Australia); 011 64 3 3530199 (International)
Web Site	http://www.rheochem.com.au/
Synonym(s)	KCL • MURIATE OF POTASH • POTASH • SYLVITE
Use(s)	DRILLING FLUID ADDITIVE • FERTILISER • INHIBITOR
SDS Date	01 Nov 2010

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN No.	None Allocated	**DG Class**	None Allocated	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
POTASSIUM CHLORIDE	KCl	7447-40-7	>97%

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. 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.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable. May evolve toxic gases (potassium oxides, chlorides) when heated to decomposition.
Fire and Explosion	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.
Extinguishing	Prevent contamination of drains or waterways.
Hazchem Code	None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage If spilt (bulk), use personal protective equipment. Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

7. STORAGE AND HANDLING

Storage Store in a cool, dry, well ventilated area, removed from oxidising agents and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

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.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Stds No exposure standard(s) allocated.

Biological Limits No biological limit allocated.

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE Personal Protective Equipment is not required under normal conditions of use.At high dust levels, wear: dust-proof goggles and a Class P1 (Particulate) respirator. With prolonged use, wear: rubber or cotton or PVC gloves and coveralls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	WHITE SOLID	**Solubility (water)**	340 g/L @ 20°C
Odour	ODOURLESS	**Specific Gravity**	2.0
pH	NOT AVAILABLE	**% Volatiles**	NOT AVAILABLE
Vapour Pressure	NOT AVAILABLE	**Flammability**	NON FLAMMABLE
Vapour Density	NOT AVAILABLE	**Flash Point**	NOT RELEVANT
Boiling Point	1413°C	**Upper Explosion Limit**	NOT RELEVANT
Melting Point	773°C	**Lower Explosion Limit**	NOT RELEVANT
Evaporation Rate	NOT AVAILABLE		

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended conditions of storage.

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

Material to Avoid Incompatible (potentially explosive) with oxidising agents (eg. hypochlorites).

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

Hazardous Reactions Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Low toxicity. Use safe work practices to avoid eye or skin contact and inhalation. 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.

Eye Low to moderate irritant. Contact may result in irritation, lacrimation, pain and redness.

Inhalation Low irritant. Over exposure may result in irritation of the nose and throat, with coughing.

Skin Low irritant. Prolonged or repeated contact may result in mild irritation, rash and dermatitis.

Ingestion Low toxicity. Ingestion may result in gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in blood clotting changes, cardiac arrhythmias, increased respiration, muscle weakness, convulsions and coma.

Toxicity Data POTASSIUM CHLORIDE (7447-40-7)
LD50 (Ingestion): 1500 mg/kg (mouse)
LD50 (Intraperitoneal): 620 mg/kg (mouse)

LD50 (Intravenous): 117 mg/kg (mouse)
LDLo (Ingestion): 20 mg/kg (man)
LDLo (Intraperitoneal): 900 mg/kg (guinea pig)
LDLo (Intravenous): 77 mg/kg (guinea pig)
LDLo (Subcutaneous): 2120 mg/kg (frog)
TDLo (Ingestion): 60 mg/kg/days (woman)

12. ECOLOGICAL INFORMATION

Environment Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.

13. DISPOSAL CONSIDERATIONS

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

Shipping Name	None Allocated				
UN No.	None Allocated	**DG Class**	None Allocated	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	None Allocated		

15. REGULATORY INFORMATION

Poison Schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

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

ABBREVIATIONS:
ACGIH - American Conference of Industrial Hygienists.
ADG - Australian Dangerous Goods.
BEI - Biological Exposure Indice(s).
CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.
CNS - Central Nervous System.
EC No - European Community Number.
HSNO - Hazardous Substances and New Organisms.
IARC - International Agency for Research on Cancer.
mg/m3 - Milligrams per Cubic Metre.
NOS - Not Otherwise Specified.
pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm - Parts Per Million.
RTECS - Registry of Toxic Effects of Chemical Substances.
STEL - Short Term Exposure Limit.
SWA - Safe Work Australia.
TWA - Time Weighted Average.

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

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

made.

Report Status

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Prepared By

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Email: info@rmt.com.au
Web: www.rmt.com.au

SDS Date 01 Nov 2010

End of Report

RHEOCHEM
A Newpark Company

SAFETY DATA SHEET

Product Name **SODIUM SULPHITE**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**RHEOCHEM LTD**
Address	11 Alacrity Place, Henderson, WA, AUSTRALIA, 6166
Telephone	+61 8 9410 8200
Fax	+61 8 9410 8299
Emergency	1800 127 406 (Australia); 011 64 3 3530199 (International)
Web Site	http://www.rheochem.com.au/
Synonym(s)	SODIUM SULFITE
Use(s)	ANTIOXIDANT · FOOD PRESERVATIVE · LABORATORY REAGENT · PAPER INDUSTRY · PHOTOGRAPHIC DEVELOPER · REDUCING AGENT · WATER TREATMENT
SDS Date	12 November 2012

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

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.

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN Number	None Allocated	**DG Class**	None Allocated
Packing Group	None Allocated	**Subsidiary Risk(s)**	None Allocated
Hazchem Code	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
SODIUM CARBONATE	CAS: 497-19-8 EC: 207-838-8	Xi;R36	<0.1%
SODIUM SULPHITE	CAS: 7757-83-7 EC: 231-821-4	Not Available	>97%
SODIUM SULPHATE	CAS: 7757-82-6 EC: 231-820-9	Not Available	<2.5%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	<0.1%

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. 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.

Advice to Doctor Treat symptomatically.

First Aid Facilities Eye wash facilities and safety shower are recommended.

5. FIRE FIGHTING MEASURES

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

Fire and Explosion 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.

Extinguishing Use an extinguishing agent suitable for the surrounding fire.

Hazchem Code None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Prevent spill entering drains or waterways. Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

7. STORAGE AND HANDLING

Storage Store in a cool, dry, well ventilated area, removed from oxidising agents, acids and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Also store removed from air and moisture.

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

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

Biological Limits No biological limit allocated.

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

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

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
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
% Volatiles	NOT AVAILABLE

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to Avoid	Incompatible with oxidising agents (eg. hypochlorites) and acids (eg. nitric acid). Sensitive to air and moisture.
Hazardous Decomposition Products	May evolve toxic gases (sulphur oxides) when heated to decomposition.
Hazardous Reactions	Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary

Low to moderate toxicity. 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

Low to moderate toxicity. 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)

SODIUM SULPHATE (7757-82-6)

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

12. ECOLOGICAL INFORMATION

Environment Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.

13. DISPOSAL CONSIDERATIONS

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

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	None Allocated	None Allocated	None Allocated
Proper Shipping Name	None Allocated	None Allocated	None Allocated
DG Class/ Division	None Allocated	None Allocated	None Allocated
Subsidiary Risk(s)	None Allocated	None Allocated	None Allocated
Packing Group	None Allocated	None Allocated	None Allocated
Hazchem Code	None Allocated		

15. REGULATORY INFORMATION

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)

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 ChemAlert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

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

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

Revision History

Revision	Description
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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End of SDS