# Dongara Gas Field
# Xyris Production Facility PFW Injection Environment Plan Bridging Document Summary

Upstream PS Controlled Document

No. 21/HSEQ/ENV/PL05SUM

Revision 0

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# 1 References

| Document code | Title |
|---|---|
| 21/HSEQ/ENV/PL03 | Dongara Gas Field Environment Plan |
| 21/HSEQ/ENV/PL06 | Waitsia Gas Project Commissioning and Operations Environment Plan |
| 21/HSEQ/ENV/PL07 | Dongara Gas Field Condensate Loading System Environment Plan Bridging Document |

# 2 Term definitions and abbreviations

| Abbreviation | Definition |
|---|---|
| ALARP | As Low As Reasonably Practicable |
| BD | Bridging Document |
| CLS | Condensate Loading System |
| DGF | Dongara Gas Field |
| DMIRS | Department of Mines, Industry Regulation and Safety |
| DMP | Department of Mines and Petroleum (now DMIRS) |
| DPF | Dongara Production Facility |
| DWER | Department of Water and Environmental Regulation |
| EP | Environment Plan |
| ESA | Environmentally Sensitive Area |
| GDE | Groundwater Dependent Ecosystem |
| PEB | Petroleum Environment Branch |
| PFW | Produced Formation Water |
| SDS | Safety Data Sheet |
| Senecio-03 | Waitsia Gas Project well |
| Waitsia Gas Project | XPF and associated infrastructure (wells, flowlines, pipelines PL111 and PL64) |
| Waitsia-01 | Waitsia Gas Project well |
| WDW | Dongara Production Facility Water Disposal Well |
| WIA | Well Intervention Activity |
| XPF | Xyris Production Facility |

# 3 Contact Details

Regulatory & Community Affairs Manager

AWE Limited

(08) 9480 1300

PO Box 574

WEST PERTH WA 6782

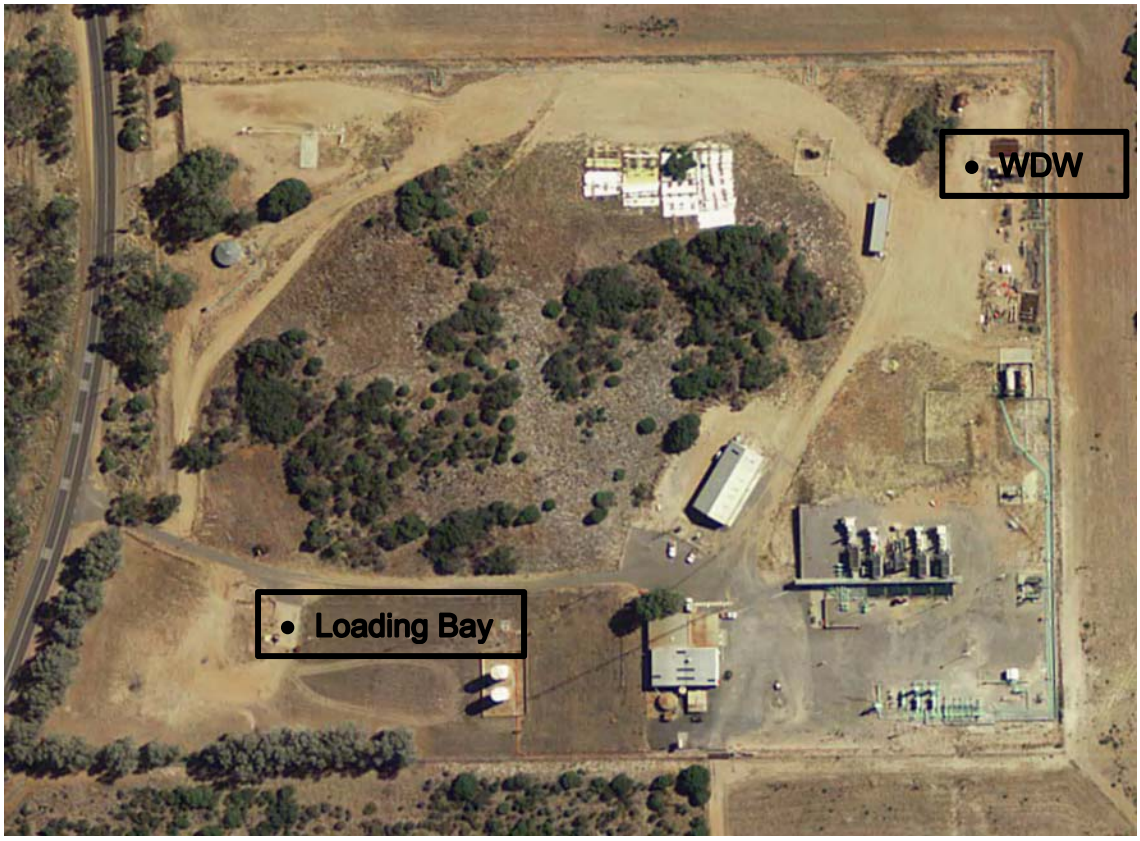
# 4 Location

The Dongara Gas Field (DGF) is located within onshore production licences L1 and L2 in the coastal Midwest region of Western Australia; approximately 7 km east of Dongara, within the Shire of Irwin, and 350 km north of Perth.

The existing DGF WDW is located within the Dongara Production Facility (DPF) (Figure 1):

| Zone | Easting | Northing |
|---|---|---|
| MGA 50 | 306,588mE | 6,761,444mN |

**Figure 1 - DGF WDW within the DPF**




Source: Upstream PS, July 2017

# 5 Timeframe

No construction is required for this project; first PFW load-in is to occur July 2017.

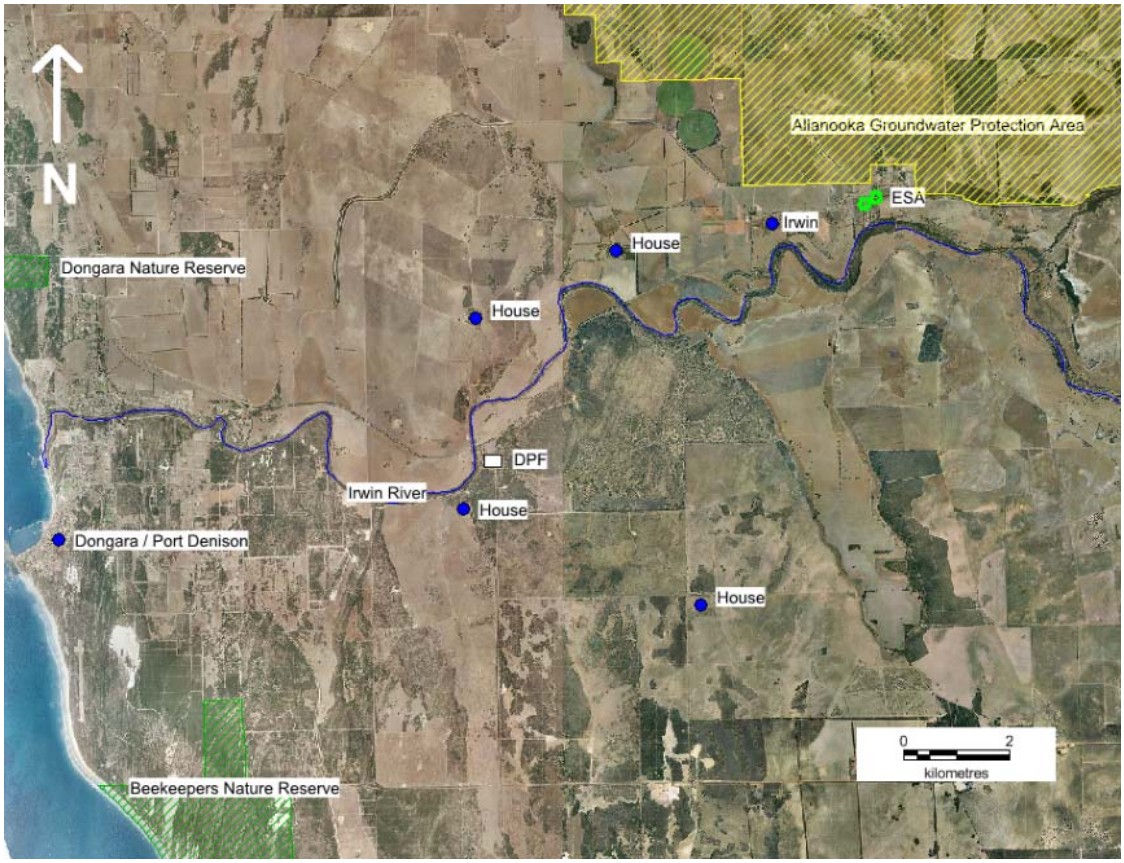
# 6 Description of the Environment

A detailed description of the environment in the DGF is included in Section 5 of the DGF Environment Plan (EP) [21/HSEQ/ENV/PL03]. A summary of the environment surrounding DPF is included in Table 1. Figure 2 indicates sensitive receptors with respect to DPF.

**Table 1 - Description of the Environment**

| Aspect | Detail |
|---|---|
| Climate | Mediterranean climate characterised by seasonal patterns of hot, dry summers and mild, wet winters |
| Soils | Sandy, well drained soils consisting of calcareous and siliceous sand underlain by aeolianite, which is often exposed |
| Surface water | Irwin River (200 m west) |
| Groundwater | Groundwater level is approximately 10 m below ground surface<br>The nearest Groundwater Dependent Ecosystem (GDE) is located >10km SE of DPF |
| Conservation Areas | DPF is not located in the vicinity of conservation estate (Redbook Area, Environmental Sensitive Area (ESA) or Nature Reserve) |
| Vegetation | DPF is cleared around process equipment with firebreaks surrounding the facility, vegetated bushland 100 m from CLS<br>No ecological communities of national or state significance are known to occur within the area |
| Fauna | Facility is fenced to prevent fauna access<br>Invertebrates known to occur within DPF and reptiles have been observed<br>Operations will not impact on significant fauna habitat |
| Aboriginal Heritage | Irwin River (200 m west) |
| European Heritage | No areas of European heritage significance within 5 km of DPF |
| Socio-economic | Dongara 7 km west<br>Land use surrounding DPF is cattle grazing<br>Nearest residence 1 km southwest of DPF<br>Dongara is the centre for a long standing oil and gas industry |

**Figure 2 - Sensitive receptors with respect to DPF**




Source: Upstream PS, May 2016

# 7 Description of the Activity

A detailed description of the DGF is included in Section 4 of the DGF EP [21/HSEQ/ENV/PL03].

## 7.1 XPF PFW Disposal

The existing CLS allows the loading of condensate / PFW into or from two 159 kL vertical tanks via drybreak and pump on a concrete bunded load out bay. The bay is currently utilised for XPF condensate load-in and load-out. Water drain from the tanks is via the central drainage system to the corrugated plate interceptor and disposal via the WDW.

PFW from XPF is currently loaded into the HPF Evaporation Pond and Turkey's Nest. Low winter evaporation and Well Intervention Activity (WIA) water load-in to the HPF Evaporation Pond has resulted in limited capacity for XPF PFW.

AWE proposes to utilise the CLS and WDW to temporarily dispose of the XPF PFW while water levels in the HPF Evaporation Pond and Turkey's Nest are at their limit (<1 m freeboard). The transport of the PFW is managed under the Waitsia Gas Project EP [21/HSEQ/ENV/PL06]. The PFW load-in activities will be managed under the DGF EP. PFW storage and disposal will continue to be managed under the DGF EP.

No construction is required for this activity. PFW load-in from the XPF will commence immediately and continue until levels in the Evaporation Pond or Turkey's Nest fall below the 1 m freeboard. While in use, PFW load-ins will occur twice a week. All loading activities will be supervised and undertaken during daylight hours only.

## 7.2 Chemical Disclosure

Chemicals are injected into the Waitsia-01 and Senecio-03 gas streams. When the PFW is separated from the gas, some of the chemicals transfer into the PFW and will be transferred with the PFW to the WDW.

The purpose of this document is to disclose products, additives, chemicals and other substances injected downhole as required under the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012.

The maximum quantities of chemicals that could be injected downhole are provided in Appendix A along with Safety Data Sheets (SDSs) in Appendix B.

AWE confirms that all chemicals and substances have been accurately disclosed in Attachment 1 for the XPF PFW injection into the WDW.

# 8 Environmental Risk Assessment and Management

The risks and impacts associated with DGF operations managed to as low as reasonably practicable (ALARP) are included in the DGF EP [21/HSEQ/ENV/PL03 Appendix 5] and DGF CLS EP BD [21/HSEQ/ENV/PL07 Section 7]. There are no additional risks or impacts additional to those identified above or beyond the accepted DGF EP (Rev 0) accepted 21 March 2014 and DGF CLS EP BD (Rev 1) accepted 12 July 2016.

# 9 Implementation Strategy

The implementation strategy outlined in the accepted EP [21/HSEQ/ENV/PL03] Section 8 is applicable to the proposed activity. The aspects include

- Systems, practices and procedures
- Roles and responsibilities
- Training
- Monitoring, audit and review of environmental performance
- Emergency and oil spill response
- Maintenance of quantitative records
- Reporting on environmental performance

There are no additional risks or impacts above or beyond the accepted DGF EP [21/HSEQ/ENV/PL03 Rev 0] accepted 21 March 2014.

# 10 Consultation

AWE has consulted Department of Mines, Industry Regulation and Safety (DMIRS) Petroleum Environment Branch (PEB) and Department of Water and Environmental Regulation (DWER) on this specific activity.

The AWE Mid West website (www.awemidwest.com.au) covering its Perth Basin activities is an additional method for AWE to communicate with stakeholders on a continuing basis. The website includes project specific pages as well as blogs highlighting updates and responding to particular topics of interest to our stakeholders. It also includes an option to subscribe to news feeds and to contact AWE for additional information.

AWE will continue to consult with stakeholders in accordance with the arrangements described in Section 10 of the DGF EP.

**Table A1 System Details**

| | |
|---|---|
| **Operator** | AWE Perth Pty Ltd |
| **Project / Well** | DPF Water Disposal Well (WDW) |
| **System** | Produced Formation Water |
| **Total Volume** | 1000 kL |
| **Note** | Concentrations of product in the PFW are absolute maximums based on the volume of the individual chemical injected into the gas stream |

**Table A2 Product List**

| Product Name | Supplier | Purpose | Toxicity, Eco toxicity & Biodegradability Data | % Product in System Fluid | SDS Attached? |
|---|---|---|---|---|---|
| Produced Formation Water | AWE | Product separated from gas | | 93.65% | |
| Methanol (97%) | Mintech | Hydrate Inhibitor | <u>Acute Toxicity</u><br>• LC50: 15,400 mg/L exposure time 96 hr (fish)<br>• EC50: >10,000 mg/L exposure time 48 hr (daphnia and other aquatic invertebrates)<br>• EC50: 22,000 mg/L exposure time 72 hr (algae)<br>• >1,000 mg/L bacteria<br>• NOEC: 7,900 mg/L exposure time 8.3 days (chronic toxicity fish)<br><u>Biodegradation/bioaccumulation</u><br>If released to the atmosphere methanol degrades via reaction with photochemically produced hydroxyl radicals (it remains in vapour for 18 days). It is expected to biodegrade in both soil and water. If spilt on soil it is expected to be susceptible to significant leaching, as well rapid evaporation from dry surfaces is likely to occur.<br>Methanol does not concentrate or accumulate in fish. | 6.2% | Appendix B |
| Cortron IRN-331 | Nalco Champion | Corrosion Inhibitor | <u>Acute Toxicity</u><br>*Component 1 (60-100%)*<br>• Non-hazardous according to Safe Work Australia criteria, non-dangerous goods according to ADG.<br>*Component 2 (1-10%)*<br>• LC50: >18 (limit) mg/L exposure time 96 hr (Sheepshead minnow)<br>• LC50: 32.6 mg/L exposure time 48 hr (Acartia tonsa)<br>• EC50: 98.58 mg/L exposure time 72 hr (Skeletonema costatum) | 0.1% | Appendix C |

| Product Name | Supplier | Purpose | Toxicity, Eco toxicity & Biodegradability Data | % Product in System Fluid | SDS Attached? |
|---|---|---|---|---|---|
| | | | *Component 3 (1-10%)*<br>• LC50: 0.9* mg/L exposure time 96 hr (fish)<br>• LC50: 10.9* mg/L exposure time 48 hr (crustacean)<br>• EC50: 99* mg/L exposure time 72 hr (algae)<br>**Estimated data based on structural analogue*<br>*Component 4 (1-10%)*<br>• LC50: 0.64 (limit) mg/L exposure time 96 hr (Sheepshead minnow)<br>• LC50: 0.81 mg/L exposure time 48 hr (Acartia tonsa)<br>• EC50: 0.64 mg/L exposure time 72 hr (Skeletonema costatum)<br>*(Component 4 data based on WAF test)*<br>*Component 5 (1-10%)*<br>• PLONOR<br>*Component 6 (1-10%)*<br>• LC50:1.7 mg/L exposure time 96 hr (Scophthalmus maximus)<br>• EC50: 0.4 mg/L exposure time 48 hr (Acartia tonsa)<br>• EC50: 0.26 mg/L exposure time 72 hr (Skeletonema costatum)<br>*(Component 6 data based on WAF test)*<br>*Component 7 (1-10%)*<br>• LC50: >1.89 mg/L exposure time 96 hr (Scophthalmus maximus)<br>• LC50: 6.51 mg/L exposure time 48 hr (Acartia tonsa)<br>• EC50: 1.89 mg/L exposure time 72 hr (Skeletonema costatum)<br>*(Component 7 data based on WAF test)*<br>*Component 8 (1-10%)*<br>• LC50: >0.19 (limit) mg/L exposure time 96 hr (Sheepshead minnow)<br>• EC50: 1.23 mg/L exposure time 48 hr (Acartia tonsa)<br>• EC50: 0.19 mg/L exposure time 72 hr (Skeletonema costatum)<br><u>Biodegradation/bioaccumulation</u><br>*Component 1 (60-100%)*<br>• Non-hazardous according to Safe Work Australia criteria, non-dangerous goods according to ADG.<br>*Component 2 (1-10%)*<br>• Log Pow: -0.8<br>• Biodegradation (28d): 21% (OECD 306)<br>*Component 3 (1-10%)* | | |

| Product Name | Supplier | Purpose | Toxicity, Eco toxicity & Biodegradability Data | % Product in System Fluid | SDS Attached? |
|---|---|---|---|---|---|
| | | | • Log Pow: 3.1*<br>• Biodegradation (28d): 40%*<br>**Estimated data based on structural analogue*<br>*Component 4 (1-10%)*<br>• Log Pow: Not applicable, surface active<br>• Biodegradation (28d): 14% (OECD 306)<br>*Component 5 (1-10%)*<br>• PLONOR<br>*Component 6 (1-10%)*<br>• Log Pow: 0.1 – 1.9<br>• Biodegradation (28d): 34% (Marine BODIS)<br>*Component 7 (1-10%)*<br>• Log Pow: 4.9<br>• Biodegradation (28d): 73% (OECD 306)<br>*Component 8 (1-10%)*<br>• Log Pow: Not applicable, surface active<br>• Biodegradation (63d): 41% (OECD 306) | | |
| NALCO EC9356A | Nalco Champion | H2S Scavenger | <u>Acute Toxicity</u><br>Hexahydro-1,3,5-Trimethyl-S-Triazine:<br>• LC50: >1.908 mg/L exposure time 96 hr (fish)<br>• LC50: 20.352 mg/L exposure time 48 hr (daphnia and other aquatic invertebrates)<br>• EC50: 1.145 mg/L exposure time 72 hr (algae)<br><u>Biodegradation/bioaccumulation</u><br>Hexahydro-1,3,5-Trimethyl-S-Triazine:<br>• Log Pow: 1.4<br>• Biodegradation (14d): 73% (OECD 306) | 0.05% | Appendix D |

**Table A3 Chemical List**

| Chemical Name | CAS number | Mass fraction (%) |
|---|---|---|
| Produced Formation Water | | 93.6500 |
| Methanol | 67-56-1 | 6.0155 |
| Water | 7732-18-5 | 0.2962 |
| Hexahydro-1,3,5-Trimethyl-S-Triazine | 108-74-7 | 0.0140 |
| Alkyl Pyridine Benzyl Chloride Quaternary | 68909-18-2 | 0.0062 |
| Quarternary ammonium compound | 61789-71-7 | 0.0048 |
| Fatty amino compound | 61790-69-0 | 0.0044 |
| Decylalcohol, ethoxylated, phosphate | 52019-36-0 | 0.0041 |
| Ethoxylated amine | 61791-26-2 | 0.0021 |
| 2-Mercaptoethanol | 60-24-2 | 0.0010 |
| Ethanediol | 107-21-1 | 0.0008 |
| Acetic acid | 64-19-7 | 0.0008 |
| Monomethylamine | 74-89-5 | 0.0001 |

# Appendix A Methanol SDS

multi-chem® | mintech
A HALLIBURTON SERVICE

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

### 1.1 Product identifier

**Product name** **METHANOL 97**

**Synonym(s)** METHANOL + 3% DI WATER • METHYL HYDROXIDE • MINTECH CHEMICAL METHANOL • MONOHYDROXYMETHANE • WOOD ALCOHOL

### 1.2 Uses and uses advised against

**Use(s)** ANTIFREEZE • CHEMICAL SYNTHESIS • DENATURE ETHANOL • FUEL • SOLVENT

### 1.3 Details of the supplier of the product

**Supplier name** **MULTI-CHEM MINTECH**

**Address** 1 Ward Road, East Rockingham, WA, 6168, AUSTRALIA

**Telephone** (08) 9419 5300

**Fax** (08) 9439 1055

**Email** admin@mintech.com.au

**Website** www.mintechchemical.com.au

### 1.4 Emergency telephone number(s)

**Emergency** 1800 429 628

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

**GHS classification(s)**
Flammable Liquids: Category 2
Acute Toxicity: Skin: Category 3
Specific Target Organ Systemic Toxicity (Single Exposure): Category 1
Acute Toxicity: Inhalation: Category 3
Acute Toxicity: Oral: Category 3

### 2.2 Label elements

**Signal word** **DANGER**

**Pictogram(s)**

**Hazard statement(s)**

| | |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H301 | Toxic if swallowed. |
| H311 | Toxic in contact with skin. |
| H331 | Toxic if inhaled. |
| H370 | Causes damage to organs. |

**Prevention statement(s)**

| | |
|---|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground/bond container and receiving equipment. |
| P241 | Use explosion-proof electrical/ventilating/lighting equipment. |
| P243 | Take precautionary measures against static discharge. |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray. |
| P264 | Wash thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |

**Response statement(s)**

| | |
|---|---|
| P301 + P310 | IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. |
| 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. |
| P311 | Call a POISON CENTER or doctor/physician. |
| P321 | Specific treatment is advised - see first aid instructions. |
| P330 | Rinse mouth. |
| P363 | Wash contaminated clothing before reuse. |
| P370 + P378 | In case of fire: Use appropriate media for extinction. |

**Storage statement(s)**

| | |
|---|---|
| P403 + P233 + P235 | Store in a well-ventilated place. Keep cool. Keep container tightly closed. |
| 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 | CAS Number | EC Number | Content |
|---|---|---|---|
| METHANOL | 67-56-1 | 200-659-6 | >95% |
| WATER | 7732-18-5 | 231-791-2 | <3% |

## 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 and safety shower are recommended.

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

Methanol primarily affects the central nervous system, with symptoms of headache, nausea, vomiting and dizziness. Damage to the optic nerves may occur with chronic or high level exposure, causing visual problems and possible blindness.

### 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

Highly flammable. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Vapour may form explosive mixtures with air. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones, etc when handling. Earth containers when dispensing fluids.

### 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

2WE

| | |
|---|---|
| 2 | Fine Water Spray. |
| W | Risk of violent reaction or explosion. Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off. |
| E | Evacuation of people in and around the immediate vicinity of the incident should be considered. |

## 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. 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**

| Ingredient | Reference | TWA | | STEL | |
|---|---|---|---|---|---|
| | | ppm | mg/m³ | ppm | mg/m³ |
| Methanol | SWA (AUS) | 200 | 262 | 250 | 328 |

**Biological limits**

| Ingredient | Determinant | Sampling Time | BEI |
|---|---|---|---|
| METHANOL | Methanol in urine | End of shift | 15 mg/L |

Reference: ACGIH Biological Exposure Indices

### 8.2 Exposure controls

**Engineering controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. Maintain vapour levels below the recommended exposure standard.

**PPE**

| | |
|---|---|
| **Eye / Face** | Wear splash-proof goggles. |
| **Hands** | Wear butyl or viton (R) or barrier 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. Where the boiling point is < 65°C, use an AX filter type. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | CLEAR COLOURLESS LIQUID |
| **Odour** | CHARACTERISTIC ALCOHOL ODOUR |
| **Flammability** | HIGHLY FLAMMABLE |
| **Flash point** | 12°C (cc) |
| **Boiling point** | 64°C |
| **Melting point** | NOT AVAILABLE |
| **Evaporation rate** | NOT AVAILABLE |
| **pH** | NOT AVAILABLE |
| **Vapour density** | NOT AVAILABLE |
| **Specific gravity** | 0.8 |
| **Solubility (water)** | SOLUBLE |
| **Vapour pressure** | 97 mm Hg @ 20°C |
| **Upper explosion limit** | NOT AVAILABLE |
| **Lower explosion limit** | NOT AVAILABLE |
| **Partition coefficient** | NOT AVAILABLE |
| **Autoignition temperature** | NOT AVAILABLE |
| **Decomposition temperature** | NOT AVAILABLE |
| **Viscosity** | NOT AVAILABLE |
| **Explosive properties** | NOT AVAILABLE |
| **Oxidising properties** | NOT AVAILABLE |
| **Odour threshold** | NOT AVAILABLE |

### 9.2 Other information

| | |
|---|---|
| **% Volatiles** | 100 % |

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

### 10.2 Chemical stability

Stable under recommended conditions of storage.

### 10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

### 10.4 Conditions to avoid

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

### 10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), heat and ignition sources. Incompatible with acid chlorides, acid anhydrides, alkali metals and reducing agents (e.g. sulphites).

### 10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

**Acute toxicity**

**Information available for the product:**
Toxic if swallowed, in contact with skin, and/or if inhaled.

**Information available for the ingredient(s):**

| Ingredient | Oral Toxicity (LD50) | Dermal Toxicity (LD50) | Inhalation Toxicity (LC50) |
|---|---|---|---|
| METHANOL | 300 mg/kg (human) | 15,800 mg/kg (rabbit) | 50 g/m³/2 hours |

**Skin** Contact may result in drying and defatting of the skin, rash and dermatitis.

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

**Sensitization** Not classified as causing skin or respiratory sensitisation.

**Mutagenicity** Not classified as a mutagen.

**Carcinogenicity** Not classified as a carcinogen.

**Reproductive** Not classified as a reproductive toxin.

**STOT – single exposure** Over exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness.

**STOT – repeated exposure** Methanol primarily affects the central nervous system, with symptoms of headache, nausea, vomiting and dizziness. Damage to the optic nerves may occur with repeated exposure, causing visual problems and possible blindness.

**Aspiration** Not classified as causing aspiration.

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

No information provided.

### 12.2 Persistence and degradability

If released to the atmosphere methanol degrades via reaction with photochemically produced hydroxyl radicals (it remains in vapour for 18 days). It is expected to biodegrade in both soil and water. If spilt on soil it is expected to be susceptible to significant leaching, as well rapid evaporation from dry surfaces is likely to occur.

### 12.3 Bioaccumulative potential

Methanol does not concentrate or accumulate in fish.

### 12.4 Mobility in soil

Methanol is soluble in water and is carried in the water and air. Methanol does not bind well to soil, so it can enter the groundwater.

### 12.5 Other adverse effects

No information provided.

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

**Waste disposal** Wearing the protective equipment outlined, ensure all ignition sources are extinguished. For small quantities, absorb on paper, sand or similar and evaporate under a fume cupboard or open area. For large volumes, atomise into incinerator (mixing with more flammable solvent if required) or recycle by gravimetric separation, distilling & reusing. Contact the manufacturer/supplier for additional information (if required).

**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** | 1230 | 1230 | 1230 |
| **14.2 Proper Shipping Name** | METHANOL | METHANOL | METHANOL |
| **14.3 Transport hazard classes** | 3, 6.1 | 3, 6.1 | 3, 6.1 |
| **14.4 Packing Group** | II | II | II |

**14.5 Environmental hazards** Not a Marine Pollutant

**14.6 Special precautions for user**

**Hazchem code** 2WE

**GTEPG** 3A3

**EMS** F-E, S-D

## 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**

| | |
|---|---|
| F | Flammable |
| T | Toxic |

**Risk phrases**

| | |
|---|---|
| R11 | Highly flammable. |
| R23/24/25 | Toxic by inhalation, in contact with skin and if swallowed. |
| R39/23/24/25 | Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. |

**Safety phrases**

| | |
|---|---|
| S1/2 | Keep locked up and out of reach of children. |
| S7 | Keep container tightly closed. |
| S16 | Keep away from sources of ignition - No smoking. |
| S36/37 | Wear suitable protective clothing and gloves. |
| 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** WORK PRACTICES - SOLVENTS: Organic solvents may present both a health and flammability hazard. It is recommended that engineering controls should be adopted to reduce exposure where practicable (for example, if using indoors, ensure explosion proof extraction ventilation is available). Flammable or combustible liquids with explosive limits have the potential for ignition from static discharge. Refer to AS 1020 (The control of undesirable static electricity) and AS 1940 (The storage and handling of flammable and combustible liquids) for control procedures.

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 |
| EMS | Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods) |
| GHS | Globally Harmonized System |
| GTEPG | Group Text Emergency Procedure Guide |
| IARC | International Agency for Research on Cancer |
| LC50 | Lethal Concentration, 50% / Median Lethal Concentration |
| LD50 | Lethal Dose, 50% / Median Lethal Dose |
| mg/m³ | Milligrams per Cubic Metre |
| OEL | Occupational Exposure Limit |
| pH | relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). |
| ppm | Parts Per Million |
| STEL | Short-Term Exposure Limit |
| STOT-RE | Specific target organ toxicity (repeated exposure) |
| STOT-SE | Specific target organ toxicity (single exposure) |
| SUSMP | Standard for the Uniform Scheduling of Medicines and Poisons |
| SWA | Safe Work Australia |
| TLV | Threshold Limit Value |
| TWA | Time Weighted Average |

**Report status**

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

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

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

**Prepared by**

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**[ End of SDS ]**

# Appendix B Cortron IRN-331 SDS

NALCO Champion
An Ecolab Company

# SAFETY DATA SHEET

## CORR10331A

## Section: 1. PRODUCT AND COMPANY IDENTIFICATION

| | | |
|---|---|---|
| Product name | : | CORR10331A |
| Other means of identification | : | Not applicable. |
| Recommended use | : | CORROSION INHIBITOR |
| Restrictions on use | : | Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits. |
| Company | : | ECOLAB PTY LTD<br>2 Drake Avenue<br>Macquarie Park NSW 2113<br>Australia<br>A.B.N. 59 000 449 990<br>TEL: 1300 654 224<br>FAX: +61 2 8870 8680 |
| Emergency telephone number | : | 1800 205 506<br>International: +64 7 958 2372 |
| Issuing date | : | 15.07.2016 |

## Section: 2. HAZARDS IDENTIFICATION

### GHS Classification

| | | |
|---|---|---|
| Skin corrosion/irritation | : | Category 1C |
| Serious eye damage/eye irritation | : | Category 1 |
| Skin sensitization | : | Category 1 |

### GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Causes severe skin burns and eye damage.
May cause an allergic skin reaction.

Precautionary Statements :

**Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.

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

**Other hazards** : None known.

## Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

| Chemical Name | CAS-No. | Concentration: (%) |
|---|---|---|
| N-Benzyl-Alkylpyridinium Chloride | 68909-18-2 | 5 - 10 |
| Benzyl(Coconut Oil Alkyl)Dimethylammonium Chloride | 61789-71-7 | 1 - 5 |
| Reaction product of diethylenetriamine and tall-oil (fatty) acid | 61790-69-0 | 1 - 5 |
| Ethoxylated Mono-Tallow Alkyl-Amine | 61791-26-2 | 1 - 5 |
| Methanol | 67-56-1 | 1 - 5 |
| 2-Mercaptoethanol | 60-24-2 | 1 - 5 |

## Section: 4. FIRST AID MEASURES

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

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

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

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

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

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

Notes to physician : Treat symptomatically.

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

## Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus

Special protective equipment : Use personal protective equipment.

for firefighters

| | | |
|---|---|---|
| Specific extinguishing methods | : | Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Hazchem Code | : | 2X |

## Section: 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Do not allow contact with soil, surface or ground water. |
| Methods and materials for containment and cleaning up | : | Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. |

## Section: 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Advice on safe handling | : | Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation. |
| Conditions for safe storage | : | Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers. Avoid direct sunlight. At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H2S). |
| Suitable material | : | Keep in properly labelled containers. |
| Unsuitable material | : | not determined |

## Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

| Components | CAS-No. | Form of exposure | Permissible concentration | Basis |
|---|---|---|---|---|
| Methanol | 67-56-1 | TWA | 200 ppm<br>262 mg/m3 | AU OEL |
| | | VLE | 250 ppm<br>328 mg/m3 | AU OEL |
| Methanol | 67-56-1 | WES-TWA | 200 ppm<br>262 mg/m3 | NZ OEL |
| | | WES-STEL | 250 ppm<br>328 mg/m3 | NZ OEL |
| Methanol | 67-56-1 | TWA | 200 ppm | ACGIH |
| | | STEL | 250 ppm | ACGIH |
| | | TWA | 200 ppm<br>260 mg/m3 | NIOSH REL |
| | | STEL | 250 ppm | NIOSH REL |

| | | | | |
|---|---|---|---|---|
| | | | 325 mg/m3 | |
| | | TWA | 200 ppm<br>260 mg/m3 | OSHA Z1 |

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

**Personal protective equipment**

Eye protection : Safety goggles
Face-shield

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

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

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

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

## Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid
Colour : Dark brown
Odour : odourless
Flash point : 95 °C
pH : 4.65, (25 °C)
Odour Threshold : no data available
Melting point/freezing point : FREEZING POINT: 0 °C
Initial boiling point and boiling range : 100 °C
Evaporation rate : no data available
Flammability (solid, gas) : no data available
Upper explosion limit : no data available
Lower explosion limit : no data available
Vapour pressure : no data available
Relative vapour density : no data available
Relative density : 1.015, (25 °C),
Density : no data available
Water solubility : Complete
Solubility in other solvents : no data available
Partition coefficient: n- : no data available

| | | |
|---|---|---|
| octanol/water | | |
| Auto-ignition temperature | : | no data available |
| Thermal decomposition temperature | : | no data available |
| Viscosity, dynamic | : | 20 mPa.s (25 °C) |
| Viscosity, kinematic | : | no data available |
| Molecular weight | : | no data available |
| VOC | : | no data available |

## Section: 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Chemical stability | : | At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H2S). |
| Possibility of hazardous reactions | : | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | : | None known. |
| Incompatible materials | : | None known. |
| Hazardous decomposition products | : | Decomposition products may include the following materials:<br>Carbon oxides<br>nitrogen oxides (NOx)<br>Sulphur oxides<br>Oxides of phosphorus |

## Section: 11. TOXICOLOGICAL INFORMATION

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

**Potential Health Effects**

| | | |
|---|---|---|
| Eyes | : | Causes serious eye damage. |
| Skin | : | Causes severe skin burns. May cause allergic skin reaction. |
| Ingestion | : | May cause blindness if swallowed. Causes digestive tract burns. |
| Inhalation | : | May cause nose, throat, and lung irritation. |
| Chronic Exposure | : | Health injuries are not known or expected under normal use. |

**Experience with human exposure**

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

**Toxicity**

**Product**

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

**Human Hazard Characterization**

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

## Section: 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

| | | |
|---|---|---|
| Environmental Effects | : | This product has no known ecotoxicological effects. |

**Product**

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

**Components**

| | | |
|---|---|---|
| Toxicity to fish | : | Methanol<br>LC50 : 15,400 mg/l<br>Exposure time: 96 h |

**Components**

| | | |
|---|---|---|
| Toxicity to daphnia and other aquatic invertebrates | : | Reaction product of diethylenetriamine and tall-oil (fatty) acid<br>LC50 : 0.3 mg/l<br>Exposure time: 48 h<br><br>Methanol<br>EC50 : > 10,000 mg/l<br>Exposure time: 48 h |

2-Mercaptoethanol
EC50 : 0.89 mg/l
Exposure time: 48 h

**Components**

Toxicity to algae : N-Benzyl-Alkylpyridinium Chloride
EC50 : 0.16 mg/l
Exposure time: 72 h

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

**Components**

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

**Components**

Toxicity to fish (Chronic toxicity) : Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

**Persistence and degradability**

no data available

**Mobility**

no data available

**Bioaccumulative potential**

no data available

**Other information**

no data available

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

## Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

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

## Section: 14. TRANSPORT INFORMATION

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

**Land transport**

| | | |
|---|---|---|
| Proper shipping name | : | CORROSIVE LIQUID, N.O.S. |
| Technical name(s): | : | Benzyl(Coconut Oil Alkyl)Dimethylammonium Chloride |
| UN/ID No. | : | UN 1760 |
| Transport hazard class(es) | : | 8 |
| Packing group | : | II |
| Hazchem Code | : | 2X |

**Air transport (IATA)**

| | | |
|---|---|---|
| UN/ID No. | : | UN 1760 |
| Proper shipping name | : | CORROSIVE LIQUID, N.O.S. |
| Technical name(s) | : | Benzyl(Coconut Oil Alkyl)Dimethylammonium Chloride |
| Transport hazard class(es) | : | 8 |
| Packing group | : | II |

**Sea transport (IMDG/IMO)**

| | | |
|---|---|---|
| UN/ID No. | : | UN 1760 |
| Proper shipping name | : | CORROSIVE LIQUID, N.O.S. |
| Technical name(s) | : | Benzyl(Coconut Oil Alkyl)Dimethylammonium Chloride |
| Transport hazard class(es) | : | 8 |
| Packing group | : | II |

## Section: 15. REGULATORY INFORMATION

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

**INTERNATIONAL CHEMICAL CONTROL LAWS** :

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

## Section: 16. OTHER INFORMATION

**REFERENCES**

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

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

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

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

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

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

| | | |
|---|---|---|
| Revision Date | : | 15.07.2016 |
| Version Number | : | 1.2 |
| Prepared By | : | Regulatory Affairs |

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

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

# Appendix C NALCO EC9356A SDS

NALCO Champion
An Ecolab Company

# SAFETY DATA SHEET

## NALCO® EC9356A

## Section: 1. PRODUCT AND COMPANY IDENTIFICATION

| | | |
|---|---|---|
| Product name | : | NALCO® EC9356A |
| Other means of identification | : | Not applicable. |
| Recommended use | : | HYDROGEN SULFIDE SCAVENGER |
| Restrictions on use | : | Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits. |
| Company | : | ECOLAB PTY LTD<br>2 Drake Avenue<br>Macquarie Park NSW 2113<br>Australia<br>A.B.N. 59 000 449 990<br>TEL: 1300 654 224<br>FAX: +61 2 8870 8680 |
| Emergency telephone number | : | 1800 205 506<br>International: +64 7 958 2372 |
| Issuing date | : | 10.06.2016 |

## Section: 2. HAZARDS IDENTIFICATION

### GHS Classification

| | | |
|---|---|---|
| Flammable liquids | : | Category 4 |
| Acute toxicity (Oral) | : | Category 4 |
| Skin corrosion/irritation | : | Category 1C |
| Serious eye damage/eye irritation | : | Category 1 |
| Skin sensitization | : | Category 1 |
| Specific target organ toxicity - repeated exposure (Oral) | : | Category 2 |

### GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Combustible liquid
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure if swallowed.

Precautionary Statements : **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace.
**Response:**

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction. If skin irritation or rash occurs: Get medical advice/ attention. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Wash contaminated clothing before reuse.
**Storage:**
Store in a well-ventilated place. Keep cool. Store locked up.
**Disposal:**
Dispose of contents/ container to an approved waste disposal plant.

**Other hazards** : None known.

## Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

| Chemical Name | CAS-No. | Concentration: (%) |
|---|---|---|
| Hexahydro-1,3,5-Trimethyl-S-Triazine | 108-74-7 | 10 - 30 |

## Section: 4. FIRST AID MEASURES

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

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

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

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

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

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

Notes to physician : Treat symptomatically.

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

## Section: 5. FIREFIGHTING MEASURES

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

material.

| | | |
|---|---|---|
| Unsuitable extinguishing media | : | None known. |
| Specific hazards during firefighting | : | Fire Hazard<br>Keep away from heat and sources of ignition.<br>Flash back possible over considerable distance. |
| Hazardous combustion products | : | Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) |
| Special protective equipment for firefighters | : | Use personal protective equipment. |
| Specific extinguishing methods | : | Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Hazchem Code | : | 2X |

## Section: 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Initial Emergency Response Guide No | : | 36 |
| Personal precautions, protective equipment and emergency procedures | : | Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Do not allow contact with soil, surface or ground water. |
| Methods and materials for containment and cleaning up | : | Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. |

## Section: 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Advice on safe handling | : | Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation. |
| Conditions for safe storage | : | Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers. |
| Suitable material | : | Keep in properly labelled containers. |
| Unsuitable material | : | not determined |

## Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

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

**Personal protective equipment**

| | | |
|---|---|---|
| Eye protection | : | Safety goggles<br>Face-shield |
| Hand protection | : | Wear the following personal protective equipment:<br>Standard glove type.<br>Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. |
| Skin protection | : | Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing |
| Respiratory protection | : | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. |
| Hygiene measures | : | Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard. |

## Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | Liquid |
| Colour | : | colourless |
| Odour | : | Pungent |
| Flash point | : | 90 °C, Method: ASTM D 93, Pensky-Martens closed cup |
| pH | : | 11, 100 % |
| Odour Threshold | : | no data available |
| Melting point/freezing point | : | MELTING POINT: -15 °C, ASTM D-97 |
| Initial boiling point and boiling range | : | no data available |
| Evaporation rate | : | no data available |
| Flammability (solid, gas) | : | no data available |
| Upper explosion limit | : | no data available |
| Lower explosion limit | : | no data available |
| Vapour pressure | : | no data available |
| Relative vapour density | : | no data available |
| Relative density | : | 1.013, (15 °C), |
| Density | : | 8.42 lb/gal |
| Water solubility | : | completely soluble |
| Solubility in other solvents | : | no data available |
| Partition coefficient: n-octanol/water | : | no data available |

| | | |
|---|---|---|
| Auto-ignition temperature | : | no data available |
| Thermal decomposition temperature | : | no data available |
| Viscosity, dynamic | : | no data available |
| Viscosity, kinematic | : | 2.3 mm2/s (40 °C), Method: ASTM D 445 |
| Molecular weight | : | no data available |
| VOC | : | no data available |

## Section: 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Chemical stability | : | Stable under normal conditions. |
| Possibility of hazardous reactions | : | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | : | Heat, flames and sparks. |
| Incompatible materials | : | Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors.<br>Toxic gases may be released if in contact with the following:<br>Acids<br>Bases<br><br>Strong oxidizing agents |
| Hazardous decomposition products | : | Decomposition products may include the following materials:<br>Carbon oxides<br>nitrogen oxides (NOx) |

## Section: 11. TOXICOLOGICAL INFORMATION

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

**Potential Health Effects**

| | | |
|---|---|---|
| Eyes | : | Causes serious eye damage. |
| Skin | : | Causes severe skin burns. May cause allergic skin reaction. |
| Ingestion | : | Harmful if swallowed. Causes digestive tract burns. |
| Inhalation | : | May cause nose, throat, and lung irritation. |
| Chronic Exposure | : | May cause damage to organs through prolonged or repeated exposure. |

**Experience with human exposure**

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

**Toxicity**

**Product**

| | | |
|---|---|---|
| Acute oral toxicity | : | Acute toxicity estimate: 1,786 mg/kg |
| Acute inhalation toxicity | : | no data available |
| Acute dermal toxicity | : | no data available |
| Skin corrosion/irritation | : | no data available |
| Serious eye damage/eye irritation | : | no data available |
| Respiratory or skin sensitization | : | no data available |
| Carcinogenicity | : | No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| Reproductive effects | : | No reproductive toxic effects expected. |
| Germ cell mutagenicity | : | Contains no ingredient listed as a mutagen |
| Teratogenicity | : | no data available |
| STOT - single exposure | : | no data available |
| STOT - repeated exposure | : | no data available |
| Aspiration toxicity | : | No aspiration toxicity classification |

**Human Hazard Characterization**

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

## Section: 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

| | | |
|---|---|---|
| Environmental Effects | : | This product has no known ecotoxicological effects. |

**Product**

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

**Components**

| | | |
|---|---|---|
| Toxicity to fish | : | Hexahydro-1,3,5-Trimethyl-S-Triazine<br>LC50 : > 1.908 mg/l<br>Exposure time: 96 h |

**Components**

| | | |
|---|---|---|
| Toxicity to daphnia and other aquatic invertebrates | : | Hexahydro-1,3,5-Trimethyl-S-Triazine<br>LC50 : 20.352 mg/l<br>Exposure time: 48 h |

**Components**

| | | |
|---|---|---|
| Toxicity to algae | : | Hexahydro-1,3,5-Trimethyl-S-Triazine |

EC50 : 1.145 mg/l
Exposure time: 72 h

**Persistence and degradability**

The organic portion of this preparation is expected to be inherently biodegradable.

**Mobility**

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

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

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

**Bioaccumulative potential**

This preparation or material is not expected to bioaccumulate.

**Other information**

no data available

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

## Section: 13. DISPOSAL CONSIDERATIONS

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

## Section: 14. TRANSPORT INFORMATION

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

**Land transport**

| | | |
|---|---|---|
| Proper shipping name | : | AMINES, LIQUID, CORROSIVE, N.O.S. |
| Technical name(s): | : | Substituted alkylamine |
| UN/ID No. | : | UN 2735 |
| Transport hazard class(es) | : | 8 |
| Packing group | : | III |
| IERG No | : | 36 |
| Hazchem Code | : | 2X |

| | | |
|---|---|---|
| Special precautions for user | : | Dangerous goods of Class 8 (Alkali) are incompatible in a placard load with any of the following:<br>Class 1 Explosives<br>Class 4.3 Dangerous when wet substances<br>Class 5.1 Oxidising agents<br>Class 5.2 Organic peroxides<br>Class 7 Radioactive substances<br>and are incompatible with food or food packaging in any quantity. |

**Air transport (IATA)**

| | | |
|---|---|---|
| UN/ID No. | : | UN 2735 |
| Proper shipping name | : | AMINES, LIQUID, CORROSIVE, N.O.S. |
| Technical name(s) | : | Substituted alkylamine |
| Transport hazard class(es) | : | 8 |
| Packing group | : | III |

**Sea transport (IMDG/IMO)**

| | | |
|---|---|---|
| UN/ID No. | : | UN 2735 |
| Proper shipping name | : | AMINES, LIQUID, CORROSIVE, N.O.S. |
| Technical name(s) | : | Substituted alkylamine |
| Transport hazard class(es) | : | 8 |
| Packing group | : | III |

## Section: 15. REGULATORY INFORMATION

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

**INTERNATIONAL CHEMICAL CONTROL LAWS** :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

JAPAN
This product contains substance(s) which are not in compliance with the Law Regulating the Manufacture and Importation Of Chemical Substances and are not listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

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

PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

## Section: 16. OTHER INFORMATION

**REFERENCES**

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

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

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

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

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

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

| | | |
|---|---|---|
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| Prepared By | : | Regulatory Affairs |

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

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