



# Sanodure Bordeaux RL

ALPHA CHEMICALS PTY LTD

Chemwatch Hazard Alert Code: 2

Chemwatch: 4879-50

Version No: 5.1.1.1

Safety Data Sheet according to WHS and ADG requirements

Issue Date: 01/11/2019

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S.GHS.AUS.EN

## SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

### Product Identifier

|                               |                      |
|-------------------------------|----------------------|
| Product name                  | Sanodure Bordeaux RL |
| Synonyms                      | Not Available        |
| Other means of identification | Not Available        |

### Relevant identified uses of the substance or mixture and uses advised against

|                          |   |
|--------------------------|---|
| Relevant identified uses | Aluminium dye. Used in the metal processing industry.<br>INTEGRITY CHECK: Product contains BOTH an alcohol and an acid as ingredients.<br>Use according to manufacturer's directions. |
|--------------------------|---|

### Details of the supplier of the safety data sheet

|                         |   |
|-------------------------|---|
| Registered company name | ALPHA CHEMICALS PTY LTD                         |
| Address                 | 4 ALLEN PLACE WETHERILL PARK NSW 2099 Australia |
| Telephone               | 61 (0)2 9982 4622                               |
| Fax                     | Not Available                                   |
| Website                 | ~   |
| Email                   | shane@alphachem.com.au                          |

### Emergency telephone number

|                                   |                         |
|-----------------------------------|-------------------------|
| Association / Organisation        | ALPHA CHEMICALS PTY LTD |
| Emergency telephone numbers       | 61 (0)418 237 771       |
| Other emergency telephone numbers | Not Available           |

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS.** According to the WHS Regulations and the ADG Code.

### CHEMWATCH HAZARD RATINGS

|              | Min | Max |              |
|--------------|-----|-----|--------------|
| Flammability | 1   | 1   |              |
| Toxicity     | 1   | 1   | 0 = Minimum  |
| Body Contact | 2   | 2   | 1 = Low      |
| Reactivity   | 1   | 1   | 2 = Moderate |
| Chronic      | 2   | 2   | 3 = High     |
|              |     |     | 4 = Extreme  |

|                    |   |
|--------------------|---|
| Poisons Schedule   | Not Applicable  |
| Classification [1] | Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Skin Sensitizer Category 1A, Acute Aquatic Hazard Category 3      |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI |

### Label elements

|                     |                |
|---------------------|----------------|
| Hazard pictogram(s) |                |
| SIGNAL WORD         | <b>WARNING</b> |

### Hazard statement(s)

Continued...

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|      |                                      |
|------|--------------------------------------|
| H315 | Causes skin irritation.              |
| H319 | Causes serious eye irritation.       |
| H317 | May cause an allergic skin reaction. |
| H402 | Harmful to aquatic life.             |

**Precautionary statement(s) Prevention**

|      |  |
|------|--|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P261 | Avoid breathing dust/fumes.  |
| P273 | Avoid release to the environment.  |
| P272 | Contaminated work clothing should not be allowed out of the workplace.     |

**Precautionary statement(s) Response**

|                |  |
|----------------|--|
| P321           | Specific treatment (see advice on this label).   |
| P362           | Take off contaminated clothing and wash before reuse.  |
| P302+P352      | IF ON SKIN: Wash with plenty of water.   |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313      | If skin irritation or rash occurs: Get medical advice/attention.   |
| P337+P313      | If eye irritation persists: Get medical advice/attention.  |

**Precautionary statement(s) Storage**

Not Applicable

**Precautionary statement(s) Disposal**

|      |  |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

**Substances**

See section below for composition of Mixtures

**Mixtures**

| CAS No     | %[weight] | Name                           |
|------------|-----------|--------------------------------|
| 64-18-6    | 2.5-<5    | <u>formic acid</u>             |
| 107-41-5   | 1-<10     | <u>hexylene glycol</u>         |
| 1066-30-4  | 1-<10     | <u>chromic acetate</u>         |
| 141-53-7   | 1-<10     | <u>Sodium formate</u>          |
| 55965-84-9 | NotSpec   | <u>isothiazolinones, mixed</u> |

**SECTION 4 FIRST AID MEASURES**

**Description of first aid measures**

|                     |  |
|---------------------|--|
| <b>Eye Contact</b>  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with fresh running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>  |
| <b>Skin Contact</b> | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>  |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul>       |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Seek medical advice.</li> </ul> |

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

To treat poisoning by the higher aliphatic alcohols (up to C7):

- ▶ Gastric lavage with copious amounts of water.
- ▶ It may be beneficial to instill 60 ml of mineral oil into the stomach.
- ▶ Oxygen and artificial respiration as needed.
- ▶ Electrolyte balance: it may be useful to start 500 ml. M/6 sodium bicarbonate intravenously but maintain a cautious and conservative attitude toward electrolyte replacement

Continued...

unless shock or severe acidosis threatens.

- ▶ To protect the liver, maintain carbohydrate intake by intravenous infusions of glucose.
- ▶ Haemodialysis if coma is deep and persistent. [GOSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products, Ed 5]

#### BASIC TREATMENT

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Monitor and treat, where necessary, for pulmonary oedema.
- ▶ Anticipate and treat, where necessary, for seizures.
- ▶ **DO NOT use emetics.** Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- ▶ Give activated charcoal.

#### ADVANCED TREATMENT

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ If the patient is hypoglycaemic (decreased or loss of consciousness, tachycardia, pallor, dilated pupils, diaphoresis and/or dextrose strip or glucometer readings below 50 mg), give 50% dextrose.
- ▶ Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

#### EMERGENCY DEPARTMENT

- ▶ Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- ▶ Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- ▶ Acidosis may respond to hyperventilation and bicarbonate therapy.
- ▶ Haemodialysis might be considered in patients with severe intoxication.
- ▶ Consult a toxicologist as necessary. BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

For C8 alcohols and above.

Symptomatic and supportive therapy is advised in managing patients.

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

- ▶ Alcohol stable foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.
- ▶ Water spray or fog - Large fires only.

### Special hazards arising from the substrate or mixture

#### Fire Incompatibility

- ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

### Advice for firefighters

|                              |  |
|------------------------------|--|
| <b>Fire Fighting</b>         | <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Use water delivered as a fine spray to control fire and cool adjacent area.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> <li>▶ If safe to do so, remove containers from path of fire.</li> <li>▶ Equipment should be thoroughly decontaminated after use.</li> </ul>   |
| <b>Fire/Explosion Hazard</b> | <p>Minimum Ignition Temperature (MIE): &gt;1 J (modified Hartmann tube)</p> <ul style="list-style-type: none"> <li>▶ Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions.</li> <li>▶ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).</li> <li>▶ Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.</li> <li>▶ In the same way as gases and vapours, dusts in the form of a cloud are only ignitable over a range of concentrations; in principle, the concepts of lower explosive limit (LEL) and upper explosive limit (UEL) are applicable to dust clouds but only the LEL is of practical use; - this is because of the inherent difficulty of achieving homogeneous dust clouds at high temperatures (for dusts the LEL is often called the "Minimum Explosible Concentration", MEC).</li> <li>▶ When processed with flammable liquids/vapors/mists, ignitable (hybrid) mixtures may be formed with combustible dusts. Ignitable mixtures will increase the rate of explosion pressure rise and the Minimum Ignition Energy (the minimum amount of energy required to ignite dust clouds - MIE) will be lower than the pure dust in air mixture. The Lower Explosive Limit (LEL) of the vapour/dust mixture will be lower than the individual LELs for the vapors/mists or dusts.</li> </ul> <p>Combustion products include:<br/>carbon monoxide (CO)<br/>carbon dioxide (CO<sub>2</sub>)</p> |

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|                |   |
|----------------|---|
|                | nitrogen oxides (NOx)<br>sulfur oxides (SOx)<br>metal oxides<br>other pyrolysis products typical of burning organic material.<br>May emit poisonous fumes.<br>May emit corrosive fumes. |
| <b>HAZCHEM</b> | Not Applicable  |

**SECTION 6 ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

See section 8

**Environmental precautions**

See section 12

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

|                     |   |
|---------------------|---|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Remove all ignition sources.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Use dry clean up procedures and avoid generating dust.</li> <li>▶ Place in a suitable, labelled container for waste disposal.</li> </ul>   |
| <b>Major Spills</b> | <p>Moderate hazard.</p> <ul style="list-style-type: none"> <li>▶ <b>CAUTION:</b> Advise personnel in area.</li> <li>▶ Alert Emergency Services and tell them location and nature of hazard.</li> <li>▶ Control personal contact by wearing protective clothing.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Recover product wherever possible.</li> <li>▶ <b>IF DRY:</b> Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal.</li> </ul> |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

**SECTION 7 HANDLING AND STORAGE****Precautions for safe handling**

|                          |   |
|--------------------------|---|
| <b>Safe handling</b>     | <ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Prevent concentration in hollows and sumps.</li> <li>▶ <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li> <li>▶ <b>DO NOT allow material to contact humans, exposed food or food utensils.</b></li> <li>▶ Avoid contact with incompatible materials.</li> <li>▶ <b>When handling, DO NOT eat, drink or smoke.</b></li> <li>▶ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)</li> <li>▶ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.</li> <li>▶ Establish good housekeeping practices.</li> <li>▶ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.</li> <li>▶ Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 1/32 in.(0.8 mm) thick can be sufficient to warrant immediate cleaning of the area.</li> <li>▶ Do not use air hoses for cleaning.</li> </ul> |
| <b>Other information</b> | <ul style="list-style-type: none"> <li>▶ Pure formic acid slowly decomposes releasing toxic carbon monoxide and may pressurise containers.</li> <li>▶ Water in less concentrated acid improves stability.</li> <li>▶ Extreme care needed in opening containers of unknown age</li> <li>▶ Store in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ Store in a cool, dry area protected from environmental extremes.</li> <li>▶ Store away from incompatible materials and foodstuff containers.</li> <li>▶ Protect containers against physical damage and check regularly for leaks.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul> <p>For major quantities:</p> <ul style="list-style-type: none"> <li>▶ Consider storage in banded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).</li> <li>▶ Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.</li> </ul>   |

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

|                                |   |
|--------------------------------|---|
| <b>Suitable container</b>      | <ul style="list-style-type: none"> <li>▶ Polyethylene or polypropylene container.</li> <li>▶ Check all containers are clearly labelled and free from leaks.</li> </ul>  |
| <b>Storage incompatibility</b> | <p>Hexylene glycol:</p> <ul style="list-style-type: none"> <li>▶ is incompatible with strong oxidisers, sulfuric acid, nitric acid, caustics, aliphatic amines, isocyanates</li> </ul> <p>Alcohols</p> <ul style="list-style-type: none"> <li>▶ are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents.</li> <li>▶ reacts, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen</li> <li>▶ react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide, pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, triisobutylaluminium</li> </ul> |

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- ▶ should not be heated above 49 deg. C. when in contact with aluminium equipment
  - ▶ Toxic gases are formed by mixing azo and azido compounds with acids, aldehydes, amides, carbamates, cyanides, inorganic fluorides, halogenated organics, isocyanates, ketones, metals, nitrides, peroxides, phenols, epoxides, acyl halides, and strong oxidising or reducing agents.
  - ▶ Flammable gases are formed by mixing azo and azido compounds with alkali metals.
  - ▶ Explosive combination can occur with strong oxidising agents, metal salts, peroxides, and sulfides
  - ▶ Azo, diazo and azido compounds can detonate especially where organic azides have been sensitised by the addition of metal salts or strong acids.
- Formic acid:
- ▶ reacts explosively or violently strong oxidisers, with hydrogen peroxide, furfuryl alcohol, hypochlorites, isocyanides, nitromethane, chromic acid, nitric acid, phosphorus pentoxide, strong bases thallium nitrate, nitromethane.
  - ▶ reacts with concentrated sulfuric acid to produce carbon dioxide
  - ▶ is incompatible with alkalis, ammonia, aliphatic amines, alkanolamines, furfuryl alcohol, isocyanates, alkylene oxides, epichlorohydrin, palladium
  - ▶ is a strong reducing agent
  - ▶ attacks aluminium, cast iron and steel, some plastics, rubber and coatings
  - ▶ slowly decomposes in storage forming carbon dioxide gas

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

| Source                       | Ingredient      | Material name                    | TWA               | STEL              | Peak               | Notes         |
|------------------------------|-----------------|----------------------------------|-------------------|-------------------|--------------------|---------------|
| Australia Exposure Standards | formic acid     | Formic acid                      | 5 ppm / 9.4 mg/m3 | 19 mg/m3 / 10 ppm | Not Available      | Not Available |
| Australia Exposure Standards | hexylene glycol | Hexylene glycol                  | Not Available     | Not Available     | 25 ppm / 121 mg/m3 | Not Available |
| Australia Exposure Standards | chromic acetate | Chromium (III) compounds (as Cr) | 0.5 mg/m3         | Not Available     | Not Available      | Not Available |

EMERGENCY LIMITS

| Ingredient      | Material name                            | TEEL-1        | TEEL-2        | TEEL-3        |
|-----------------|--|---------------|---------------|---------------|
| formic acid     | Formic acid                              | Not Available | Not Available | Not Available |
| hexylene glycol | Hexylene glycol                          | 2.3 ppm       | 25 ppm        | 150 ppm       |
| chromic acetate | Chromic acetate; (Chromium(III) acetate) | 6.6 mg/m3     | 78 mg/m3      | 470 mg/m3     |
| Sodium formate  | Sodium formate                           | 18 mg/m3      | 200 mg/m3     | 1,200 mg/m3   |

| Ingredient              | Original IDLH | Revised IDLH  |
|-------------------------|---------------|---------------|
| formic acid             | 30 ppm        | Not Available |
| hexylene glycol         | Not Available | Not Available |
| chromic acetate         | 25 mg/m3      | Not Available |
| Sodium formate          | Not Available | Not Available |
| isothiazolinones, mixed | Not Available | Not Available |

OCCUPATIONAL EXPOSURE BANDING

| Ingredient              | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|-------------------------|-----------------------------------|----------------------------------|
| Sodium formate          | E                                 | ≤ 0.01 mg/m³                     |
| isothiazolinones, mixed | E                                 | ≤ 0.1 ppm                        |

**Notes:** Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

Exposure controls

|   |  |
|---|--|
| <b>Appropriate engineering controls</b> | <p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.</p> <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> <ul style="list-style-type: none"> <li>▶ Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.</li> </ul> |
| <b>Personal protection</b>              |  |
| <b>Eye and face protection</b>          | <ul style="list-style-type: none"> <li>▶ Safety glasses with side shields.</li> <li>▶ Chemical goggles.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in</li> </ul>  |

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|                              |  |
|------------------------------|--|
|                              | a clean environment only after workers have washed hands thoroughly.   |
| <b>Skin protection</b>       | See Hand protection below  |
| <b>Hands/feet protection</b> | <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>▶ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.</li> <li>▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li> </ul> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p> <p>Suitability and durability of glove type is dependent on usage.</p> <p>Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.</p> <ul style="list-style-type: none"> <li>▶ polychloroprene.</li> <li>▶ nitrile rubber.</li> <li>▶ butyl rubber.</li> <li>▶ fluorocarbon.</li> <li>▶ polyvinyl chloride.</li> </ul> <p>Gloves should be examined for wear and/ or degradation constantly.</p> |
| <b>Body protection</b>       | See Other protection below   |
| <b>Other protection</b>      | <ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ P.V.C. apron.</li> <li>▶ Barrier cream.</li> <li>▶ Skin cleansing cream.</li> <li>▶ Eye wash unit.</li> </ul>  |

## Recommended material(s)

## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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| Material         | CPI |
|------------------|-----|
| BUTYL            | A   |
| NATURAL RUBBER   | A   |
| NEOPRENE         | A   |
| NEOPRENE/NATURAL | A   |
| NITRILE          | A   |
| PVC              | A   |
| SARANEX-23       | A   |
| NATURAL+NEOPRENE | C   |
| PE               | C   |

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

## Respiratory protection

Type ABK-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator    |
|------------------------------------|----------------------|----------------------|---------------------------|
| up to 10 x ES                      | ABK-AUS P2           | -                    | ABK-PAPR-AUS / Class 1 P2 |
| up to 50 x ES                      | -                    | ABK-AUS / Class 1 P2 | -                         |
| up to 100 x ES                     | -                    | ABK-2 P2             | ABK-PAPR-2 P2 ^           |

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- ▶ Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- ▶ The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- ▶ Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- ▶ Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- ▶ Use approved positive flow mask if significant quantities of dust becomes airborne.
- ▶ Try to avoid creating dust conditions.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

## Information on basic physical and chemical properties

|                         |  |  |               |
|-------------------------|--|--|---------------|
| <b>Appearance</b>       | Red granules; partially miscible with water (50 g/l) |  |               |
| <b>Physical state</b>   | Divided Solid  | <b>Relative density (Water = 1)</b>            | 0.800 (bulk)  |
| <b>Odour</b>            | Not Available  | <b>Partition coefficient n-octanol / water</b> | Not Available |
| <b>Odour threshold</b>  | Not Available  | <b>Auto-ignition temperature (°C)</b>          | Not Available |
| <b>pH (as supplied)</b> | Not Applicable                                       | <b>Decomposition temperature</b>               | 150-190       |

Continued...

## Sanodure Bordeaux RL

|   |                |   |                |
|---|----------------|---|----------------|
| <b>Melting point / freezing point (°C)</b>          | Not Available  | <b>Viscosity (cSt)</b>                  | Not Applicable |
| <b>Initial boiling point and boiling range (°C)</b> | Not Applicable | <b>Molecular weight (g/mol)</b>         | Not Available  |
| <b>Flash point (°C)</b>                             | Not Available  | <b>Taste</b>                            | Not Available  |
| <b>Evaporation rate</b>                             | Not Applicable | <b>Explosive properties</b>             | Not Available  |
| <b>Flammability</b>                                 | Not Available  | <b>Oxidising properties</b>             | Not Available  |
| <b>Upper Explosive Limit (%)</b>                    | Not Available  | <b>Surface Tension (dyn/cm or mN/m)</b> | Not Applicable |
| <b>Lower Explosive Limit (%)</b>                    | Not Available  | <b>Volatile Component (%vol)</b>        | Negligible     |
| <b>Vapour pressure (kPa)</b>                        | Negligible     | <b>Gas group</b>                        | Not Available  |
| <b>Solubility in water</b>                          | Miscible       | <b>pH as a solution (1%)</b>            | 3-4 (3 g/l)    |
| <b>Vapour density (Air = 1)</b>                     | Not Applicable | <b>VOC g/L</b>                          | Not Available  |

## SECTION 10 STABILITY AND REACTIVITY

|   |  |
|---|--|
| <b>Reactivity</b>                         | See section 7  |
| <b>Chemical stability</b>                 | <ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul> |
| <b>Possibility of hazardous reactions</b> | See section 7  |
| <b>Conditions to avoid</b>                | See section 7  |
| <b>Incompatible materials</b>             | See section 7  |
| <b>Hazardous decomposition products</b>   | See section 5  |

## SECTION 11 TOXICOLOGICAL INFORMATION

## Information on toxicological effects

|                     |   |
|---------------------|---|
| <b>Inhaled</b>      | <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.</p> <p>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</p> <p>Excessive inhalation of formic acid vapour can produce respiratory symptoms, headache, nausea and weakness, but the warning properties of formic acid helps to deter exposure and hence prevent systemic effects.</p> <p>There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.</p>   |
| <b>Ingestion</b>    | <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Overexposure to non-ring alcohols causes nervous system symptoms. These include headache, muscle weakness and inco-ordination, giddiness, confusion, delirium and coma.</p> <p>Symptoms of over-exposure to hexylene glycol include stimulation of the central nervous system followed by depression, drowsiness, vomiting, coma, failure of breathing, convulsions, kidney damage and death. It is eliminated in the urine.</p> <p>Formic acid has a half life of 2.5hours and may cause salivation, oral burning sensation, nausea, vomiting, diarrhoea, tissue damage, bleeding, shock and even death in severe cases.</p>   |
| <b>Skin Contact</b> | <p>This material can cause inflammation of the skin on contact in some persons.</p> <p>The material may accentuate any pre-existing dermatitis condition</p> <p>Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.</p> <p>When hexylene glycol was applied as a dressing to paediatric burn patients, approximately 8% exhibited highly variable periods of coma with almost half of the comatose group eventually dying as a result of kidney failure.</p> <p>Most liquid alcohols appear to act as primary skin irritants in humans. Significant percutaneous absorption occurs in rabbits but not apparently in man.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Skin contact with formic acid may cause irritation, burns, keloids and blisters. Inability to speak, breathing and swallowing difficulty may occur depending on route and site of exposure.</p>  |
| <b>Eye</b>          | <p>This material can cause eye irritation and damage in some persons.</p> <p>Eye contact with formic acid liquid or its high vapour concentrations will produce irritation, inflamed conjunctiva with reddened eye and possibly corneal burns.</p>  |
| <b>Chronic</b>      | <p>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.</p> <p>Hexylene glycol may produce slight liver and kidney changes, according to animal testing.</p> <p>Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.</p> <p>Chromium (III) is an essential trace mineral. Chronic exposure to chromium (III) irritates the airways, malnourishes the liver and kidneys, causes fluid in the lungs, and adverse effects on white blood cells, and also increases the risk of developing lung cancer.</p> <p>Chronic occupational exposures to formic acid may cause nausea and albumin or blood in the urine.</p> <p>Animal testing has shown that many azo dyes have cancer-causing activity, affecting the liver, bladder and gut. Specific effects in humans are unclear, but some dyes are known to cause mutations.</p> |

Sanodure Bordeaux RL

|                         |   |   |
|-------------------------|---|---|
| Sanodure Bordeaux RL    | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | Oral (Rat) LD50: >5000 mg/kg * <sup>[2]</sup>   | Not Available   |
| formic acid             | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>   | Eye (rabbit): 122 mg - SEVERE                                     |
|                         | Inhalation (rat) LC50: 7.4 mg/l/4H <sup>[2]</sup>   | Eye: adverse effect observed (irritating) <sup>[1]</sup>          |
|                         | Oral (rat) LD50: =730 mg/kg <sup>[2]</sup>  | Skin (rabbit): 610 (open) - mild                                  |
|                         |   | Skin: adverse effect observed (corrosive) <sup>[1]</sup>          |
| hexylene glycol         | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | Dermal (rabbit) LD50: >5000 mg/kg <sup>[2]</sup>  | Eye (rabbit): 93mg - SEVERE                                       |
|                         | Oral (rat) LD50: =3692 mg/kg <sup>[2]</sup>   | Eye: no adverse effect observed (not irritating) <sup>[1]</sup>   |
|                         |   | Skin (rabbit):465 mg open-mild                                    |
|                         |   | Skin (rabbit):465mg/24hr-moderate                                 |
|                         |   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |
| chromic acetate         | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>   | Eye: no adverse effect observed (not irritating) <sup>[1]</sup>   |
|                         | Oral (rat) LD50: >5000 mg/kg <sup>[1]</sup>   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |
| Sodium formate          | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>   | Eye: no adverse effect observed (not irritating) <sup>[1]</sup>   |
|                         | Inhalation (rat) LC50: 0.67 mg/l/4H <sup>[2]</sup>  | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |
|                         | Oral (rat) LD50: >3000 mg/kg <sup>[2]</sup>   |   |
| isothiazolinones, mixed | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|                         | dermal (rat) LD50: >1008 mg/kg <sup>[1]</sup>   | Eye: adverse effect observed (irreversible damage) <sup>[1]</sup> |
|                         | Oral (rat) LD50: 53 mg/kg <sup>[2]</sup>  | Skin: adverse effect observed (corrosive) <sup>[1]</sup>          |
|                         |   | Skin: adverse effect observed (irritating) <sup>[1]</sup>         |
| <b>Legend:</b>          | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances |   |

|  |   |
|--|---|
| <b>FORMIC ACID</b>   | For acid mists, aerosols, vapours<br>Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).<br>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.  |
| <b>CHROMIC ACETATE</b>   | The substance is classified by IARC as Group 3:<br><b>NOT</b> classifiable as to its carcinogenicity to humans.<br>Evidence of carcinogenicity may be inadequate or limited in animal testing.<br>Tumours at site of application recorded.  |
| <b>ISOTHIAZOLINONES, MIXED</b>   | The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.   |
| <b>Sanodure Bordeaux RL &amp; ISOTHIAZOLINONES, MIXED</b>  | The following information refers to contact allergens as a group and may not be specific to this product.<br>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.   |
| <b>Sanodure Bordeaux RL &amp; FORMIC ACID &amp; SODIUM FORMATE &amp; ISOTHIAZOLINONES, MIXED</b> | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production. |
| <b>Sanodure Bordeaux RL &amp; CHROMIC ACETATE</b>  | On skin and inhalation exposure, chromium and its compounds (except hexavalent) can be a potent sensitiser, as particulates. Studies show that they have a complex toxicity mechanism with hexavalent chromium associated with an increased risk of lung damage and respiratory cancers (primarily bronchogenic and nose cancers). However, there is no evidence that elemental, divalent, or trivalent chromium compounds causes cancer or genetic toxicity.   |
| <b>Sanodure Bordeaux RL &amp; FORMIC ACID &amp; ISOTHIAZOLINONES, MIXED</b>                      | No significant acute toxicological data identified in literature search.  |

|   |   |                                 |   |
|---|---|---------------------------------|---|
| <b>Sanodure Bordeaux RL &amp; HEXYLENE GLYCOL</b> | Hexylene glycol is of low acute toxicity but may be acutely lethal at very high doses. It may cause reversible irritation of the skin and eye. Repeated exposure may cause irreversible damage to the liver and stomach and partly reversible kidney damage. It is likely not to cause mutations or affect reproduction or development of the unborn. |                                 |   |
| <b>FORMIC ACID &amp; ISOTHIAZOLINONES, MIXED</b>  | The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.  |                                 |   |
| <b>Acute Toxicity</b>                             | ✗   | <b>Carcinogenicity</b>          | ✗ |
| <b>Skin Irritation/Corrosion</b>                  | ✓   | <b>Reproductivity</b>           | ✗ |
| <b>Serious Eye Damage/Irritation</b>              | ✓   | <b>STOT - Single Exposure</b>   | ✗ |
| <b>Respiratory or Skin sensitisation</b>          | ✓   | <b>STOT - Repeated Exposure</b> | ✗ |
| <b>Mutagenicity</b>                               | ✗   | <b>Aspiration Hazard</b>        | ✗ |

**Legend:** ✗ – Data either not available or does not fill the criteria for classification  
 ✓ – Data available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

| Sanodure Bordeaux RL    | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|-------------------------|---------------|--------------------|-------------------------------|---------------|---------------|
|                         | Not Available | Not Available      | Not Available                 | Not Available | Not Available |
| formic acid             | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | 1-720mg/L     | 2             |
|                         | EC50          | 48                 | Crustacea                     | 32.19mg/L     | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | >1-mg/L       | 2             |
| hexylene glycol         | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | 8-mg/L        | 2             |
|                         | EC50          | 48                 | Crustacea                     | 2-800mg/L     | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | >429mg/L      | 2             |
| chromic acetate         | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | >100mg/L      | 2             |
|                         | EC50          | 48                 | Crustacea                     | >100mg/L      | 2             |
|                         | EC100         | 24                 | Crustacea                     | >100mg/L      | 2             |
| Sodium formate          | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | >1-mg/L       | 2             |
|                         | EC50          | 48                 | Crustacea                     | >1-mg/L       | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | >1-mg/L       | 2             |
| isothiazolinones, mixed | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | 0.129mg/L     | 2             |
|                         | EC50          | 48                 | Crustacea                     | 0.007mg/L     | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | 0.0063mg/L    | 2             |
| Legend:                 | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | NOEC          | 72                 | Algae or other aquatic plants | >=1-mg/L      | 2             |
|                         | NOEC          | 72                 | Algae or other aquatic plants | 429mg/L       | 2             |
|                         | NOEC          | 24                 | Crustacea                     | 100mg/L       | 2             |
| Legend:                 | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | 1-mg/L        | 2             |
|                         | EC50          | 48                 | Crustacea                     | >1-mg/L       | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | >1-mg/L       | 2             |
| Legend:                 | ENDPOINT      | TEST DURATION (HR) | SPECIES                       | VALUE         | SOURCE        |
|                         | LC50          | 96                 | Fish                          | 1-mg/L        | 2             |
|                         | EC50          | 48                 | Crustacea                     | 0.00049mg/L   | 2             |
|                         | EC50          | 72                 | Algae or other aquatic plants | 0.00049mg/L   | 2             |

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Fish LC0 (48 h): rainbow trout (*Salmo gairdneri*, *Oncorhynchus mykiss*) 200 mg/l Activated sludge IC50 >100 mg/l (OECD 209) Biodegradability (14 d, TOC); 55-73%– static method Harmful to aquatic organisms.

For hexylene glycol:

log Kow : -0.14

BOD 5 : <0.004-0.02

COD : 2.2-2.3

Environmental Fate:

Hexylene glycol is a liquid, melting point – 50 C, boiling point 197.5 C, vapour pressure 0.07 hPa at 20 C, it is fully miscible in water and has a calculated n-octanol water partition coefficient (log Kow) of 0.58.

The calculated half-life for the photo-oxidation of hexylene glycol in air is 9 hours. Hexylene glycol is not expected to undergo direct photolysis and is not susceptible to hydrolysis.

Hexylene glycol is predicted to distribute in the environment primarily to water, or water and soil. Hexylene glycol has low potential to bioaccumulate (BCF=3) and low potential for sorption to soil. In water, hydrolysis and photodegradation are not expected to occur. Hexylene glycol is at least inherently biodegradable.

Ecotoxicity:

Hexylene glycol is of low acute toxicity to aquatic organisms.

For Chromium: Chromium is poorly absorbed by cells found in microorganisms, plants and animals. Hexavalent chromate anions are readily transported into cells and toxicity is closely linked to the higher oxidation state.

Ecotoxicity - Toxicity in Aquatic Organisms: Chromium is harmful to aquatic organisms in very low concentrations. Organisms consumed by fish species are very sensitive to low levels of chromium. Chromium is toxic to fish although less so in warm water. Marked decreases in toxicity are found with increasing pH or water hardness; changes in salinity have little if any effect. Chromium appears to make fish more susceptible to infection. High concentrations can damage and/or accumulate in various fish tissues and in invertebrates such as snails and worms.

For chromium:

Aquatic Fate - Most chromium released into water will be deposited in the sediment. A small percentage of chromium can be found in soluble and insoluble forms with soluble chromium making up a very small percentage of the total chromium. Most of the soluble chromium is present as chromium (VI) and soluble chromium (III) complexes. In the aquatic phase, chromium (III) occurs mostly as suspended solids adsorbed onto clayish materials, organics, or iron oxide present in water. Soluble forms and suspended chromium can undergo intramedia transport. Chromium (VI) in water will eventually be reduced to chromium (III) by organic matter in the water. This process may be slower depending on the type and amount of organic material present and on the redox condition of the water. The reaction was generally faster under anaerobic than aerobic conditions.

For Azo Dyes:

Environmental Fate: Biodegradation of azo dyes can occur in both aerobic and anaerobic environments. Many of these chemicals tend to persist under aerobic environmental conditions. Aerobic degradation of azo dyes is not expected as oxygen is often an inhibitor of azo reduction. Biodegradation of these dyes by aerobic sludge is reported to be insignificant. While azo dyes are generally stable under aerobic conditions, they are susceptible to reductive degradation under the anaerobic conditions characteristic of sediment. An important natural abiotic degradation mechanism is photolysis and hydrolysis as a function of pH in the range of pH 4-9. If the dye is not broken during rigors of biological waste treatment, it is unlikely to degrade rapidly in the less severe conditions of the environment. The reductive cleavage of the azo-bond is the major degradation pathway for azo dyes.

For Mordant Dyes:

Environmental Fate: These dyes are basically characterized as hydrophobic, non-ionic or neutral dyes. Solubility in water is in the range of 0.2 mg/L to 34.3 mg/L. The partition coefficients (Kow) are very high for the non-ionic dyes. Substituents may also influence the degradation rate. The aromatic rings of the neutral dyes with substituted hydroxyl, amino, acetamido or nitro groups show higher biodegradation/mineralization rates than by those with unsubstituted rings. Non-ionic dyes may bioaccumulate; however, the risk of bioaccumulation of the non-ionic dyes must be studied further due to their large molecular sizes. Many dyes are visible in water at concentrations as low as 1 mg/L. Textile-processing waste waters are therefore usually highly colored and discharge in open waters presents an aesthetic problem.

for formic acid (and formates)

In the atmosphere, formic acid reacts with photochemically produced hydroxyl radicals (half-life 34 days).

Formic acid is highly soluble in water, it is non-persistent (half-life 2-20 days).

Leaches into some soils where it is expected to be biodegradable.

Does not concentrate in food chain

**DO NOT discharge into sewer or waterways.**

### Persistence and degradability

| Ingredient      | Persistence: Water/Soil   | Persistence: Air             |
|-----------------|---------------------------|------------------------------|
| formic acid     | LOW (Half-life = 14 days) | LOW (Half-life = 55.46 days) |
| hexylene glycol | LOW                       | LOW                          |
| Sodium formate  | LOW                       | LOW                          |

### Bioaccumulative potential

| Ingredient      | Bioaccumulation        |
|-----------------|------------------------|
| formic acid     | LOW (BCF = 0.22)       |
| hexylene glycol | LOW (LogKOW = 0.5802)  |
| Sodium formate  | LOW (LogKOW = -0.4605) |

### Mobility in soil

| Ingredient      | Mobility       |
|-----------------|----------------|
| formic acid     | HIGH (KOC = 1) |
| hexylene glycol | HIGH (KOC = 1) |
| Sodium formate  | HIGH (KOC = 1) |

## SECTION 13 DISPOSAL CONSIDERATIONS

### Waste treatment methods

|                                     |  |
|-------------------------------------|--|
| <b>Product / Packaging disposal</b> | <ul style="list-style-type: none"> <li>▶ Containers may still present a chemical hazard/ danger when empty.</li> <li>▶ Return to supplier for reuse/ recycling if possible.</li> </ul> <p>Otherwise:</p> <ul style="list-style-type: none"> <li>▶ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</li> <li>▶ Where possible retain label warnings and SDS and observe all notices pertaining to the product.</li> </ul> <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> <li>▶ Reduction</li> <li>▶ Reuse</li> <li>▶ Recycling</li> <li>▶ Disposal (if all else fails)</li> </ul> <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.</p> <ul style="list-style-type: none"> <li>▶ <b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></li> <li>▶ It may be necessary to collect all wash water for treatment before disposal.</li> <li>▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li> <li>▶ Where in doubt contact the responsible authority.</li> </ul> |
|-------------------------------------|--|

## SECTION 14 TRANSPORT INFORMATION

### Labels Required

|                         |                |
|-------------------------|----------------|
| <b>Marine Pollutant</b> | NO             |
| <b>HAZCHEM</b>          | Not Applicable |

**Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

## SECTION 15 REGULATORY INFORMATION

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

### FORMIC ACID IS FOUND ON THE FOLLOWING REGULATORY LISTS

|   |
|---|
| Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List                            |
| Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes                  |
| Australia Exposure Standards  |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals                |
| Australia Inventory of Chemical Substances (AICS)   |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5 |
| GESAMP/EHS Composite List - GESAMP Hazard Profiles  |

|   |
|---|
| IMO IBC Code Chapter 17: Summary of minimum requirements  |
| IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk   |
| IMO Provisional Categorization of Liquid Substances - List 3: (Trade-named) mixtures containing at least 99% by weight of components already assessed by IMO, presenting safety hazards                         |
| IMO Provisional Categorization of Liquid Substances - List 4: Pollutant only mixtures containing one or more components, forming more than 1% by weight of the mixture, which have not yet been assessed by IMO |
| International Air Transport Association (IATA) Dangerous Goods Regulations  |
| International Maritime Dangerous Goods Requirements (IMDG Code)   |
| United Nations Recommendations on the Transport of Dangerous Goods Model Regulations  |

### HEXYLENE GLYCOL IS FOUND ON THE FOLLOWING REGULATORY LISTS

|  |
|--|
| Australia Exposure Standards   |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals |
| Australia Inventory of Chemical Substances (AICS)                            |
| GESAMP/EHS Composite List - GESAMP Hazard Profiles                           |

|  |
|--|
| IMO IBC Code Chapter 17: Summary of minimum requirements                   |
| IMO IBC Code Chapter 18: List of products to which the Code does not apply |
| IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances              |

### CHROMIC ACETATE IS FOUND ON THE FOLLOWING REGULATORY LISTS

|   |
|---|
| Australia Exposure Standards                      |
| Australia Inventory of Chemical Substances (AICS) |

|   |
|---|
| International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs |
|---|

### SODIUM FORMATE IS FOUND ON THE FOLLOWING REGULATORY LISTS

|   |
|---|
| Australia Inventory of Chemical Substances (AICS) |
|---|

### ISOTHIAZOLINONES, MIXED IS FOUND ON THE FOLLOWING REGULATORY LISTS

|  |
|--|
| Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List             |
| Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes   |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals |

|  |
|--|
| International Air Transport Association (IATA) Dangerous Goods Regulations           |
| International Maritime Dangerous Goods Requirements (IMDG Code)                      |
| United Nations Recommendations on the Transport of Dangerous Goods Model Regulations |

### National Inventory Status

| National Inventory            | Status   |
|-------------------------------|--|
| Australia - AICS              | No (isothiazolinones, mixed)   |
| Canada - DSL                  | Yes  |
| Canada - NDSL                 | No (isothiazolinones, mixed; Sodium formate; formic acid; chromic acetate; hexylene glycol)  |
| China - IECSC                 | Yes  |
| Europe - EINEC / ELINCS / NLP | No (isothiazolinones, mixed)   |
| Japan - ENCS                  | No (isothiazolinones, mixed)   |
| Korea - KECI                  | Yes  |
| New Zealand - NZIoC           | Yes  |
| Philippines - PICCS           | Yes  |
| USA - TSCA                    | No (isothiazolinones, mixed)   |
| Taiwan - TCSI                 | Yes  |
| Mexico - INSQ                 | No (isothiazolinones, mixed)   |
| Vietnam - NCI                 | Yes  |
| Russia - ARIPS                | Yes  |
| <b>Legend:</b>                | Yes = All CAS declared ingredients are on the inventory<br>No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

## SECTION 16 OTHER INFORMATION

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 01/11/2019 |
| <b>Initial Date</b>  | 01/11/2013 |

**SDS Version Summary**

| Version | Issue Date | Sections Updated   |
|---------|------------|--|
| 4.1.1.1 | 28/03/2019 | Physical Properties  |
| 5.1.1.1 | 01/11/2019 | One-off system update. NOTE: This may or may not change the GHS classification |

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

**Definitions and abbreviations**

PC—TWA: Permissible Concentration-Time Weighted Average  
PC—STEL: Permissible Concentration-Short Term Exposure Limit  
IARC: International Agency for Research on Cancer  
ACGIH: American Conference of Governmental Industrial Hygienists  
STEL: Short Term Exposure Limit  
TEEL: Temporary Emergency Exposure Limit.  
IDLH: Immediately Dangerous to Life or Health Concentrations  
OSF: Odour Safety Factor  
NOAEL :No Observed Adverse Effect Level  
LOAEL: Lowest Observed Adverse Effect Level  
TLV: Threshold Limit Value  
LOD: Limit Of Detection  
OTV: Odour Threshold Value  
BCF: BioConcentration Factors  
BEI: Biological Exposure Index

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