# Immerse Tin #567-812

**RS Components**

Chemwatch Hazard Alert Code: **3**

Chemwatch: **5209-10**
Version No: **2.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **06/05/2016**
Print Date: **06/05/2016**
Initial Date: **Not Available**
S.GHS.AUS.EN

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

### Product Identifier

| | |
|---|---|
| **Product name** | Immerse Tin #567-812 |
| **Synonyms** | Manufacturer's Code: 567-812 |
| **Proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains thiourea) |
| **Other means of identification** | Not Available |

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

| | |
|---|---|
| **Relevant identified uses** | Immerse Tinning. |

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

| | | |
|---|---|---|
| **Registered company name** | RS Components | RS Components |
| **Address** | 25 Pavesi Street Smithfield NSW 2164 Australia | Units 30 & 31, 761 Great South Road Penrose Auckland 1006 New Zealand |
| **Telephone** | +1 300 656 636 | +64 9 526 1600 |
| **Fax** | +1 300 656 696 | +64 9 579 1700 |
| **Website** | Not Available | www.rsnewzealand.com |
| **Email** | Not Available | Not Available |

### Emergency telephone number

| | | |
|---|---|---|
| **Association / Organisation** | Not Available | Not Available |
| **Emergency telephone numbers** | 1800 039 008 (24 hours),+61 3 9573 3112 | Not Available |
| **Other emergency telephone numbers** | Not Available | Not Available |

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

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

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|---|---|
| **Poisons Schedule** | S6 |
| **Classification [1]** | Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, Carcinogenicity Category 2, Reproductive Toxicity Category 2, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Acute Aquatic Hazard Category 2, Chronic Aquatic Hazard Category 2 |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI* |

### Label elements

| | |
|---|---|
| **GHS label elements** |  |
| **SIGNAL WORD** | **DANGER** |

### Hazard statement(s)

| | |
|---|---|
| **H302** | Harmful if swallowed. |
| **H315** | Causes skin irritation. |
| **H318** | Causes serious eye damage. |
| **H351** | Suspected of causing cancer. |
| **H361** | Suspected of damaging fertility or the unborn child. |
| **H335** | May cause respiratory irritation. |
| **H411** | Toxic to aquatic life with long lasting effects. |

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### Precautionary statement(s) Prevention

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| **P201** | Obtain special instructions before use. |
| **P271** | Use only outdoors or in a well-ventilated area. |
| **P280** | Wear protective gloves/protective clothing/eye protection/face protection. |
| **P281** | Use personal protective equipment as required. |
| **P261** | Avoid breathing dust/fumes. |
| **P270** | Do not eat, drink or smoke when using this product. |
| **P273** | Avoid release to the environment. |

### Precautionary statement(s) Response

| | |
|---|---|
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P308+P313** | IF exposed or concerned: Get medical advice/attention. |
| **P310** | Immediately call a POISON CENTER or doctor/physician. |
| **P362** | Take off contaminated clothing and wash before reuse. |
| **P391** | Collect spillage. |
| **P301+P312** | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. |
| **P302+P352** | IF ON SKIN: Wash with plenty of soap and water. |
| **P304+P340** | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| **P330** | Rinse mouth. |
| **P332+P313** | If skin irritation occurs: Get medical advice/attention. |

### Precautionary statement(s) Storage

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|---|---|
| **P405** | Store locked up. |
| **P403+P233** | Store in a well-ventilated place. Keep container tightly closed. |

### Precautionary statement(s) Disposal

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|---|---|
| **P501** | Dispose of contents/container in accordance with local regulations. |

## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

### Substances

See section below for composition of Mixtures

### Mixtures

| CAS No | %[weight] | Name |
|---|---|---|
| 62-56-6 | 40 | thiourea |
| 10025-69-1 | 15-25 | stannous chloride, dihydrate |
| | balance | Ingredients determined not to be hazardous |

## SECTION 4 FIRST AID MEASURES

### Description of first aid measures

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| **Eye Contact** | If this product comes in contact with the eyes:<br>▸ Immediately hold eyelids apart and flush the eye continuously with running water.<br>▸ 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.<br>▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.<br>▸ Transport to hospital or doctor without delay.<br>▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| **Skin Contact** | If skin contact occurs:<br>▸ Immediately remove all contaminated clothing, including footwear.<br>▸ Flush skin and hair with running water (and soap if available).<br>▸ Seek medical attention in event of irritation. |
| **Inhalation** | ▸ If fumes or combustion products are inhaled remove from contaminated area.<br>▸ Lay patient down. Keep warm and rested.<br>▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.<br>▸ 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.<br>▸ Transport to hospital, or doctor, without delay. |
| **Ingestion** | ▸ **IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.**<br>▸ For advice, contact a Poisons Information Centre or a doctor.<br>▸ Urgent hospital treatment is likely to be needed.<br>▸ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.<br>▸ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.<br>▸ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. |

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**Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:**

- **INDUCE** vomiting with fingers down the back of the throat, **ONLY IF CONSCIOUS**. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

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

Treat symptomatically.
For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- **DO NOT** attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT** use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology]

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

### Special hazards arising from the substrate or mixture

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| **Fire Incompatibility** | ▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |

### Advice for firefighters

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| **Fire Fighting** | ▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ Wear breathing apparatus plus protective gloves in the event of a fire.<br>▸ Prevent, by any means available, spillage from entering drains or water courses.<br>▸ Use fire fighting procedures suitable for surrounding area.<br>▸ **DO NOT** approach containers suspected to be hot.<br>▸ Cool fire exposed containers with water spray from a protected location.<br>▸ If safe to do so, remove containers from path of fire.<br>▸ Equipment should be thoroughly decontaminated after use. |
| **Fire/Explosion Hazard** | ▸ 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.<br>▸ 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).<br>▸ 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.<br>▸ 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).<br>▸ 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.<br>▸ A dust explosion may release of large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people.<br>▸ Usually the initial or primary explosion takes place in a confined space such as plant or machinery, and can be of sufficient force to damage or rupture the plant. If the shock wave from the primary explosion enters the surrounding area, it will disturb any settled dust layers, forming a second dust cloud, and often initiate a much larger secondary explosion. All large scale explosions have resulted from chain reactions of this type.<br>▸ Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.<br>▸ Build-up of electrostatic charge may be prevented by bonding and grounding.<br>▸ Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.<br>▸ All movable parts coming in contact with this material should have a speed of less than 1-meter/sec.<br>▸ A sudden release of statically charged materials from storage or process equipment, particularly at elevated temperatures and/ or pressure, may result in ignition especially in the absence of an apparent ignition source.<br>▸ One important effect of the particulate nature of powders is that the surface area and surface structure (and often moisture content) can vary widely from sample to sample, depending of how the powder was manufactured and handled; this means that it is virtually impossible to use flammability data published in the literature for dusts (in contrast to that published for gases and vapours).<br>▸ Autoignition temperatures are often quoted for dust clouds (minimum ignition temperature (MIT)) and dust layers (layer ignition temperature (LIT)); LIT |

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| | ▸ generally falls as the thickness of the layer increases.<br>Combustion products include; carbon monoxide (CO) carbon dioxide ($CO_2$) hydrogen chloride phosgene nitrogen oxides (NOx) sulfur oxides (SOx) hydrogen sulfide ($H_2S$) other pyrolysis products typical of burning organic material |

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

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| **Minor Spills** | ▸ Clean up waste regularly and abnormal spills immediately.<br>▸ Avoid breathing dust and contact with skin and eyes.<br>▸ Wear protective clothing, gloves, safety glasses and dust respirator.<br>▸ Use dry clean up procedures and avoid generating dust.<br>▸ Vacuum up or sweep up. **NOTE:** Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).<br>▸ Dampen with water to prevent dusting before sweeping.<br>▸ Place in suitable containers for disposal.<br><br>Environmental hazard - contain spillage. |
| **Major Spills** | Environmental hazard - contain spillage.<br>Moderate hazard.<br>▸ **CAUTION**: Advise personnel in area.<br>▸ Alert Emergency Services and tell them location and nature of hazard.<br>▸ Control personal contact by wearing protective clothing.<br>▸ Prevent, by any means available, spillage from entering drains or water courses.<br>▸ Recover product wherever possible.<br>▸ **IF DRY:** Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. **IF WET:** Vacuum/shovel up and place in labelled containers for disposal.<br>▸ **ALWAYS:** Wash area down with large amounts of water and prevent runoff into drains.<br>▸ If contamination of drains or waterways occurs, advise Emergency Services. |

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

## SECTION 7 HANDLING AND STORAGE

### Precautions for safe handling

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| **Safe handling** | ▸ Avoid all personal contact, including inhalation.<br>▸ Wear protective clothing when risk of exposure occurs.<br>▸ Use in a well-ventilated area.<br>▸ Prevent concentration in hollows and sumps.<br>▸ **DO NOT** enter confined spaces until atmosphere has been checked.<br>▸ **DO NOT** allow material to contact humans, exposed food or food utensils.<br>▸ Avoid contact with incompatible materials.<br>▸ When handling, **DO NOT** eat, drink or smoke.<br>▸ Keep containers securely sealed when not in use.<br>▸ Avoid physical damage to containers.<br>▸ Always wash hands with soap and water after handling.<br>▸ Work clothes should be laundered separately. Launder contaminated clothing before re-use.<br>▸ Use good occupational work practice.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.<br>▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.<br>▸ 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)<br>▸ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.<br>▸ Establish good housekeeping practices.<br>▸ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.<br>▸ 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.<br>▸ Do not use air hoses for cleaning.<br>▸ Minimise dry sweeping to avoid generation of dust clouds. Vacuum dust-accumulating surfaces and remove to a chemical disposal area. Vacuums with explosion-proof motors should be used.<br>▸ Control sources of static electricity. Dusts or their packages may accumulate static charges, and static discharge can be a source of ignition.<br>▸ Solids handling systems must be designed in accordance with applicable standards (e.g. NFPA including 654 and 77) and other national guidance.<br>▸ Do not empty directly into flammable solvents or in the presence of flammable vapors.<br>▸ The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges.<br>Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.<br>▸ Do NOT cut, drill, grind or weld such containers.<br>▸ In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit. |
| **Other information** | ▸ Store in original containers.<br>▸ Keep containers securely sealed.<br>▸ Store in a cool, dry area protected from environmental extremes.<br>▸ Store away from incompatible materials and foodstuff containers.<br>▸ Protect containers against physical damage and check regularly for leaks.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.<br>For major quantities:<br>▸ Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams}.<br>▸ Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities. |

### Conditions for safe storage, including any incompatibilities

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| **Suitable container** | ▸ Lined metal can, lined metal pail/ can.<br>▸ Plastic pail.<br>▸ Polyliner drum.<br>▸ Packing as recommended by manufacturer.<br>▸ Check all containers are clearly labelled and free from leaks.<br>▸ Glass container is suitable for laboratory quantities |
| **Storage incompatibility** | ▸ Avoid reaction with oxidising agents<br>▸ Contact with acids produces toxic fumes<br>Stannous chloride:<br>▸ anhydrous form reacts with moisture in air forming hydrogen chloride<br>▸ reacts with water producing heat, hydrochloric acid, tin oxide<br>▸ reacts violently with bases, strong oxidisers, organic materials, phenyl azide, silicon tetrahydride<br>▸ may cause fire or explosion in contact with alcohols, alkyl nitrates, amines, ethylene oxide, potassium, sodium, turpentine<br>▸ in contact with ethylene oxide may cause violent polymerisation<br>▸ may react with glycidol, bromine trifluoride<br>▸ is an explosion hazard if mixed with nitrates or hydrogen peroxide (>3% solutions).<br>▸ will spontaneously combust with bromine trifluoride.<br>▸ may ignite when mixed with calcium carbide or calcium acetylide.<br>▸ in contact with strong oxidising agents or alkalis will generate heat or fumes.<br>▸ will react with hydrazine hydrate forming dihydrazine chloride which decomposes explosively when heated.<br>Thiourea<br>▸ is basic in aqueous solutions<br>▸ reacts violently with acrolein, strong acids<br>▸ is incompatible with acrylaldehyde, hydrogen peroxide, metal salts<br>▸ aqueous solutions are incompatible with organic anhydrides, acrylates, alcohols, aldehydes, alkylene oxides, substituted allyls, cresols, caprolactam solutions, epichlorohydrin, ethylene dichloride, glycols, hydrogen peroxide, isocyanates, ketones, maleic anhydride, nitrates, nitromethane, phenols, vinyl acetate<br>▸ Avoid strong acids, bases. |

## 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 | stannous chloride, dihydrate | Tin, oxide & inorganic compounds, except SnH4 (as Sn) | 2 mg/m3 | Not Available | Not Available | Not Available |

**EMERGENCY LIMITS**

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|---|---|---|---|---|
| thiourea | Thiourea | 0.84 mg/m3 | 9.3 mg/m3 | 80 mg/m3 |
| stannous chloride, dihydrate | Tin(II) chloride dihydrate; (Stannous chloride dihydrate) | 3.8 mg/m3 | 3.8 mg/m3 | 760 mg/m3 |
| stannous chloride, dihydrate | Stannous chloride; (Tin(II) chloride (1:2)) | 3.2 mg/m3 | 3.2 mg/m3 | 640 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| thiourea | Not Available | Not Available |
| stannous chloride, dihydrate | 400 mg/m3 | 100 mg/m3 |

### Exposure controls

**Appropriate engineering controls**

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
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.
Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection.
Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

| Type of Contaminant: | Air Speed: |
|---|---|
| solvent, vapours, degreasing etc., evaporating from tank (in still air). | 0.25-0.5 m/s (50-100 f/min.) |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5-1 m/s (100-200 f/min.) |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) | 1-2.5 m/s (200-500 f/min.) |
| grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion). | 2.5-10 m/s (500-2000 f/min.) |

Within each range the appropriate value depends on:

| Lower end of the range | Upper end of the range |
|---|---|

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| | |
|---|---|
| | 1: Room air currents minimal or favourable to capture / 1: Disturbing room air currents<br>2: Contaminants of low toxicity or of nuisance value only. / 2: Contaminants of high toxicity<br>3: Intermittent, low production. / 3: High production, heavy use<br>4: Large hood or large air mass in motion / 4: Small hood-local control only<br><br>Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used. |
| **Personal protection** |  |
| **Eye and face protection** | ▸ Safety glasses with side shields.<br>▸ Chemical goggles.<br>▸ 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 a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent] |
| **Skin protection** | See Hand protection below |
| **Hands/feet protection** | **NOTE:**<br>▸ 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.<br>▸ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.<br>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.<br>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.<br>Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:<br>▸ frequency and duration of contact,<br>▸ chemical resistance of glove material,<br>▸ glove thickness and<br>▸ dexterity<br>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).<br>▸ When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.<br>▸ When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.<br>▸ Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.<br>▸ Contaminated gloves should be replaced.<br>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.<br>Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.<br>▸ polychloroprene.<br>▸ nitrile rubber.<br>▸ butyl rubber.<br>▸ fluorocaoutchouc.<br>▸ polyvinyl chloride.<br>Gloves should be examined for wear and/ or degradation constantly. |
| **Body protection** | See Other protection below |
| **Other protection** | ▸ Overalls.<br>▸ P.V.C. apron.<br>▸ Barrier cream.<br>▸ Skin cleansing cream.<br>▸ Eye wash unit. |
| **Thermal hazards** | Not Available |

### Respiratory protection

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

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

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| **Appearance** | White crystals with a pungent odour; soluble in water. |

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| **Physical state** | Divided Solid | **Relative density (Water = 1)** | 1.405 @ 20 deg.C |
| **Odour** | Not Available | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | Not Available |

**Continued...**

| | | | |
|---|---|---|---|
| **pH (as supplied)** | Not Available | **Decomposition temperature** | Not Available |
| **Melting point / freezing point (°C)** | 169-173 | **Viscosity (cSt)** | Not Available |
| **Initial boiling point and boiling range (°C)** | Not Applicable | **Molecular weight (g/mol)** | Not Applicable |
| **Flash point (°C)** | Not Applicable | **Taste** | Not Available |
| **Evaporation rate** | Not Available | **Explosive properties** | Not Available |
| **Flammability** | Not Applicable | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | Not Applicable | **Surface Tension (dyn/cm or mN/m)** | Not Applicable |
| **Lower Explosive Limit (%)** | Not Applicable | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | Not Applicable | **Gas group** | Not Available |
| **Solubility in water (g/L)** | Miscible | **pH as a solution (1%)** | 6-8 (5%) |
| **Vapour density (Air = 1)** | Not Available | **VOC g/L** | Not Available |

## SECTION 10 STABILITY AND REACTIVITY

| | |
|---|---|
| **Reactivity** | See section 7 |
| **Chemical stability** | ▸ Unstable in the presence of incompatible materials.<br>▸ Product is considered stable.<br>▸ Hazardous polymerisation will not occur. |
| **Possibility of hazardous reactions** | See section 7 |
| **Conditions to avoid** | See section 7 |
| **Incompatible materials** | See section 7 |
| **Hazardous decomposition products** | See section 5 |

## SECTION 11 TOXICOLOGICAL INFORMATION

### Information on toxicological effects

| | |
|---|---|
| **Inhaled** | The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.<br>Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.<br>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.<br>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<br>in excessive exposures. |
| **Ingestion** | Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.<br>The thioureas, which are antithyroid drugs, can cause headache, anxiety, fever, rash and stomach upset. |
| **Skin Contact** | This material can cause inflammation of the skin on contact in some persons.<br>The material may accentuate any pre-existing dermatitis condition<br>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.<br>Skin sensitivity to thiourea derivatives has been demonstrated in several studies. Allergic contact dermatitis and photocontact dermatitis have been described. |
| **Eye** | If applied to the eyes, this material causes severe eye damage. |
| **Chronic** | There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment.<br>Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.<br>Based on experience with animal studies, exposure to the material may result in toxic effects to the development of the foetus, at levels which do not cause significant toxic effects to the mother.<br>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.<br>There is limited evidence that, skin contact with this product is more likely to cause a sensitisation reaction in some persons compared to the general population.<br>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.<br>Exposure to thiourea can result in reduced thyroid function. Prolonged exposure to high doses causes enlargement of the thyroid and reduced levels of circulating thyroid hormone. |

| | | |
|---|---|---|
| **Immerse Tin #567-812** | **TOXICITY** | **IRRITATION** |
| | Not Available | Not Available |
| **thiourea** | **TOXICITY** | **IRRITATION** |
| | Oral (rat) LD50: 125 mg/kg[2] | Eye (rabbit): 14% |
| **stannous chloride, dihydrate** | **TOXICITY** | **IRRITATION** |
| | Oral (rat) LD50: 700 mg/kg*][2] | Nil reported [Johnson @ Johnson] |

**Continued...**

| | |
|---|---|
| ***Legend:*** | *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* |

| | |
|---|---|
| **THIOUREA** | for thiourea:<br>There are reports on disorders of workers coming into contact with thiourea during the course of, for example, maintenance of machinery or packing, without providing any details as to exposure levels. The symptoms observed were typical of hypothyroidism, as evidenced by facial oedema, hypotonia, bradycardia, electrocardiograph alterations associated with reduced basal metabolism, constipation, flatulence, polyuria, and granulocytopenia, accompanied by lymphocytosis and monocytosis. The first perturbations of the blood count were observed after 5-6 months of exposure, and the highest incidence of the symptoms was evident in those workers who had been in contact with the chemical for 5-15 years Individual cases of contact dermatitis related to the use or processing of thiourea and thiourea compounds have been reported. Some cases showed increased sensitivity to UV light (photocontact dermatitis). Thiourea derivatives such as dimethyl, diethyl, dibutyl, diphenyl, ethylbutyl, and ethylene thiourea are used as accelerators in the vulcanization process in the rubber industry. Products such as wet suits, swimming goggles, orthopaedic devices, protective gloves, and shoes containing these compounds have been shown to produce allergic contact dermatitis.<br>Administration of thiourea to healthy animals or humans leads to depression of thyroid function. It acts by inhibiting the peroxidase in the thyroid gland, resulting in decreased thyroid hormone production and increased proliferation due to an increase in the secretion of TSH. This could lead to tumour formation. This is a well recognised mechanism of action for non-genotoxic thyroid carcinogens However, no definite conclusion regarding the mechanism of carcinogenicity can be made for thiourea, since it cannot totally be excluded that the possible genotoxicity of thiourea also plays a role.<br>In humans and animals, thiourea is rapidly absorbed from the gastrointestinal tract. A single oral dose of 28.57 mg thiourea/kg body weight in humans was completely eliminated within 48 h in urine, while a peak concentration in blood was measured within 30 min. In rats administered 5 mg intravenously, 30% of the thiourea was recovered from the carcasses after 3 h, and only traces after 25 h.<br>Thiourea is also absorbed to a lesser degree through the skin. Following dermal application of 2000 mg/kg body weight to rabbits in the form of an aqueous solution (26 ml of a 25% w/v solution), approximately 4% of the applied dose was found in the animals' urine; when applied in solid form, only 0.1% was found in the urine.<br>Thiourea is oxidised by thyroid gland peroxidase in the presence of iodine or iodide and hydrogen peroxide to form formamidine disulfide (NH2(NH)CSSC(NH)NH2). Formamidine disulfide is unstable and decomposes at pH values above 3.0, forming cyanamide, elementary sulfur, and thiourea. It was shown *in vitro* and *in vivo* that both cyanamide and thiourea are inhibitors of thyroid peroxidase<br>The acute toxicity of thiourea varies with the species, strain, and age of the animals exposed to the chemical and with the iodine content of their diet. Oral LD50s are about 1000 mg/kg body weight for mice, 125-1930 mg/kg body weight for rats, depending on the strain, and 10 000 mg/kg body weight for rabbits. The intraperitoneal LD50 for the rat ranges between 4 and 1340 mg/kg body weight, according to the strain. Death at these doses is due to lung oedema, and the survivors exhibit pleural effusion. Accordingly, thiourea at doses between 10 and 500 mg/kg body weight has been employed in experimental animal studies as a model agent for the elicitation of lung oedema and pleural effusion. The pathological effects are prevented by pretreatment of the animals with cysteine or glutathione, which reduces the irreversible binding of radioactivity to lung proteins after administration of [14C] thiourea. Toxic doses of thiourea also resulted in hyperglycaemia, glucosuria, polyuria, and a reduction in the liver glycogen level in rats.<br>**Irritation and sensitisation:** A 24-h exposure to undiluted thiourea applied to the intact and abraded skin of rabbits resulted in mild to marked erythema with a slight degree of oedema. When rabbit skin was exposed to 0.5 g of thiourea for a period of 4 h, the substance was tolerated without reaction.<br>A single application of a 10% (w/w) aqueous solution of thiourea to the eye was tolerated without reaction. In another study, the application of 100 mg thiourea to the conjunctiva of the rabbit eye resulted in reddening (1-2 using Draize scoring) and swelling (1-2 using Draize scoring).<br>Thiourea yielded negative results in a sensitization test carried out with guinea-pigs according to the method of Magnusson & Kligman.<br>**Short term exposure:** The iodine level of the thyroid gland was reduced from 73 to 13 mg/100 g tissue upon the oral administration of thiourea at 70 mg/kg body weight for 10 days. Thiourea also resulted in a reduction of thyroid iodine uptake when administered in rats at 1% (500 mg/kg body weight per day) in the diet for 2 months. Concomitant with reduced thyroid activity, the weight of the pituitary gland increased and signs of pituitary overactivity were evident both histologically and biochemically; the weights of the ovary, uterus, and prostate gland all declined. Haemosiderosis in the spleen, lymph nodes, and intestinal villi of rats was observed subsequent to the administration of 16-50 daily doses of 1 ml of a 1% aqueous solution of thiourea by gavage. The repeated administration of high doses (no quantitative data given) of thiourea in the diet, in the drinking-water, or by intraperitoneal injection resulted in manifold effects: reduced osmotic resistance of the erythrocytes, congestion, haemosiderosis and atrophy of the spleen, anaemia, leukocytopenia, granulocytopenia, increased erythropoiesis in the bone marrow, reduced clotting times, and increased phospholipid levels of the blood.<br>**Long-term exposure and carcinogenicity:** In a chronic toxicity study, thiourea was administered daily in drinking-water at concentrations of 1.72, 6.88, or 27.5 mg/kg body weight to mice for 2 years and to rats for the duration of their lifetimes or a maximum of 3 years. A reduction in body weight gain and an enlargement of the thyroid gland were observed only in the rats in the highest dose group, and no other changes were detected, either macroscopically or microscopically. A lowest-observed-adverse-effect level (LOAEL) of 27.5 mg/kg body weight per day (reduction of body weight and enlargement of thyroid gland) and a no-observed-adverse-effect level (NOAEL) of 6.88 mg/kg body weight per day for rats can be given.<br>Thiourea has not been tested in a standard bioassay of carcinogenicity in rodents. Several older carcinogenicity studies, of doubtful quality, were carried out prior to the mid-1960s They described the occurrence of tumours at numerous locations other than the thyroid gland, but the distribution of these varied from one study to another. In several studies involving different strains of mice, thyroid hyperplasia, but not thyroid tumours, was reported after oral administration. In rats given thiourea orally, a high incidence of thyroid follicular cell adenomas and carcinomas and increased incidences of hepatocellular adenomas and tumours of the Zymbal or Meibomian gland were reported<br>**Genotoxicity and related end-points:** Thiourea has been tested in numerous assays. It did not induce gene mutations in bacteria. Inconsistent results, the majority of which were negative, were obtained in mammalian cells. Thiourea induced chromosomal recombination in yeast and insects. Thiourea is not considered to be a genotoxic carcinogen.<br>**Mitogenic effects:** Thiourea has mitogenic properties. Older studies with high doses of thiourea (0.4 g, 1-14 times, intraperitoneal; unclear whether per animal or per kg body weight) produced a high mitosis rate in the liver without hepatocellular necrosis. Studies on partially hepatectomized rats showed similar results.<br>**Effects on fertility:** Thiourea can affect fertility as a result of hypothyroidism. Thiourea was included in the diet of rats at concentrations of between 0.01 and 1% for 24 months, which were equivalent to doses ranging from 5 to 500 mg/kg body weight per day. A reduction or cessation of spermatogenesis and effects on the thyroid gland or other organs were observed at doses higher than 35 mg/kg body weight per day.<br>**Developmental toxicity:** Thiourea had neither a maternally toxic nor a teratogenic effect when administered to rats on the 12th or 13th day of gestation as a single oral dose of 480 mg/kg body weight. In a study in which 66 female sheep (18 growing lambs, 18 maiden ewes, 9 pregnant ewes; controls: 9 growing lambs, 9 maiden ewes, 3 pregnant ewes) were orally administered 0 or 50 mg thiourea/kg body weight daily for 2, 4, or 6 months (six treated and three controls per group), external genitalia were infantile and stunted in growing lambs, while they were pale anaemic and dry in maiden ewes. None of the growing lambs showed signs of oestrus. Mammary development was retarded<br>Thiourea was shown to cross the placenta in mice and rats and to be preferentially stored in the thyroid gland, depending on the stage of development of this organ, where it affects iodine metabolism. In a study in which groups of CF4 rats were treated with 0.2% thiourea in the drinking-water on days 1-14 of gestation, growth retardation and malformations of the nervous system and skeleton were present in treated offspring, although specific incidences of foetal effects were not given.<br>**Immunological, neurological, or other effects:** Acute intoxication with thiourea has been linked with an increase in the level of histamine in the lungs and plasma (4.38 ug histamine/100 ml plasma was determined for rats administered thiourea intraperitoneally at 10 mg/kg body weight compared with 2.08 ug/100 ml in the controls) and with an increase in lung vessel permeability. Rats developed tolerance to an otherwise lethal dose of thiourea (10 mg/kg body weight) when pretreated with a non-lethal dose (0.5 mg/kg body weight) over a period of 8 days. This tolerance was accompanied by a reduction in both lung vessel permeability and plasma histamine levels<br>The oedema-inducing effect of thiourea is probably due to the action of its oxidation product cyanamide and can be alleviated by treatment with hydroxyl radical scavengers such as dimethyl sulfoxide, ethanol, or mannitol. The adverse action of thiourea on the lungs of rats injected intraperitoneally with 0.3 mg/kg body weight could also be diminished by intraperitoneal treatment with the antiarrhythmic agents procainamide (at 4 mg/kg body weight), quinidine gluconate (20 mg/kg body weight), and lidocaine (30 mg/kg body weight).<br>Treatment *in vitro* with 75 mmol thiourea/litre results in an inhibition of interleukin-8 production in human whole blood, the toxic effect of which can be suppressed by the administration of glutathione or cysteine.<br>Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen |

**Continued...**

| | |
|---|---|
| | [*National Toxicology Program: U.S. Dep. of Health & Human Services 2002*]<br>The substance is classified by IARC as Group 3:<br>**NOT** classifiable as to its carcinogenicity to humans.<br>Evidence of carcinogenicity may be inadequate or limited in animal testing.<br>Product: Oral (rat) >5000 mg/kg Dermal (rabbit) >2800 mg/kg [Orica] Respiratory tract changes, multiple lung effects, haemorrhage, granulocytopenia, specific developmental abnormalities involving central nervous system, musculoskeletal system, endocrine system recorded. |
| **STANNOUS CHLORIDE, DIHYDRATE** | Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. 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. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. |

| | | | |
|---|---|---|---|
| **Acute Toxicity** | ✔ | **Carcinogenicity** | ✔ |
| **Skin Irritation/Corrosion** | ✔ | **Reproductivity** | ✔ |
| **Serious Eye Damage/Irritation** | ✔ | **STOT - Single Exposure** | ⊘ |
| **Respiratory or Skin sensitisation** | ⊘ | **STOT - Repeated Exposure** | ⊘ |
| **Mutagenicity** | ⊘ | **Aspiration Hazard** | ⊘ |

***Legend:*** ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data required to make classification available*
⊘ *– Data Not Available to make classification*

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

| Ingredient | Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **thiourea** | EC50 | 48 | Crustacea | =35mg/L | 1 |
| **thiourea** | BCF | 24 | Algae or other aquatic plants | 0.05mg/L | 4 |
| **thiourea** | EC10 | 72 | Algae or other aquatic plants | 0.3-0.7mg/L | 1 |
| **thiourea** | LC50 | 96 | Fish | >100mg/L | 1 |
| **thiourea** | NOEC | 504 | Crustacea | >=0.1- <=0.25mg/L | 2 |
| **thiourea** | EC50 | 96 | Algae or other aquatic plants | >=3.8- <=5.4mg/L | 2 |
| **stannous chloride, dihydrate** | EC50 | 72 | Algae or other aquatic plants | 0.2mg/L | 4 |
| **stannous chloride, dihydrate** | LC50 | 96 | Fish | >0.035mg/L | 4 |
| **stannous chloride, dihydrate** | EC50 | 48 | Crustacea | 22mg/L | 2 |
| **stannous chloride, dihydrate** | NOEC | 504 | Crustacea | 0.18mg/L | 2 |
| **stannous chloride, dihydrate** | EC50 | 72 | Algae or other aquatic plants | 0.2mg/L | 2 |
| ***Legend:*** | *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data* | | | | |

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
**DO NOT** discharge into sewer or waterways.

### Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| thiourea | LOW | LOW |

### Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| thiourea | LOW (BCF = 2) |

### Mobility in soil

| Ingredient | Mobility |
|---|---|
| thiourea | MEDIUM (KOC = 2.782) |

**Continued...**

## SECTION 13 DISPOSAL CONSIDERATIONS

### Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | ▸ Containers may still present a chemical hazard/ danger when empty.<br>▸ Return to supplier for reuse/ recycling if possible.<br>Otherwise:<br>▸ 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.<br>▸ Where possible retain label warnings and SDS and observe all notices pertaining to the product.<br>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.<br>A Hierarchy of Controls seems to be common - the user should investigate:<br>▸ Reduction<br>▸ Reuse<br>▸ Recycling<br>▸ Disposal (if all else fails)<br>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.<br>▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>▸ It may be necessary to collect all wash water for treatment before disposal.<br>▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.<br>▸ Where in doubt contact the responsible authority. |

## SECTION 14 TRANSPORT INFORMATION

### Labels Required

| | |
|---|---|
| |  |
| **Marine Pollutant** |  |
| **HAZCHEM** | 2Z |

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

### Air transport (ICAO-IATA / DGR)

| | |
|---|---|
| **UN number** | 3077 |
| **Packing group** | III |
| **UN proper shipping name** | Environmentally hazardous substance, solid, n.o.s. * (contains thiourea) |
| **Environmental hazard** | Not Applicable |
| **Transport hazard class(es)** | ICAO/IATA Class: 9<br>ICAO / IATA Subrisk: Not Applicable<br>ERG Code: 9L |
| **Special precautions for user** | Special provisions: A97 A158 A179 A197<br>Cargo Only Packing Instructions: 956<br>Cargo Only Maximum Qty / Pack: 400 kg<br>Passenger and Cargo Packing Instructions: 956<br>Passenger and Cargo Maximum Qty / Pack: 400 kg<br>Passenger and Cargo Limited Quantity Packing Instructions: Y956<br>Passenger and Cargo Limited Maximum Qty / Pack: 30 kg G |

### Sea transport (IMDG-Code / GGVSee)

| | |
|---|---|
| **UN number** | 3077 |
| **Packing group** | III |
| **UN proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains thiourea) |
| **Environmental hazard** | Marine Pollutant |
| **Transport hazard class(es)** | IMDG Class: 9<br>IMDG Subrisk: Not Applicable |
| **Special precautions for user** | EMS Number: F-A, S-F<br>Special provisions: 274 335 966 967 969 |

**Continued...**

| | | |
|---|---|---|
| | Limited Quantities | 5 kg |

### 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

**THIOUREA(62-56-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Hazardous Substances Information System - Consolidated Lists
Australia Inventory of Chemical Substances (AICS)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

**STANNOUS CHLORIDE, DIHYDRATE(10025-69-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Exposure Standards
Australia Hazardous Substances Information System - Consolidated Lists
Australia Inventory of Chemical Substances (AICS)

| National Inventory | Status |
|---|---|
| Australia - AICS | Y |
| Canada - DSL | Y |
| Canada - NDSL | N (stannous chloride, dihydrate; thiourea) |
| China - IECSC | Y |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | Y |
| Korea - KECI | Y |
| New Zealand - NZIoC | Y |
| Philippines - PICCS | Y |
| USA - TSCA | Y |
| ***Legend:*** | *Y = All ingredients are on the inventory*<br>*N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)* |

## SECTION 16 OTHER INFORMATION

### 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.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net

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