FERRIC OXIDE

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

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>FERRIC OXIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>ferric oxide</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Fe2O3; iron(III) oxide; diron trioxide; C.I. Pigment Red 102 Natural Oxide; C.I. Pigment Red 101 Synthetic Oxide; CI77491; C.I. 77491; natural red oxide; rouge; raddle; synthetic iron oxide; blended red oxides of iron; red iron oxide; anhydrous iron oxide; sienna; red ochre; ferrugo; bauxite residue; stone red; prussian red; specular iron; burnt island red; Mars red; Mars brown; vitriol red; colloidal red oxide; transparent oxide; English red; Deanox pigments; yellow ferric oxide; yellow oxide of iron; Calcotine; Collothar; burnt sienna; Vogel's iron red; Venetian red; Spanish red; burnt umber; iron stone; rust; haematite; hematite; Bayferrox; iron sesquioxide; 24/R1808; 24/R0228; red oxide; iron oxide; Primox 50 and Natural Red Oxide R; iron oxide red</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>Fe2O3</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
<tr>
<td>CAS number</td>
<td>1309-37-1</td>
</tr>
</tbody>
</table>

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

- A pigment for rubber, paints, paper, linoleum, ceramics, glass; in paint for ironwork; as a polishing agent for glass, precious metals, diamonds; electrical resistors and semiconductors, magnets, magnetic tape. It is also used as a catalyst and in colloidal solutions as stain for polysaccharides. [Intermediate ~]

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
- CHEMWATCH EMERGENCY RESPONSE
- Emergency telephone numbers: 61 (0)418 237 771 +61 1800 951 288
- Other emergency telephone numbers: Not Available +61 2 9196 1132

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

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

<table>
<thead>
<tr>
<th>CHEMWATCH HAZARD RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
</tr>
<tr>
<td>Toxicity</td>
</tr>
<tr>
<td>Body Contact</td>
</tr>
<tr>
<td>Reactivity</td>
</tr>
<tr>
<td>Chronic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poisons Schedule</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification</td>
<td>Skin Corrosion/Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Eye Iritation Category 2A</td>
</tr>
</tbody>
</table>

Hazard pictogram(s)

SIGNAL WORD WARNING

Hazard statement(s)
H315 Causes skin irritation.
H335 May cause respiratory irritation.
H319 Causes serious eye irritation.

Precautionary statement(s) Prevention
P271 Use only outdoors or in a well-ventilated area.
P261 Avoid breathing dust/fumes.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement(s) Response
P362 Take off contaminated clothing and wash before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P337+P313 If eye irritation persists: Get medical advice/attention.
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.
P332+P313 If skin irritation occurs: Get medical advice/attention.

Precautionary statement(s) Storage
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal
P501 Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

<table>
<thead>
<tr>
<th>CAS No</th>
<th>% (weight)</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1309-37-1</td>
<td>&gt;99</td>
<td>ferric oxide</td>
</tr>
<tr>
<td>7631-86-9</td>
<td>&lt;0.5</td>
<td>silica amorphous</td>
</tr>
</tbody>
</table>

Mixtures
See section above for composition of Substances

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact
If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- 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.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact
If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

Inhalation
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- 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.
- Transport to hospital, or doctor, without delay.

Ingestion
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casually can comfortably drink.
- Seek medical advice.
Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

For acute or short term repeated exposures to iron and its derivatives:

- Always treat symptoms rather than history.
- Control of iron stores depend on variation in absorption rather than excretion. Absorption occurs through aspiration, ingestion and burned skin.
- Hepatic damage may progress to failure with hypoprothrombinaemia and hypoglycaemia. Hepatorenal syndrome may occur.
- Iron intoxication may also result in decreased cardiac output and increased cardiac pooling which subsequently produces hypotension.
- Serum iron should be analysed in symptomatic patients. Serum iron levels (2-4 hrs post-ingestion) greater than 100 ug/dL indicate poisoning with levels, in excess of 350 ug/dL, being potentially serious. Emesis or lavage (for obtunded patients with no gag reflex) are the usual means of decontamination.
- Deferoxamine is a specific chelator of ferric (3+) iron and is currently the antidote of choice. It should be administered parenterally. [Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

Fire Incompatibility

None known.

Advice for firefighters

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

Fire/Explosion Hazard

- Non combustible.
- Not considered a significant fire risk, however containers may burn.

Decomposition may produce toxic fumes of:

- Metal oxides
- May emit poisonous fumes.
- May emit corrosive fumes.

HAZCHEM

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

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste disposal.

Minor Spills

Moderate hazard.

- CAUTION: Advise personnel in area.
- Alert Emergency Services and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal.

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

Major Spills

Precautions for safe handling

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
**Conditions for safe storage, including any incompatibilities**

- **Polyethylene or polypropylene container.**
- **Check all containers are clearly labelled and free from leaks.**

**Storage incompatibility**

- For iron oxide (ferric oxide):
  - Avoid storage with aluminium, calcium hypochlorite and ethylene oxide.
  - Risk of explosion occurs following reaction with powdered aluminium, calcium silicide, ethylene oxide (polymers), carbon monoxide, magnesium and perchlorates.
  - Risk of ignition or formation of flammable gases or vapours occurs following reaction with carbides, for example caesium carbide, (produces heat), hydrogen sulfide, hydrogen peroxide (decomposes).
  - An intimately powered mixture with aluminium, usually ignited by magnesium ribbon, reacts with an intense exotherm to produce molten iron in the commercial “thermit” welding process.
  - **WARNING:** Avoid or control reaction with peroxides. All transition metal peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively.
  - The pi-complexes formed between chromium(0), vanadium(0) and other transition metals (haloarene-metal complexes) and mono- or poly-fluorobenzene show extreme sensitivity to heat and are explosive.
  - Avoid reaction with borohydrides or cyanoborohydrides.
  - Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
  - These trifluorides are hypergolic oxidisers. They ignite on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
  - The state of subdivision may affect the results.

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control parameters**

**OCCUPATIONAL EXPOSURE LIMITS (OEL)**

**INGREDIENT DATA**

<table>
<thead>
<tr>
<th>Source</th>
<th>Ingredient</th>
<th>Material name</th>
<th>TWA</th>
<th>STEL</th>
<th>Peak</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Exposure Standards</td>
<td>ferric oxide</td>
<td>Iron oxide fume (Fe2O3) (as Fe)</td>
<td>5 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Fumed silica (respirable dust)</td>
<td>2 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>See Silica - Amorphous</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica - Amorphous: Fume (thermally generated)(respirable dust)</td>
<td>2 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>(e) Containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica - Amorphous: Fumed silica (respirable dust)</td>
<td>2 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Diatomaceous earth (uncalcined)</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>See Silica - Amorphous; (a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica gel</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>See Silica - Amorphous; (a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica - Amorphous: Diatomaceous earth (uncalcined)</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>(a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Precipitated silica</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>See Silica - Amorphous; (a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica - Amorphous: Precipitated silica</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>(a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>silica amorphous</td>
<td>Silica - Amorphous: Silica gel</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>(a) This value is for inhalable dust containing no asbestos and &lt; 1% crystalline silica.</td>
</tr>
</tbody>
</table>

**EMERGENCY LIMITS**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Material name</th>
<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ferric oxide</td>
<td>Iron oxide; (Ferric oxide)</td>
<td>15 mg/m³</td>
<td>360 mg/m³</td>
<td>2,200 mg/m³</td>
</tr>
<tr>
<td>silica amorphous</td>
<td>Silica gel, amorphous synthetic</td>
<td>18 mg/m³</td>
<td>200 mg/m³</td>
<td>1,200 mg/m³</td>
</tr>
<tr>
<td>silica amorphous</td>
<td>Silica, amorphous fumed</td>
<td>18 mg/m³</td>
<td>100 mg/m³</td>
<td>630 mg/m³</td>
</tr>
<tr>
<td>silica amorphous</td>
<td>Siloxanes and silicones, dimethyl, reaction products with silica; (Hydrophobic silicon dioxide, amorphous)</td>
<td>120 mg/m³</td>
<td>1,300 mg/m³</td>
<td>7,900 mg/m³</td>
</tr>
<tr>
<td>silica amorphous</td>
<td>Silica, amorphous fume</td>
<td>45 mg/m³</td>
<td>500 mg/m³</td>
<td>3,000 mg/m³</td>
</tr>
<tr>
<td>silica amorphous</td>
<td>Silica, amorphous hydrated</td>
<td>18 mg/m³</td>
<td>220 mg/m³</td>
<td>1,300 mg/m³</td>
</tr>
</tbody>
</table>

**Ingredient** | **Original IDLH** | **Revised IDLH**
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ferric oxide</td>
<td>2,500 mg/m³</td>
<td>Not Available</td>
</tr>
</tbody>
</table>
**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 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.

**Personal protection**

- Safety glasses with side shields.
- Chemical goggles.
- 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 adorption 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. Lenses 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.

**Eye and face protection**

**Skin protection**

See Hand protection below

**Hands/feet protection**

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.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and to be observed when making a final choice.

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.

Suitability and durability of glove type is dependent on usage. Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene.
- nitrile rubber.
- butyl rubber.
- fluorocautchouc.
- polyvinyl chloride.

Gloves should be examined for wear and/ or degradation constantly.

**Body protection**

See Other protection below

**Other protection**

- Overalls.
- P.V.C. apron.
- Overalls.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

**Respiratory protection**

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

<table>
<thead>
<tr>
<th>Required Minimum Protection Factor</th>
<th>Half-Face Respirator</th>
<th>Full-Face Respirator</th>
<th>Powered Air Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 x ES</td>
<td>P1 Air-line*</td>
<td>-</td>
<td>PAPR-P1</td>
</tr>
<tr>
<td>up to 50 x ES</td>
<td>Air-line**</td>
<td>P2</td>
<td>PAPR-P2</td>
</tr>
<tr>
<td>up to 100 x ES</td>
<td>-</td>
<td>P3</td>
<td>-</td>
</tr>
<tr>
<td>100+ x ES</td>
<td>-</td>
<td>Air-line*</td>
<td>PAPR-P3</td>
</tr>
</tbody>
</table>

*: Negative pressure demand  **: Continuous flow
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(SO2), G = Agricultural chemicals, K = Ammonia(NH3), 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).
- 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.
Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Odourless red to reddish brown powder; insoluble in water. Soluble in hydrochloric and sulphuric acids, and slightly soluble in nitric acid. Occurs naturally as haematite.</td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
<td>Divided Solid</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>pH (as supplied)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Melting point / freezing point (°C)</strong></td>
<td>1565</td>
</tr>
<tr>
<td><strong>Initial boiling point and boiling range (°C)</strong></td>
<td>Decomposes.</td>
</tr>
<tr>
<td><strong>Flash point (°C)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Upper Explosive Limit (%)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Lower Explosive Limit (%)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Vapour pressure (kPa)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Solubility in water</strong></td>
<td>Immiscible</td>
</tr>
<tr>
<td><strong>Vapour density (Air = 1)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Relative density (Water = 1)</strong></td>
<td>4.6-5.4</td>
</tr>
<tr>
<td><strong>Partition coefficient n-octanol / water</strong></td>
<td>Not Available.</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature (°C)</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>Surface Tension (dyn/cm or mN/m)</strong></td>
<td>159.7</td>
</tr>
<tr>
<td><strong>Molecular weight (g/mol)</strong></td>
<td>159.7</td>
</tr>
<tr>
<td><strong>Volatile Component (%vol)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Gas group</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>pH as a solution (1%)</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>VOC g/L</strong></td>
<td>Not Available</td>
</tr>
</tbody>
</table>

SECTION 10 STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reactivity</strong></td>
<td>See section 7</td>
</tr>
<tr>
<td><strong>Chemical stability</strong></td>
<td>Unstable in the presence of incompatible materials.</td>
</tr>
<tr>
<td><strong>Possibility of hazardous reactions</strong></td>
<td>See section 7</td>
</tr>
<tr>
<td><strong>Conditions to avoid</strong></td>
<td>See section 7</td>
</tr>
<tr>
<td><strong>Incompatible materials</strong></td>
<td>See section 7</td>
</tr>
<tr>
<td><strong>Hazardous decomposition products</strong></td>
<td>See section 5</td>
</tr>
</tbody>
</table>

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

<table>
<thead>
<tr>
<th>Route of Exposure</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhaled</strong></td>
<td>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. 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. 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. Welding fume with high levels of ferrous materials may lead to particle deposition in the lungs (siderosis) after long exposure. This clears up when exposure stops. Chronic exposure to iron dusts may lead to eye disorders.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>Accidental ingestion of the material may be damaging to the health of the individual. Iron poisoning results in pain in the upper abdomen and vomiting, and is followed hours later by shock, in severe cases coma and death. Iron toxicity increases in proportion to their solubility in the gastrointestinal tract.</td>
</tr>
<tr>
<td><strong>Skin Contact</strong></td>
<td>This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition. Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material. 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.</td>
</tr>
<tr>
<td><strong>Eye</strong></td>
<td>This material can cause eye irritation and damage in some persons. Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Chronic excessive intake of iron may be associated with damage to the liver and pancreas. People with a genetic disposition to poor control over iron are at an increased risk. Welding fume with high levels of ferrous materials may lead to particle deposition in the lungs (siderosis) after long exposure. This clears up when exposure stops. Chronic exposure to iron dusts may lead to eye disorders.</td>
</tr>
</tbody>
</table>

**Continued...**
### Toxicity

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Duration (HR)</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>LC50: 96</td>
<td>0.05mg/L</td>
<td>2</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50: 48</td>
<td>5.11mg/L</td>
<td>2</td>
</tr>
<tr>
<td>Algae or other aquatic</td>
<td>EC50: 72</td>
<td>18mg/L</td>
<td>2</td>
</tr>
<tr>
<td>Fish</td>
<td>NOEC: 504</td>
<td>0.52mg/L</td>
<td>2</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50: 96</td>
<td>1-299.09mg/L</td>
<td>1</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50: 48</td>
<td>ca.760mg/L</td>
<td>1</td>
</tr>
<tr>
<td>Algae or other aquatic</td>
<td>EC50: 72</td>
<td>440mg/L</td>
<td>1</td>
</tr>
<tr>
<td>Crustacea</td>
<td>NOEC: 720</td>
<td>34,223mg/L</td>
<td>2</td>
</tr>
</tbody>
</table>

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

**For Metal:**
- Atmospheric Fate: Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air.
- Environmental Fate: Environmental processes, such as oxidation, the presence of acids or bases and microbiological processes, may transform insoluble metals to more soluble ionic forms. Environmental processes may enhance bioavailability and may also be important in changing solubilities. Aquatic/Terrestrial Fate: When released to dry soil, most metals will exhibit limited mobility and remain in the upper layer; some will leach locally into ground water and/or surface water ecosystems when soaked by rain or melt ice. A metal ion is considered infinitely persistent because it cannot degrade further. Once released to surface waters and moist soils their fate depends on solubility and dissociation in water. A significant proportion of dissolved/sorbed metals will end up in sediments through the settling of suspended particles. The remaining metal ions can then be taken up by aquatic organisms. Ionic species may bind to dissolved ligands or sorb to solid particles in water. DO NOT discharge into sewer or waterways.
Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>silica amorphous</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>silica amorphous</td>
<td>LOW (LogKOW = 0.5294)</td>
</tr>
</tbody>
</table>

Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>silica amorphous</td>
<td>LOW (KOC = 23.74)</td>
</tr>
</tbody>
</table>

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

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. A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

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.

DO NOT allow wash water from cleaning or process equipment to enter drains.

It may be necessary to collect all wash water for treatment before disposal.

In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.

Where in doubt contact the responsible authority.

Recycle wherever possible or consult manufacturer for recycling options.

Consult State Land Waste Management Authority for disposal.

Bury residue in an authorised landfill.

Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 TRANSPORT INFORMATION

Labels Required

<table>
<thead>
<tr>
<th>Marine Pollutant</th>
<th>HAZCHEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

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

FERRIC OXIDE (1309-37-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

- Australia Exposure Standards
- Australia Inventory of Chemical Substances (ACIS)
- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4

FERRIC OXIDE (1309-37-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
- International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

SILICA AMORPHOUS (7631-86-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

- Australia Exposure Standards
- Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
- Australia Inventory of Chemical Substances (ACIS)
- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index

SILICA AMORPHOUS (7631-86-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
- GESAMP/EHS Composite List - GESAMP Hazard Profiles
- International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
- International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

National Inventory Status

<table>
<thead>
<tr>
<th>National Inventory</th>
<th>Status</th>
</tr>
</thead>
</table>

Continued...
Australia - AICS Yes
Canada - DSL Yes
Canada - NDSL No (ferric oxide)
China - IECSC Yes
Europe - EINEC / ELINCS / NLP Yes
Japan - ENCS Yes
Korea - KEIC Yes
New Zealand - NZIoC Yes
Philippines - PICCS Yes
USA - TSCA Yes
Taiwan - TCSI Yes
Mexico - INSQ Yes
Vietnam - NCI Yes
Russia - ARIPS Yes
Thailand - TECI Yes

Legend: Yes = All CAS declared ingredients are on the inventory
No = 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

Revision Date 27/06/2017
Initial Date Not Available

SDS Version Summary

<table>
<thead>
<tr>
<th>Version</th>
<th>Issue Date</th>
<th>Sections Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.1.1</td>
<td>03/02/2008</td>
<td>Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Acute Health (swallowed), Chronic Health, Classification, Disposal, Engineering Control, Environmental, Exposure Standard, Fire Fighter (fire/explosion hazard), Fire Fighter (fire fighting), Fire Fighter (fire incompatibility), First Aid (inhaled), Handling Procedure, Personal Protection (other), Personal Protection (eye), Personal Protection (hands/feet), Physical Properties, Spills (major), Spills (minor), Storage (storage incompatibility), Storage (storage requirement), Storage (suitable container), Supplier Information, Synonyms, Use</td>
</tr>
<tr>
<td>7.1.1.1</td>
<td>27/06/2017</td>
<td>Synonyms</td>
</tr>
</tbody>
</table>

Other information

Ingredients with multiple cas numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>silica amorphous</td>
<td>7631-86-9, 112945-52-5, 67762-90-7, 68611-44-9, 68909-20-6, 112926-00-8, 61790-53-2, 60676-86-0, 91053-39-3, 69012-64-2, 844491-94-7</td>
</tr>
</tbody>
</table>

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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