

# RAILTECH PREMIXED PACKING SAND

Chemwatch Material Safety Data Sheet  
Issue Date: 4-Dec-2008  
NC317ECP

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Version No:4  
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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

RAILTECH PREMIXED PACKING SAND

### PRODUCT USE

Packing sand.

### SUPPLIER

Company: Railtech Australia Ltd  
Address:  
52 Lysaght Street  
Acacia Ridge  
QLD, 4110  
AUS  
Telephone: +61 7 3344 5444  
Emergency Tel: +61 0418 781 377  
Fax: +61 7 3344 5377

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## Section 2 - HAZARDS IDENTIFICATION

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### STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

### POISONS SCHEDULE

None

### RISK

None under normal operating conditions.

### SAFETY

- » Avoid contact with skin.
- » Wear eye/ face protection.
- » Use only in well ventilated areas.
- » Keep container in a well ventilated place.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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NAME	CAS RN	%
silica amorphous	7631-86-9	>60

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## Section 4 - FIRST AID MEASURES

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### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

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Section 4 - FIRST AID MEASURES

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## EYE

» 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.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

## SKIN

» If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

## INHALED

- 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.

## NOTES TO PHYSICIAN

» Treat symptomatically.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

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

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- 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.

### FIRE INCOMPATIBILITY

» None known.

HAZCHEM: None

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

continued...

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Section 6 - ACCIDENTAL RELEASE MEASURES

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## MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours/ aerosols or dusts and avoid contact with skin and eyes.
- Place in a suitable, labelled container for waste disposal.

## MAJOR SPILLS

- » Minor hazard.
- Clear area of personnel.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment as required.
- Prevent spillage from entering drains or water ways.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.
- Wash area and prevent runoff into drains or waterways.
- If contamination of drains or waterways occurs, advise emergency services.

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

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## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR 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.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

- » None known.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Silica gel (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Precipitated silica (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Diatomaceous earth (uncalcined)(a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fumed silica (respirable dust))	2
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fume (thermally generated)(respirable dust) (g))	2

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
silica amorphous	3, 000	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

#### SILICA AMORPHOUS:

» The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm, i.e..generally less than 5 µm.

Amorphous crystalline silica shows little potential for producing adverse effects on the lung and exposure standards should reflect a particulate of low intrinsic toxicity. Mixtures of amorphous silicas/ diatomaceous earth and crystalline silica should be monitored as if they comprise only the crystalline forms.

The dusts from precipitated silica and silica gel produce little adverse effect on pulmonary functions and are not known to produce significant disease or toxic effect

IARC has classified silica, amorphous as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

### PERSONAL PROTECTION

#### EYE

- 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 lens 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].

#### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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### OTHER

- Overalls.
- Eyewash unit.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

» 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.

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

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### APPEARANCE

Odourless red paste; miscible with water.

### PHYSICAL PROPERTIES

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Not Available

pH (1% solution): Not Available

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (°C): Not Applicable

State: Non Slump Paste

Boiling Range (°C): Not Available

Specific Gravity (water= 1): 1.6

pH (as supplied): 10.9

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): Not Available

Viscosity: Not Available

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and

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## Section 11 - TOXICOLOGICAL INFORMATION

vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

### EYE

» There is some evidence to suggest that this material can cause eye irritation and damage in some persons.

### SKIN

» The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

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.

### INHALED

» The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

### CHRONIC HEALTH EFFECTS

» As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

### SILICA AMORPHOUS:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: 3160 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg \*

Inhalation (rat) LC50: >0.139 mg/l/14h \*\* [Grace]

» For silica amorphous:

When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals.

After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs.

Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.

Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.

Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.

Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.

Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be

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## Section 11 - TOXICOLOGICAL INFORMATION

explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL. Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected. In humans, SAS is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin. There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS. The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

### CARCINOGEN

silica amorphous

International Agency for Research on Cancer  
(IARC) Carcinogens

Group

3

## Section 12 - ECOLOGICAL INFORMATION

No data

## Section 13 - DISPOSAL CONSIDERATIONS

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- 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.
- Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Premixed Packing Sand (CAS: None):  
No regulations applicable

silica amorphous (CAS: 7631-86-9) is found on the following regulatory lists;  
Australia Exposure Standards

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## Section 15 - REGULATORY INFORMATION

Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines  
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP  
IMO IBC Code Chapter 17: Summary of minimum requirements  
International Agency for Research on Cancer (IARC) Carcinogens  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 112945-52-5) is found on the following regulatory lists;  
Australia - Victoria Occupational Health and Safety Regulations - Schedule 5 Hazardous Substances: Substances Prohibited for Specified Uses  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
IMO IBC Code Chapter 17: Summary of minimum requirements  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 67762-90-7) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix C  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4  
IMO IBC Code Chapter 17: Summary of minimum requirements  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68611-44-9) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68909-20-6) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 112926-00-8) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 61790-53-2) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 60676-86-0) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 91053-39-3) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 69012-64-2) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products  
OECD Representative List of High Production Volume (HPV) Chemicals

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
silica amorphous	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

» 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/references](http://www.chemwatch.net/references).

» The (M)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

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Section 16 - OTHER INFORMATION

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reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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# RAILTECH WELDING PORTION

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

RAILTECH WELDING PORTION

### PRODUCT USE

Used as a casting agent in rail welding.

### SUPPLIER

Company: Railtech Australia Ltd

Address:

52 Lysaght Street

Acacia Ridge

QLD, 4110

AUS

Telephone: +61 7 3344 5444

Emergency Tel: +61 0418 781 377

Fax: +61 7 3344 5377

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## Section 2 - HAZARDS IDENTIFICATION

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### STATEMENT OF HAZARDOUS NATURE

**HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.**

### POISONS SCHEDULE

None

### RISK

None under normal operating conditions.

### SAFETY

- » Do not breathe dust.
- » Avoid contact with skin.

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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NAME	CAS RN	%
ferric oxide	1309-37-1	50-65
aluminium powder uncoated	7429-90-5	10-30
steel		1-10
iron, powder	7439-89-6	0.5-3
manganese powder	7439-96-5	0.5-3

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## Section 4 - FIRST AID MEASURES

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### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

- » If this product comes in contact with the eyes:

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Section 4 - FIRST AID MEASURES

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- 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.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

» 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.

### INHALED

- 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.

### NOTES TO PHYSICIAN

» Treat symptomatically.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

» Metal dust fires need to be smothered with sand, inert dry powders.

DO NOT USE WATER, CO<sub>2</sub> or FOAM.

- Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire.
- Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.
- Chemical reaction with CO<sub>2</sub> may produce flammable and explosive methane.
- If impossible to extinguish, withdraw, protect surroundings and allow fire to burn itself out.

### FIRE FIGHTING

- » Alert Fire Brigade and tell them location and nature of hazard.
  - Wear breathing apparatus plus protective gloves for fire only.
  - 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.  
If safe to do so, remove containers from path of fire.

### FIRE/EXPLOSION HAZARD

- Metal powders, while generally regarded as non-combustible, may burn when metal is finely divided and energy input is high.
- DO NOT use water or foam as generation of explosive hydrogen may result.
- May be ignited by friction, heat, sparks or flame.
- Metal dust fires are slow moving but intense and difficult to extinguish.
- Will burn with intense heat.
- DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal.
- Containers may explode on heating.
- Dusts or fumes may form explosive mixtures with air.
- May REIGNITE after fire is extinguished.
- Gases generated in fire may be poisonous, corrosive or irritating.

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Section 5 - FIRE FIGHTING MEASURES

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- Hot organic vapours or mist are capable of sudden spontaneous combustion when mixed with air even at temperatures below their published autoignition temperatures.
- The temperature of ignition decreases with increasing vapour volume and vapour/air contact times and is influenced by pressure change.
- Ignition may occur under elevated-temperature process conditions especially in processes performed under vacuum subjected to sudden ingress of air or in processes performed at elevated pressure, where sudden escape of vapours or mists to the atmosphere occurs.

### FIRE INCOMPATIBILITY

» None known.

**HAZCHEM: None**

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Sweep up, shovel up or
- Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).
- Place spilled material in clean, dry, sealable, labelled container.

#### MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Avoid generating dust.
- Sweep, shovel up. Recover product wherever possible.
- Put residues in labelled plastic bags or other containers for disposal.
- If contamination of drains or waterways occurs, advise emergency services.

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

---

## Section 7 - HANDLING AND STORAGE

---

### PROCEDURE FOR 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.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.

continued...

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Section 7 - HANDLING AND STORAGE

- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

- Reacts with acids producing flammable / explosive hydrogen (H<sub>2</sub>) gas.
- Reacts slowly with water.
- CAUTION contamination with moisture will liberate explosive hydrogen gas, causing pressure build up in sealed containers.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations

For major quantities:

- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>
Australia Exposure Standards	ferric oxide (Iron oxide fume (Fe <sub>2</sub> O <sub>3</sub> ) (as Fe))	5	
Australia Exposure Standards	aluminium powder uncoated (Aluminium (welding fumes) (as Al))	5	
Australia Exposure Standards	aluminium powder uncoated (Aluminium (metal dust))	10	
Australia Exposure Standards	aluminium powder uncoated (Inspirable dust (not otherwise classified))	10	
Australia Exposure Standards	aluminium powder uncoated (Aluminium, pyro powders (as Al))	5	
Australia Exposure Standards	iron, powder (Inspirable dust (not otherwise classified))	10	
Australia Exposure Standards	manganese powder (Manganese, fume (as Mn))	1	3
Australia Exposure Standards	manganese powder (Manganese, dust & compounds (as Mn))	1	
Australia Exposure Standards	manganese powder (Inspirable dust (not otherwise classified))	10	

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
ferric oxide	2, 500	
manganese powder	500	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

FERRIC OXIDE:

IRON, POWDER:

» Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

FERRIC OXIDE:

» The recommended TLV is thought to reduce the likelihood of respiratory irritation and skin irritation from exposure to aerosols and mists of soluble iron salts.

Inhalation of iron oxide dust or fume may produce a benign pneumoconiosis (siderosis). The TLV-TWA is recommended to minimise the potential for development of X-ray changes in the lung on long-term exposure. These changes are not considered to be associated with any physical impairment of lung function, although more sophisticated physiological testing, including measurement of the lung's mechanical properties and expiratory lung flow is required to reach firm and final conclusions.

ALUMINIUM POWDER UNCOATED:

Not available

IRON, POWDER:

» It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

MANGANESE POWDER:

» Ceiling values were recommended for manganese and compounds in earlier publications. As manganese is a chronic toxin a TWA is considered more appropriate. Because workers exposed to fume exhibited manganism at air-borne concentrations below those that affect workers exposed to dust a lower value has been proposed to provide an extra margin of safety. This value is still above that experienced by two workers exposed to manganese

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

fume in the course of one study.

A number of studies have shown that susceptibility to the effects of manganese at or about 1 - 5 mg/m<sup>3</sup> (TWA) can lead to clinical manifestations of manganism or more commonly to the development of indicators of sub-clinical manganism (e.g. hand tremor, exaggerated reflexes, short-term memory deficits, poor psychomotor performance). Controlling long-term exposure to the recommended ES TWA level or below should provide protection for those individuals susceptible to neurological effects of prolonged exposure.

### PERSONAL PROTECTION

#### EYE

- 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 lens 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].

#### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

#### OTHER

- Overalls.
- Eyewash unit.

#### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

\* - Negative pressure demand

\*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

- 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.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered.

Such protection might consist of:

- (a): particle dust respirators, if necessary, combined with an absorption cartridge;
- (b): filter respirators with absorption cartridge or canister of the right type;
- (c): fresh-air hoods or masks.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

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### APPEARANCE

Odourless grey powder and granules; insoluble in water.

### PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

Molecular Weight: Not Applicable

Melting Range (°C): >1000

Solubility in water (g/L): Immiscible

pH (1% solution): 10.7

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Available

Autoignition Temp (°C): >1000

State: Divided Solid

Boiling Range (°C): Not Available

Specific Gravity (water=1): 2.17

pH (as supplied): Not Available

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): >1000

Upper Explosive Limit (%): Not Available

Decomposition Temp (°C): Not Available

Viscosity: Not Applicable

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

---

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

## Section 11 - TOXICOLOGICAL INFORMATION

---

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

##### EYE

» This material can cause eye irritation and damage in some persons.

Contact with the eye by metal dusts may produce mechanical abrasion or foreign body penetration of the eyeball. Iron particles embedded in the eye may cause discolouration of the cornea and iris, and effects on the pupil such as poor reaction to light and accommodation. Particles entering the lens may produce cataracts. Rarely, glaucoma may result.

##### SKIN

» 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.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with

continued...



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## Section 11 - TOXICOLOGICAL INFORMATION

harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

### INHALED

» 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.

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.

### CHRONIC HEALTH EFFECTS

» 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. Prime symptom is breathlessness; lung shadows show on X-ray.

### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

#### FERRIC OXIDE:

» Not available. Refer to individual constituents.

#### ALUMINIUM POWDER UNCOATED:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

#### TOXICITY

#### IRRITATION

by normal routes of exposure.

No data found; suggests powdered aluminium is a low hazard material

#### IRON, POWDER:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

#### TOXICITY

Oral (rat) LD50: 98600 mg/kg

#### IRRITATION

Nil Reported [Patty]

#### MANGANESE POWDER:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

#### TOXICITY

Oral (rat) LD50: 9000 mg/kg

Inhalation (human) TClO: 2.3 mg/m<sup>3</sup>

» The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

#### IRRITATION

Skin (rabbit): 500mg/ 24h

Eye (rabbit): 500 mg/ 24h

### CARCINOGEN

ferric oxide

International Agency for Research on Cancer  
(IARC) Carcinogens

Group

3

### REPROTOXIN

manganese powder

ILO Chemicals in the electronics industry  
that have toxic effects on reproduction

Reduced fertility or  
sterility

H si

continued...

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## Section 12 - ECOLOGICAL INFORMATION

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No data

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## Section 13 - DISPOSAL CONSIDERATIONS

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- 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.

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## Section 14 - TRANSPORTATION INFORMATION

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HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

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## Section 15 - REGULATORY INFORMATION

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**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Welding Portion (CAS: None):

No regulations applicable

ferric oxide (CAS: 1309-37-1) is found on the following regulatory lists;

- Australia Exposure Standards
- Australia Hazardous Substances
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6
- International Agency for Research on Cancer (IARC) Carcinogens
- International Council of Chemical Associations (ICCA) - High Production Volume List
- OECD Representative List of High Production Volume (HPV) Chemicals

aluminium powder uncoated (CAS: 7429-90-5) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRI - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
- Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRI)
- Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Agricultural uses (Stock)
- Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
- Australia Exposure Standards
- Australia Hazardous Substances
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- OECD Representative List of High Production Volume (HPV) Chemicals
- WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

iron, powder (CAS: 7439-89-6) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (AQUA/1 to 6 - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRI - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
- Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways

continued...

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Section 15 - REGULATORY INFORMATION

taken to cause environmental harm (IRRIG)

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways -

Agricultural uses (Stock)

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways -

Domestic water quality

Australia Exposure Standards

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

OECD Representative List of High Production Volume (HPV) Chemicals

WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

manganese powder (CAS: 7439-96-5) is found on the following regulatory lists;

Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards

(Domestic water supply - inorganic chemicals)

Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards

(IRRIG - inorganic chemicals)

Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways

taken to cause environmental harm (IRRIG)

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways -

Domestic water quality

Australia Exposure Standards

Australia Hazardous Substances

Australia Inventory of Chemical Substances (AICS)

Australia National Pollutant Inventory

OECD Representative List of High Production Volume (HPV) Chemicals

WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

## Section 16 - 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/references](http://www.chemwatch.net/references).

» The (M)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.

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Issue Date: 4-Dec-2008

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# RAILTECH MOLDS

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

RAILTECH MOLDS

### PRODUCT USE

Used as molds in rail welding.

### SUPPLIER

Company: Railtech Australia Ltd

Address:

52 Lysaght Street

Acacia Ridge

QLD, 4110

AUS

Telephone: +61 7 3344 5444

Emergency Tel: +61 0418 781 377

Fax: +61 7 3344 5377

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## Section 2 - HAZARDS IDENTIFICATION

---

### STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

### POISONS SCHEDULE

None

### RISK

None under normal operating conditions.

### SAFETY

- » Do not breathe dust.
- » Avoid contact with skin.
- » Wear eye/ face protection.
- » Use only in well ventilated areas.
- » Keep container in a well ventilated place.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

---

NAME	CAS RN	%
silica amorphous	7631-86-9	70-90
zirconium silicate	14940-68-2	1-5
red iron oxide	1332-37-2	0.5-3.0

---

## Section 4 - FIRST AID MEASURES

---

### SWALLOWED

» Overexposure is unlikely in this form and quantity.

continued...

# RAILTECH MOLDS

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Section 4 - FIRST AID MEASURES

---

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

- » 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.
  - If pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

- » Brush off dust.

### INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

- » Treat symptomatically.
- 

## Section 5 - FIRE FIGHTING MEASURES

---

### EXTINGUISHING MEDIA

- » Non combustible.
- There is no restriction on the type of extinguisher which may be used.

### FIRE FIGHTING

- » Product is not combustible. No special firefighting procedures required. Alert Fire Brigade and tell them location and nature of hazard. Use fire fighting procedures suitable for surrounding area.

### FIRE/EXPLOSION HAZARD

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

### FIRE INCOMPATIBILITY

- » None known.

**HAZCHEM: None**

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### EMERGENCY PROCEDURES

#### MINOR SPILLS

- » Clean up all spills immediately. Use dry clean up procedures and avoid generating dust. If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator. Vacuum up or sweep up. Place in suitable containers for disposal.

continued...

# RAILTECH MOLDS

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Section 6 - ACCIDENTAL RELEASE MEASURES

## MAJOR SPILLS

» Minor hazard.

- Clear area of personnel and move upwind.
- If inhalation risk of exposure exists, wear SAA approved dust respirator.
- Collect recoverable product into labelled containers for recycling.

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

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

» None known.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations

For major quantities:

- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Silica gel (a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Precipitated silica (a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Diatomaceous earth (uncalcined)(a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fumed silica (respirable dust))	2	

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fume (thermally generated)(respirable dust) (g))	2	
Australia Exposure Standards	zirconium silicate (Zirconium compounds (as Zr))	5	10
Australia Exposure Standards	red iron oxide (Iron oxide fume (Fe <sub>2</sub> O <sub>3</sub> ) (as Fe))	5	

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
silica amorphous	3, 000	
zirconium silicate	25	
red iron oxide	2, 500	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

#### RED IRON OXIDE:

#### ZIRCONIUM SILICATE:

» Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

#### SILICA AMORPHOUS:

» The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm, i.e. generally less than 5 µm.

Amorphous crystalline silica shows little potential for producing adverse effects on the lung and exposure standards should reflect a particulate of low intrinsic toxicity. Mixtures of amorphous silicas/ diatomaceous earth and crystalline silica should be monitored as if they comprise only the crystalline forms.

The dusts from precipitated silica and silica gel produce little adverse effect on pulmonary functions and are not known to produce significant disease or toxic effect

IARC has classified silica, amorphous as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

#### ZIRCONIUM SILICATE:

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

» OSHA concluded that the recommended TLV-TWA and STEL would protect workers from any significant risk of pulmonary effects. NIOSH conclude that a separate limit should be considered for zirconium tetrachloride (because of the irritancy of hydrogen chloride derived from hydrolysis). This was based on a 60-day inhalation study at 6 mg/m<sup>3</sup> zirconium tetrachloride which found an increase in mortality of rats and guinea pigs due to respiratory infection and reductions of borderline statistical significance in circulating hemoglobin and erythrocyte counts in dogs.

### RED IRON OXIDE:

» It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

## PERSONAL PROTECTION

### EYE

- Safety glasses with side shields; or as required,
- 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 lens 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].

### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

### OTHER

- Overalls.
- Eyewash unit.

### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

\* - Negative pressure demand

\*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

## ENGINEERING CONTROLS

» Use in a well-ventilated area.

- If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

continued...



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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

---

### APPEARANCE

Odourless solid red brick.

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Immiscible

pH (1% solution): 11.5

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (°C): Not Applicable

State: Solid

Boiling Range (°C): Not Applicable

Specific Gravity (water= 1): Not Available

pH (as supplied): Not Available

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): >1650

Viscosity: Not Applicable

---

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

---

### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

---

## Section 11 - TOXICOLOGICAL INFORMATION

---

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» Considered to be non toxic.

Not normally a hazard due to physical form of product.

##### EYE

» Not normally a hazard due to physical form of product.

The dust may produce eye discomfort and abrasive eye inflammation.

##### SKIN

» Not normally a hazard due to physical form of product.

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

##### INHALED

» Not normally a hazard due to physical form of product.

The dust may be discomforting.

#### CHRONIC HEALTH EFFECTS

» Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

continued...

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Section 11 - TOXICOLOGICAL INFORMATION

## TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

### SILICA AMORPHOUS:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

#### TOXICITY

Oral (rat) LD50: 3160 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg \*

Inhalation (rat) LC50: >0.139 mg/l/14h \*\* [Grace]

» For silica amorphous:

When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals. After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs.

Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.

Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.

Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.

Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.

Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL.

Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected.

In humans, SAS is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin.

There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

### ZIRCONIUM SILICATE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

» OSHA concluded that the recommended TLV-TWA and STEL would protect workers from any significant risk of pulmonary effects. NIOSH conclude that a separate limit should be considered for zirconium tetrachloride

continued...

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## Section 11 - TOXICOLOGICAL INFORMATION

(because of the irritancy of hydrogen chloride derived from hydrolysis). This was based on a 60-day inhalation study at 6 mg/m<sup>3</sup> zirconium tetrachloride which found an increase in mortality of rats and guinea pigs due to respiratory infection and reductions of borderline statistical significance in circulating hemoglobin and erythrocyte counts in dogs.

The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm, i.e. generally less than 5 µm.

Zircon sands may contain trace amounts (106-120 picoCurie per gram or 3.9-4.44 Bq/g) of naturally occurring radioactive uranium and thorium.

However, measurements made by US DuPont during the use of similar mineral sands indicated that by observing OSHA Permitted Exposure Limit (PEL) for respirable quartz dust, i.e. 0.05 mg/m<sup>3</sup> ensured the user is below the permitted limits [radioactive dose annual intake] established for uranium and thorium. [North Refractories Co.]

### RED IRON OXIDE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: >5, 000 mg/kg

### IRRITATION

Skin (rabbit): non- Irritant 24h

Eye (rabbit): non- Irritant

### CARCINOGEN

silica amorphous	International Agency for Research on Cancer (IARC) Carcinogens	Group	3
red iron oxide	International Agency for Research on Cancer (IARC) Carcinogens	Group	3

## Section 12 - ECOLOGICAL INFORMATION

No data

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Molds (CAS: None):

continued...

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Section 15 - REGULATORY INFORMATION

No regulations applicable

silica amorphous (CAS: 7631-86-9) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines

CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless

Otherwise Specified, in Accordance with GMP

IMO IBC Code Chapter 17: Summary of minimum requirements

International Agency for Research on Cancer (IARC) Carcinogens

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 112945-52-5) is found on the following regulatory lists;

Australia - Victoria Occupational Health and Safety Regulations - Schedule 5 Hazardous Substances: Substances

Prohibited for Specified Uses

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

IMO IBC Code Chapter 17: Summary of minimum requirements

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 67762-90-7) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix C

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

IMO IBC Code Chapter 17: Summary of minimum requirements

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 68611-44-9) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 68909-20-6) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 112926-00-8) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 61790-53-2) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 60676-86-0) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 91053-39-3) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 69012-64-2) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships

IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products

OECD Representative List of High Production Volume (HPV) Chemicals

zirconium silicate (CAS: 14940-68-2) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

zirconium silicate (CAS: 10101-52-7) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

red iron oxide (CAS: 1332-37-2) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

OECD Representative List of High Production Volume (HPV) Chemicals

red iron oxide (CAS: 1309-37-1) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

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Section 15 - REGULATORY INFORMATION

Australia Inventory of Chemical Substances (AICS)  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
International Agency for Research on Cancer (IARC) Carcinogens  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
silica amorphous	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
zirconium silicate	14940- 68- 2, 10101- 52- 7
red iron oxide	1332- 37- 2, 1309- 37- 1

» 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/references](http://www.chemwatch.net/references).

» The (M)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.

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

### PRODUCT NAME

RAILTECH STANDARD CRUCIBLE

### SYNONYMS

"Product Code: 82450100"

### PRODUCT USE

Used as a crucible in rail welding.

### SUPPLIER

Company: Railtech Australia Ltd

Address:

52 Lysaght Street

Acacia Ridge

QLD, 4110

AUS

Telephone: +61 7 3344 5444

Emergency Tel: +61 0418 781 377

Fax: +61 7 3344 5377

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## Section 2 - HAZARDS IDENTIFICATION

---

### STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

### POISONS SCHEDULE

None

### RISK

None under normal operating conditions.

### SAFETY

» Do not breathe dust.

» Avoid contact with skin.

» Wear eye/ face protection.

» In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

---

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

---

NAME	CAS RN	%
corundum, as calcined alumina	1344-28-1.	90-95
marble powder, as limestone	1317-65-3	0.5-2.0

continued...

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## Section 4 - FIRST AID MEASURES

---

### SWALLOWED

» Overexposure is unlikely in this form and quantity.

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

» 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.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

» Brush off dust.

### INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

» Treat symptomatically.

---

## Section 5 - FIRE FIGHTING MEASURES

---

### EXTINGUISHING MEDIA

- » Non combustible.
- There is no restriction on the type of extinguisher which may be used.

### FIRE FIGHTING

» Product is not combustible. No special firefighting procedures required.

Alert Fire Brigade and tell them location and nature of hazard.

Use fire fighting procedures suitable for surrounding area.

### FIRE/EXPLOSION HAZARD

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

### FIRE INCOMPATIBILITY

» None known.

**HAZCHEM: None**

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### EMERGENCY PROCEDURES

#### MINOR SPILLS

» Clean up all spills immediately.

Use dry clean up procedures and avoid generating dust.

If exposure to workplace dust is not controlled, respiratory protection is required; wear

continued...

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Section 6 - ACCIDENTAL RELEASE MEASURES

SAA approved dust respirator.

Vacuum up or sweep up.

Place in suitable containers for disposal.

## MAJOR SPILLS

» Minor hazard.

- Clear area of personnel and move upwind.
- If inhalation risk of exposure exists, wear SAA approved dust respirator.
- Collect recoverable product into labelled containers for recycling.

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

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

» None known.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations

For major quantities:

- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	calcined alumina (Aluminium oxide (a))	10
Australia Exposure Standards	calcined alumina (Inspirable dust (not otherwise classified))	10
Australia Exposure Standards	limestone (Calcium carbonate (a))	10

continued...



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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

## MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

#### CALCINED ALUMINA:

aluminium oxide, containing no asbestos and < 1% crystalline silica

ES TWA: 10 mg/m<sup>3</sup> inspirable dust

TLV TWA: 10 mg/m<sup>3</sup> total dust A4

» NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans.

OES TWA: 10 mg/m<sup>3</sup> total inhalable dust

OES TWA: 4 mg/m<sup>3</sup> respirable dust

MAK value: 6 mg/m<sup>3</sup>

» - measured as the respirable fraction of the aerosol.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany.

The experimental and clinical data indicate that aluminium oxide acts as an

"inert" material when inhaled and seems to have little effect on the lungs

nor does it produce significant organic disease or toxic effects when

exposures are kept under reasonable control.

[Documentation of the Threshold Limit Values], ACGIH, Sixth Edition

#### LIMESTONE:

» Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

## PERSONAL PROTECTION

### EYE

- Safety glasses with side shields; or as required,
- 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 lens 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].

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

### OTHER

- Overalls.
- Eyewash unit.

### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

\* - Negative pressure demand

\*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

- » Use in a well-ventilated area.
- If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Odourless standard crucible as a grey refractory brick.

### PHYSICAL PROPERTIES

Solid.

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Not Available

pH (1% solution): Not Available

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (°C): Not Applicable

State: Solid

Boiling Range (°C): Not Applicable

Specific Gravity (water= 1): Not Available

pH (as supplied): Not Applicable

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): Not Available

Viscosity: Not Applicable

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

continued...

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## Section 11 - TOXICOLOGICAL INFORMATION

---

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» Considered to be non toxic.

Not normally a hazard due to physical form of product.

##### EYE

» Not normally a hazard due to physical form of product.

The dust may produce eye discomfort and abrasive eye inflammation.

##### SKIN

» Not normally a hazard due to physical form of product.

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

##### INHALED

» Not normally a hazard due to physical form of product.

The dust may be discomforting.

#### CHRONIC HEALTH EFFECTS

» Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

#### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

##### CALCINED ALUMINA:

» Not available. Refer to individual constituents.

##### LIMESTONE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

##### TOXICITY

Oral (rat) LD50: 6450 mg/kg

##### IRRITATION

Skin (rabbit): 500 mg/24h- Moderate

Eye (rabbit) 0.75: mg/24h -

» The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

No evidence of carcinogenic properties.

No evidence of mutagenic or

teratogenic effects.

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## Section 12 - ECOLOGICAL INFORMATION

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No data

continued...

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## Section 13 - DISPOSAL CONSIDERATIONS

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- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.

---

## Section 14 - TRANSPORTATION INFORMATION

---

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

---

## Section 15 - REGULATORY INFORMATION

---

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Standard Crucible (CAS: None):

No regulations applicable

calcined alumina (CAS: 1344-28-1) is found on the following regulatory lists;

Australia Exposure Standards

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

limestone (CAS: 1317-65-3) is found on the following regulatory lists;

Australia Exposure Standards

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

---

## Section 16 - OTHER INFORMATION

---

### EXPOSURE STANDARD FOR MIXTURES

» "Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

» Composite Exposure Standard for Mixture (TWA) :4 mg/m<sup>3</sup>.

» Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component	Breathing Zone ppm	Breathing Zone mg/m <sup>3</sup>	Mixture Conc (%)
Component		Breathing zone (ppm)	Breathing zone (mg/m <sup>3</sup> )
Mixture Conc (%)		calcined alumina	4.0000
95.0			

» 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/references](http://www.chemwatch.net/references).

» The (M)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

continued...

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Section 16 - OTHER INFORMATION

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be considered.

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

### PRODUCT NAME

RAILTECH ONE-SHOT CRUCIBLE

### SYNONYMS

"Product Code: 83450112"

### PRODUCT USE

One shot crucible used in rail welding.

### SUPPLIER

Company: Railtech Australia Ltd

Address:

52 Lysaght Street

Acacia Ridge

QLD, 4110

AUS

Telephone: +61 7 3344 5444

Emergency Tel: +61 0418 781 377

Fax: +61 7 3344 5377

---

## Section 2 - HAZARDS IDENTIFICATION

---

### STATEMENT OF HAZARDOUS NATURE

**HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.**

### POISONS SCHEDULE

None

### RISK

» Irritating to eyes.

### SAFETY

- » Do not breathe dust.
- » Avoid contact with skin.
- » Wear eye/ face protection.
- » Use only in well ventilated areas.
- » Keep container in a well ventilated place.
- » To clean the floor and all objects contaminated by this material use water and detergent.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.
- » If swallowed IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).

---

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

---

NAME	CAS RN	%
silica amorphous	7631-86-9	80-95
resin		1-10

continued...

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## Section 4 - FIRST AID MEASURES

---

### SWALLOWED

» Overexposure is unlikely in this form and quantity.

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

» 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.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

» Brush off dust.

### INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

» Treat symptomatically.

---

## Section 5 - FIRE FIGHTING MEASURES

---

### EXTINGUISHING MEDIA

- » Non combustible.
- There is no restriction on the type of extinguisher which may be used.

### FIRE FIGHTING

» Product is not combustible. No special firefighting procedures required.  
Alert Fire Brigade and tell them location and nature of hazard.  
Use fire fighting procedures suitable for surrounding area.

### FIRE/EXPLOSION HAZARD

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

### FIRE INCOMPATIBILITY

» None known.

**HAZCHEM: None**

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### EMERGENCY PROCEDURES

#### MINOR SPILLS

» Clean up all spills immediately.

Use dry clean up procedures and avoid generating dust.

If exposure to workplace dust is not controlled, respiratory protection is required; wear

continued...

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## Section 6 - ACCIDENTAL RELEASE MEASURES

SAA approved dust respirator.  
Vacuum up or sweep up.  
Place in suitable containers for disposal.

### MAJOR SPILLS

- » Minor hazard.
- Clear area of personnel and move upwind.
- If inhalation risk of exposure exists, wear SAA approved dust respirator.
- Collect recoverable product into labelled containers for recycling.

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

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

» None known.

### STORAGE REQUIREMENTS

- Store in original containers.
  - Keep containers securely sealed.
  - Store in a cool, dry area protected from environmental extremes.
  - Store away from incompatible materials and foodstuff containers.
  - Protect containers against physical damage and check regularly for leaks.
  - Observe manufacturer's storing and handling recommendations
- For major quantities:
- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
  - Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Silica gel (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Precipitated silica (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Diatomaceous earth (uncalcined)(a))	10

continued...



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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fumed silica (respirable dust))	2
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fume (thermally generated)(respirable dust) (g))	2

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
silica amorphous	3,000	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

#### SILICA AMORPHOUS:

» The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm, i.e..generally less than 5 µm.

Amorphous crystalline silica shows little potential for producing adverse effects on the lung and exposure standards should reflect a particulate of low intrinsic toxicity. Mixtures of amorphous silicas/ diatomaceous earth and crystalline silica should be monitored as if they comprise only the crystalline forms.

The dusts from precipitated silica and silica gel produce little adverse effect on pulmonary functions and are not known to produce significant disease or toxic effect

IARC has classified silica, amorphous as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

### PERSONAL PROTECTION

#### EYE

- Safety glasses with side shields; or as required,
- 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 lens 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].

#### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

#### OTHER

- Overalls.
- Eyewash unit.

#### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	--	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

\* - Negative pressure demand

\*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

» Use in a well-ventilated area.

• If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Odourless yellow solid brick.

Disaggregation may occur after use.

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Immiscible

pH (1% solution): Not Available

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (°C): Not Applicable

State: Solid

Boiling Range (°C): Not Available

Specific Gravity (water= 1): Not Available

pH (as supplied): Not Applicable

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Applicable

Flash Point (°C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): >1650

Viscosity: Not Applicable

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

## Section 11 - TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» Considered to be non toxic.

Not normally a hazard due to physical form of product.

continued...

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## Section 11 - TOXICOLOGICAL INFORMATION

### EYE

» Not normally a hazard due to physical form of product.

The dust may produce eye discomfort and abrasive eye inflammation.

### SKIN

» Not normally a hazard due to physical form of product.

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

### INHALED

» Not normally a hazard due to physical form of product.

The dust may be discomforting.

### CHRONIC HEALTH EFFECTS

» Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

### SILICA AMORPHOUS:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: 3160 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg \*

Inhalation (rat) LC50: >0.139 mg/l/14h \*\* [Grace]

» For silica amorphous:

When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals. After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs. Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.

Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.

Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.

Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.

Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL.

Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected.

### IRRITATION

Skin (rabbit): non-irritating \*

Eye (rabbit): non-irritating \*

continued...

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## Section 11 - TOXICOLOGICAL INFORMATION

In humans, SAS is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin.

There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

### CARCINOGEN

silica amorphous	International Agency for Research on Cancer (IARC) Carcinogens	Group	3
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## Section 12 - ECOLOGICAL INFORMATION

No data

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech One-Shot Crucible (CAS: None):  
No regulations applicable

silica amorphous (CAS: 7631-86-9) is found on the following regulatory lists;

- Australia Exposure Standards
  - Australia Hazardous Substances
  - Australia High Volume Industrial Chemical List (HVICL)
  - Australia Inventory of Chemical Substances (AICS)
  - Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines
  - CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP
  - IMO IBC Code Chapter 17: Summary of minimum requirements
  - International Agency for Research on Cancer (IARC) Carcinogens
  - International Council of Chemical Associations (ICCA) - High Production Volume List
  - OECD Representative List of High Production Volume (HPV) Chemicals
- silica amorphous (CAS: 112945-52-5) is found on the following regulatory lists;
- Australia - Victoria Occupational Health and Safety Regulations - Schedule 5 Hazardous Substances: Substances

continued...

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Section 15 - REGULATORY INFORMATION

### Prohibited for Specified Uses

Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
IMO IBC Code Chapter 17: Summary of minimum requirements  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 67762-90-7) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix C  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4  
IMO IBC Code Chapter 17: Summary of minimum requirements  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68611-44-9) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68909-20-6) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 112926-00-8) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 61790-53-2) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 60676-86-0) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 91053-39-3) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 69012-64-2) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products  
OECD Representative List of High Production Volume (HPV) Chemicals

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
silica amorphous	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

» 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/references](http://www.chemwatch.net/references).

» The (M)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.

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Section 16 - OTHER INFORMATION

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Print Date: 5-Dec-2008

# RAILTECH TUBE CLAY CEMENT

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

### PRODUCT NAME

RAILTECH TUBE CLAY CEMENT

### SYNONYMS

"Product Code: 82662100", "Product Code: 82662100"

### PRODUCT USE

Used as a sealing agent in rail welding.

### SUPPLIER

Company: Railtech Australia Ltd  
Address:  
52 Lysaght Street  
Acacia Ridge  
QLD, 4110  
AUS  
Telephone: +61 7 3344 5444  
Emergency Tel: +61 0418 781 377  
Fax: +61 7 3344 5377

---

## Section 2 - HAZARDS IDENTIFICATION

---

### STATEMENT OF HAZARDOUS NATURE

**HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.**

### POISONS SCHEDULE

None

### RISK

None under normal operating conditions.

### SAFETY

- » Avoid contact with skin.
- » Wear eye/ face protection.
- » Use only in well ventilated areas.
- » Keep container in a well ventilated place.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

---

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

---

NAME	CAS RN	%
silica amorphous	7631-86-9	50
fireclay	130498-21-4	10-20
bentonite	1302-78-9	5-10
calcium chloride	10043-52-4	5
water	7732-18-5	10-15

continued...

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## Section 4 - FIRST AID MEASURES

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### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

- » 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.
  - If pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

- » If skin or hair contact occurs:
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

### INHALED

- 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.

### NOTES TO PHYSICIAN

- » Treat symptomatically.

---

## Section 5 - FIRE FIGHTING MEASURES

---

### EXTINGUISHING MEDIA

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

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- 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.

### FIRE INCOMPATIBILITY

- » None known.

continued...



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Section 5 - FIRE FIGHTING MEASURES

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HAZCHEM: None

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours/ aerosols or dusts and avoid contact with skin and eyes.
- Place in a suitable, labelled container for waste disposal.

#### MAJOR SPILLS

» Minor hazard.

- Clear area of personnel.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment as required.
- Prevent spillage from entering drains or water ways.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.
- Wash area and prevent runoff into drains or waterways.
- If contamination of drains or waterways occurs, advise emergency services.

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

---

## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR 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.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

» None known.

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Section 7 - HANDLING AND STORAGE

## STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Silica gel (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Precipitated silica (a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Diatomaceous earth (uncalcined)(a))	10
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fumed silica (respirable dust))	2
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fume (thermally generated)(respirable dust) (g))	2

The following materials had no OELs on our records

- fireclay: CAS:130498- 21- 4 CAS:78005- 61- 5
- bentonite: CAS:1302- 78- 9 CAS:11004- 12- 9 CAS:1327- 43- 1
- calcium chloride: CAS:10043- 52- 4
- water: CAS:7732- 18- 5

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
silica amorphous	3, 000	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

BENTONITE:

FIRECLAY:

» It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

BENTONITE:

SILICA AMORPHOUS:

» The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm,

continued...

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

i.e..generally less than 5 µm.

## BENTONITE:

### FIRECLAY:

» Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

## SILICA AMORPHOUS:

» Amorphous crystalline silica shows little potential for producing adverse effects on the lung and exposure standards should reflect a particulate of low intrinsic toxicity. Mixtures of amorphous silicas/ diatomaceous earth and crystalline silica should be monitored as if they comprise only the crystalline forms.

The dusts from precipitated silica and silica gel produce little adverse effect on pulmonary functions and are not known to produce significant disease or toxic effect

IARC has classified silica, amorphous as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

## WATER:

» No exposure limits set by NOHSC or ACGIH.

## PERSONAL PROTECTION

### EYE

- 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 lens 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].

### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

### OTHER

- Overalls.
- Eyewash unit.

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### RESPIRATOR

» Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	- AUS P	-
1000	50	-	- AUS P
5000	50	Airline *	-
5000	100	-	- 2 P
10000	100	-	- 3 P
	100+		Airline**

\* - Continuous Flow

\*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

» 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.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Odourless brown paste.

Hardens at temperatures above 100 deg. C.

### PHYSICAL PROPERTIES

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Not Available

pH (1% solution): Not Available

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Available

Autoignition Temp (°C): Not Available

State: Non Slump Paste

Boiling Range (°C): Not Available

Specific Gravity (water= 1): 1.58

pH (as supplied): 11.8

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Available

Upper Explosive Limit (%): Not Available

Decomposition Temp (°C): Not Available

Viscosity: Not Available

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

continued...

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

##### EYE

» There is some evidence to suggest that this material can cause eye irritation and damage in some persons.

##### SKIN

» The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. 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.

##### INHALED

» The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

#### CHRONIC HEALTH EFFECTS

» As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

#### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

##### SILICA AMORPHOUS:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

##### TOXICITY

Oral (rat) LD50: 3160 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg \*

Inhalation (rat) LC50: >0.139 mg/l/14h \* \* [Grace]

» For silica amorphous:

When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals. After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs. Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.

Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic

##### IRRITATION

Skin (rabbit): non- irritating \*

Eye (rabbit): non- irritating \*

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Section 11 - TOXICOLOGICAL INFORMATION

toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.

Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.

Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.

Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL.

Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected.

In humans, SAS is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin.

There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

**FIRECLAY:**

» Not available. Refer to individual constituents.

**BENTONITE:**

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

**TOXICITY**

Intravenous (Rat) LD50: 35 mg/kg

Intravenous (Dog) LD: 10 mg/kg

» No significant acute toxicological data identified in literature search.

**IRRITATION**

**CALCIUM CHLORIDE:**

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

**TOXICITY**

Oral (rat) LD50: 1000 mg/kg

**IRRITATION**

Skin (unknown): moderate\*

Eye (unknown): severe\* [ICI]

**WATER:**

» No significant acute toxicological data identified in literature search.

**CARCINOGEN**

silica amorphous

International Agency for Research on Cancer  
(IARC) Carcinogens

Group

3

continued...

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## Section 12 - ECOLOGICAL INFORMATION

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No data

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## Section 13 - DISPOSAL CONSIDERATIONS

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- Containers may still present a chemical hazard/ danger when empty.
  - Return to supplier for reuse/ recycling if possible.
- Otherwise:
- 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.
  - Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

---

## Section 14 - TRANSPORTATION INFORMATION

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HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

---

## Section 15 - REGULATORY INFORMATION

---

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Tube Clay Cement (CAS: None):

No regulations applicable

silica amorphous (CAS: 7631-86-9) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed

medicines

CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless

Otherwise Specified, in Accordance with GMP

IMO IBC Code Chapter 17: Summary of minimum requirements

International Agency for Research on Cancer (IARC) Carcinogens

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 112945-52-5) is found on the following regulatory lists;

Australia - Victoria Occupational Health and Safety Regulations - Schedule 5 Hazardous Substances: Substances

Prohibited for Specified Uses

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

IMO IBC Code Chapter 17: Summary of minimum requirements

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 67762-90-7) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix C

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

IMO IBC Code Chapter 17: Summary of minimum requirements

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 68611-44-9) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 68909-20-6) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 112926-00-8) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

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Section 15 - REGULATORY INFORMATION

Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 61790-53-2) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 60676-86-0) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 91053-39-3) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 69012-64-2) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products  
OECD Representative List of High Production Volume (HPV) Chemicals

bentonite (CAS: 1302-78-9) is found on the following regulatory lists;  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Air Transport Association (IATA) Dangerous Goods Regulations  
OECD Representative List of High Production Volume (HPV) Chemicals  
bentonite (CAS: 11004-12-9) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
International Air Transport Association (IATA) Dangerous Goods Regulations

calcium chloride (CAS: 10043-52-4) is found on the following regulatory lists;  
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards  
(Domestic water supply - inorganic chemicals)  
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways  
taken to cause environmental harm (IRRIG)  
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways -  
Agricultural uses (Stock)  
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways -  
Domestic water quality  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless  
Otherwise Specified, in Accordance with GMP  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

water (CAS: 7732-18-5) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
IMO IBC Code Chapter 18: List of products to which the Code does not apply  
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for fireclay as CAS: 130498-21-4, CAS: 78005-61-5.

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
silica amorphous	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
fireclay	130498- 21- 4, 78005- 61- 5
bentonite	1302- 78- 9, 11004- 12- 9

### EXPOSURE STANDARD FOR MIXTURES

» "Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

» Composite Exposure Standard for Mixture (TWA) :100 mg/m<sup>3</sup>.

continued...



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Section 16 - OTHER INFORMATION

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» 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/references](http://www.chemwatch.net/references).

» The (M)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.

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Issue Date: 4-Dec-2008

Print Date: 5-Dec-2008

### SECTION 1: IDENTIFICATION OF MATERIAL AND SUPPLIER

**PRODUCT NAME:** Pyrotechnic / Technical **Thermit Igniter** **OTHER NAME:** Thermit stars  
**PRODUCT CODE:** 1700208445 **USE:** Igniter for 'Thermite' process of continuous railway track welding  
**UN NUMBER:** 0454  
**HAZCHEM CODE:** E  
**DANGEROUS GOODS CLASS & SUB RISK:** 1.4S  
**SUPPLIER:** Howard & Sons Pyrotechnics (MFG) P/L, 581 Portland Road, Wallerawang, NSW 2845, Australia  
**TELEPHONE:** (612) 63 557 301 **EMERGENCY TELEPHONE NUMBERS:** 0418 218 432 / 0419 270 535

### SECTION 2: HAZARDS IDENTIFICATION

**CLASSIFICATION:** Dangerous Goods Non hazardous substance as per [NOHSC 1008:2004]  
**FIRE HAZARD:** Product contains pyrotechnic substances capable of burning with intense heat  
 Produces oxides of sulphur, carbon, nitrogen and metal slag. Produces an intense flame in excess of 1300 degrees centigrade  
**RISK PHRASE:** R36/37 Smoke produced may be irritating to the eyes and respiratory system  
**POISONS SCHEDULE:** None allocated  
**SAFETY PHRASE:** S15/16 Keep away from flame sparks and sources of heat.  
 Ensure that the product remains packed in the UN approved packaging until use

### SECTION 3: COMPOSITION INFORMATION

Composition defined as per Chemical Abstracts Service number registry

PROPER SHIPPING NAME & CHEMICAL IDENTITY	CAS NUMBER	PROPORTION
Barium Nitrate	10022-31-8	HIGH
Potassium Nitrate	7757-79-1	MED
Sulfur	7704-34-9	MED
Aluminium Mesh	7429-90-5	LOW

= 100%

PROPORTION (% weight per weight) VHIGH= >60, HIGH= 30 – 60, MED= 10 – 29, LOW= 1 – 9, VLOW <1

### TECHNICAL SPECIFICATIONS:

<b>Effect Description</b>	Produces an intense flame						
<b>Star diameter</b>	10mm			<b>Star Length</b>		10mm	
<b>Effect Height</b>	NA	<b>Effect Width</b>	NA	<b>Burn Time</b>	15secs		
<b>Plastic Weight</b>	12gms	<b>Paper Weight</b>	NA	<b>Clay Weight</b>	NA	<b>Fuse Head</b>	NA
<b>NEQ Stars</b>	NA	<b>NEQ Inserts</b>	NA	<b>NEQ B/P dr</b>	NA	<b>NEQ F/P dr</b>	NA
<b>NEQ Total</b>	66gms	<b>Total Gross weight of Product:</b> +/-0.25gms			66gms		
<b>Cannister height</b>	80mm	<b>S/Boxes Per Carton</b>		NA	<b>Carton Size CMB</b>		NA
<b>Cannister dia</b>	50mm		<b>Packing</b>	approx 55 stars	<b>Cannister weight Gross</b>		78gms
<b>Cannister weight Net</b>	12gms	<b>Carton Weight Net</b>		NA	<b>Carton Weight Gross</b>		NA
<b>Firing Controls</b>	Light with a gas flame from a safe distance						
<b>Set Up</b>	Refer to operational instructions for thermite track welding process						

#### **SECTION 4: FIRST AID MEASURES**

##### ROUTES OF EXPOSURE

SWALLOWED: Not applicable

EYE: Hold eyes open and wash continuously with water for 15 minutes. Transport affected Person to a doctor or hospital.

SKIN: Remove all contaminated clothing, including shoes. Wash affected areas with water.

INHALED: Remove patient to fresh air, lay down and rest. If patient is not breathing, make sure airway is cleared and apply artificial respiration. Call doctor at once or transport patient to doctor or a hospital.

BURNS: Immerse affected area in cold water for 10 to 15 minutes. Bandage lightly with sterile dressing. Treat for shock if required. Transport to doctor or hospital.

##### ACUTE OR CHRONIC EXPOSURE:

There have been no reports in the literature of detrimental health effects in workers from Long term exposure to the substances composite in this product.

#### **SECTION 5: FIRE FIGHTING MEASURES**

**DO NOT FIGHT EXPLOSIVE FIRES  
CONSULT THE EMERGENCY PROCEEDURE GUIDE TRAVELLING WITH THIS PRODUCT FOR  
FIRE SITE SPECIFIC FIRE FIGHTING PROCEDURES AND EVACUATION DISTANCES.**

HAZ CHEM CODE: **E** EXTIGUISHING MEDIA: **Water** SPECIFIC HAZARD: **Intense flame**  
DO NOT USE POWDER OR Co2 FIRE EXTINGUISHERS.

#### **PERSONAL PROTECTION EQUIPMENT**

Wear Boots, overalls, gloves, breathing apparatus and protective head gear. Produces oxides of Sulfur and Nitrogen on combustion.

#### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

In case of spillage, dampen powders with water. Sweep up any powders using natural fibre brushes and non ferrous dust pans not steel, or any material that could produce sparks or present a risk of static discharge.

IN ALL CASES OF SPILLAGE CONTACT HOWARD & SONS PYROTECHNICS ON  
0263 557 301 or 0418 218 432

#### **SECTION 7: HANDLING AND STORAGE**

In their fabricated and packaged state pyrotechnics are stable and present little risk. However, extremes of heat or weather must be avoided as well as impact. When handling finished product only carry an amount that you can safely hold without the risk of dropping any pyrotechnic item.

Never store pyrotechnic items in high traffic areas or locations where impact risks are present.

#### **SECTION 8: EXPOSURE CONTROLS**

NOT RELEVANT IN PACKAGED FORM

#### **BIOLOGICAL LIMIT VALUES**

No biological limit has been allocated for this product.

**EXPOSURE STANDARDS**

No reference to pyrotechnic material as a airborne contaminant can be found in the National Occupational Health and Safety Commission, *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)].

**ENGINEERING CONTROLS****IN USE**

**THIS PRODUCT IS ONLY FOR USE IN CONNECTION WITH THE THERMITE WELDING PROCESS REFER TO OPERATIONAL INSTRUCTIONS FOR THE USE AND INITIATION OF THERMITE. ENSURE THAT BEST PRACTICE O.H&S POLICIES REGARDING THIS PRODUCT ARE FOLLOWED**

**P.P.E**

Wear Boots, overalls, gloves all Non-synthetic fire resistant materials eyewear and protective head gear

**SECTION: 9 PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE: Stars 10mm dia x 10mm in length having a metallic appearance

BOILING POINT / MELTING POINT: Not applicable

FLASH POINT (C):

Not applicable

VAPOUR PRESSURE: Not applicable

FLAMMABILITY LIMITS (%):

Not applicable

SPECIFIC GRAVITY: Not applicable

SOLUBILITY IN WATER (g/L):

< 65%

IGNITION TEMPERATURE: >600 C

**SECTION 10: STABILITY AND REACTIVITY**

This product is stable and non reactive

Avoid transporting with strong acids or alkalis keep dry keep away from flame or excessive heat

Hazardous Polymerization will not occur.

Hazardous Decomposition Products: Oxides of sulfur & nitrogen gasses produced in use

**SECTION 11: TOXICOLOGICAL INFORMATION****SMOKE FROM INITIATING PRODUCT**

**R36/37** Smoke produced may be irritating to the eyes and respiratory system

**ADVICE TO DOCTOR:** Treat symptomatically

**AS A COMPOUND OF DRY POWDERS**

Oral LD<sub>50</sub> (Rats):>5050 mg/kg body weight

Dermal LD<sub>50</sub> (Rats):>2020 mg/kg body weight

Inhalation @ 90% LC<sub>50</sub> (Rats):>5.49 mg/L air concentration

Skin Effects (Rabbits): Slightly irritating

Eye Effects (Rabbits): Minimal irritation in non-washed eyes

CARCINOGENICITY, TERATOGENICITY, MUTAGENICITY:

This product does not contain any ingredient designated by IARC, or NOHSC as a probable human carcinogen.

**SUMMARY AS PER NOHSC GUIDANCES NOTES: SEE SECTION 2****SECTION 12: ECOLOGICAL INFORMATION**

There have been no reports in the literature of detrimental ecological effects from exposure to the substances composite in this product.

## SECTION: 13 DISPOSAL CONSIDERATIONS

Disposal of unfired product should only be carried out by a licensed pyrotechnic waste disposal contractor  
Contact Howard & Sons Pyrotechnics on 0263 557 301.

Provided that the products case can be determined as free from explosives by a licensed pyrotechnician,  
the spent cases can go to licensed landfill.

## SECTION: 14 TRANSPORT INFORMATION

**Class 1.4S. UN Number 0454. Transport as per Section 8 of the Australian Dangerous Goods code.**  
**Packaging group: II Hazchem code: E**  
Keep Dry, cool and avoid shock heat and transporting with incompatible substances such as strong  
Acids, alkalies or oxidising agents.  
Pyrotechnics must travel within their original UN approved packaging.

### INTERNATIONAL FREIGHT

Shipment by water- This product has been tested under the series 6 classification as per the UN manual  
of tests and criteria rev edition 4 and as such complies with the IMDG code and Marine Orders Part 41 for  
the transport of dangerous goods.

Shipment by air- This product complies with the criteria stipulated by the International Civil Aviation  
Organisation rules (ICAO) and the International Air Transport association (IATA) regulations.

In addition this product complies with the Queensland fireworks safety code edition 1/.2004 and its  
attendant testing regimen.

## SECTION: 15 REGULATORY INFORMATION

**It is a regulation in every state or territory in Australia that a license is required to purchase, keep  
and use this product.**

**It is a requirement in every state and territory in Australia that notification be made to the Police,  
Fire services, Safety authorities and in some cases Air services, of any intended display using  
display pyrotechnics. Consult Australian Standard 2187.1/2/3/4 for further information.**

## SECTION: 16 OTHER INFORMATION

This Materials Safety and Technical Data Sheet was prepared referencing.

- The Australian IMDG code and Marine Orders Part 41
- The Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)].
- The Dangerous Goods Non hazardous substance as per [NOHSC 1008:2004]
- The International Civil Aviation Organisation rules (ICAO)
- UN manual of tests and criteria rev edition 4
- Queensland fireworks safety code edition 1/.2004
- The ACT Dangerous Substances (Explosives) Regulation 2004

### CONTACT POINT:

Howard & Sons Pyrotechnics (Manufacturing) Pty. Ltd.  
Technical Manager **CHRISTIAN HOWARD**  
Telephone Number: **WH: (02) 6355 7301 AH: 0418 218 432**

Although this information is presented in good faith and compiled from various sources, believed to be accurate, Howard & Sons Pyrotechnics (Manufacturing) Pty. Ltd. make no representations or warrant as to the completeness or accuracy there of.

As the products performance and suitability depends on various factors, the purchasers of our products should determine for themselves whether the product is suitable for their particular use.

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

RAILTECH THIMBLE

### SYNONYMS

"Product Code: 81631102", "Product Code: 81631102"

### PRODUCT USE

Used for self tapping in rail welding

### SUPPLIER

Company: Railtech Australia Ltd

Address:

52 Lysaght Street

Acacia Ridge

QLD, 4110

AUS

Telephone: +61 7 3344 5444

Emergency Tel: +61 0418 781 377

Fax: +61 7 3344 5377

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## Section 2 - HAZARDS IDENTIFICATION

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### STATEMENT OF HAZARDOUS NATURE

**HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.**

### POISONS SCHEDULE

None

### RISK

» May cause SENSITISATION by skin contact.

### SAFETY

- » Avoid contact with skin.
- » Wear eye/ face protection.
- » Use only in well ventilated areas.
- » Keep container in a well ventilated place.
- » To clean the floor and all objects contaminated by this material use water and detergent.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.
- » If swallowed IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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NAME	CAS RN	%
silica amorphous	7631-86-9	60-80
fire- clay portland, as portland cement	65997-15-1	5-10
sodium silicate, as sodium metasilicate, anhydrous	6834-92-0	1-9

continued...

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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ferric oxide	1309-37-1	1-6
cardboard, as		
cellulose	9004-34-6	1-6
zirconium silicate	14940-68-2	1-5
marble powder, as		
limestone	1317-65-3	0.5-3.0
red iron oxide	1332-37-2	0.5-3.0
aluminium	7429-90-5	1 approx

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## Section 4 - FIRST AID MEASURES

### SWALLOWED

» Overexposure is unlikely in this form and quantity.

• Immediately give a glass of water.

• First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

» 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.

• If pain persists or recurs seek medical attention.

• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

» Brush off dust.

### INHALED

• If dust is inhaled, remove from contaminated area.

• Encourage patient to blow nose to ensure clear passage of breathing.

• If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

» Treat symptomatically.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

» Non combustible.

• There is no restriction on the type of extinguisher which may be used.

### FIRE FIGHTING

» Product is not combustible. No special firefighting procedures required.

Alert Fire Brigade and tell them location and nature of hazard.

Use fire fighting procedures suitable for surrounding area.

### FIRE/EXPLOSION HAZARD

• Non combustible.

• Not considered a significant fire risk, however containers may burn.

### FIRE INCOMPATIBILITY

» None known.

continued...

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Section 5 - FIRE FIGHTING MEASURES

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HAZCHEM: None

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

» Clean up all spills immediately.

Use dry clean up procedures and avoid generating dust.

If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator.

Vacuum up or sweep up.

Place in suitable containers for disposal.

#### MAJOR SPILLS

» Minor hazard.

• Clear area of personnel and move upwind.

• If inhalation risk of exposure exists, wear SAA approved dust respirator.

• Collect recoverable product into labelled containers for recycling.

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

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## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

### SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

» None known.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations

For major quantities:

- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

continued...



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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>
Australia Exposure Standards	silica amorphous (Silica - Amorphous Silica gel (a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Precipitated silica (a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Diatomaceous earth (uncalcined)(a))	10	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fumed silica (respirable dust))	2	
Australia Exposure Standards	silica amorphous (Silica - Amorphous Fume (thermally generated)(respirable dust) (g))	2	
Australia Exposure Standards	portland cement (Portland cement (a))	10	
Australia Exposure Standards	ferric oxide (Iron oxide fume (Fe <sub>2</sub> O <sub>3</sub> ) (as Fe))	5	
Australia Exposure Standards	cellulose (Cellulose (paper fibre) (a))	10	
Australia Exposure Standards	zirconium silicate (Zirconium compounds (as Zr))	5	10
Australia Exposure Standards	limestone (Calcium carbonate (a))	10	
Australia Exposure Standards	red iron oxide (Iron oxide fume (Fe <sub>2</sub> O <sub>3</sub> ) (as Fe))	5	
Australia Exposure Standards	aluminium (Aluminium (welding fumes) (as Al))	5	
Australia Exposure Standards	aluminium (Aluminium (metal dust))	10	
Australia Exposure Standards	aluminium (Inspirable dust (not otherwise classified))	10	
Australia Exposure Standards	aluminium (Aluminium, pyro powders (as Al))	5	

The following materials had no OELs on our records

- sodium metasilicate, anhydrous: CAS:6834- 92- 0

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
silica amorphous	3, 000	
portland cement	5, 000	
ferric oxide	2, 500	
zirconium silicate	25	
red iron oxide	2, 500	

### MATERIAL DATA

» Not available. Refer to individual constituents.

### INGREDIENT DATA

FERRIC OXIDE:  
 LIMESTONE:  
 PORTLAND CEMENT:  
 RED IRON OXIDE:

continued...

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

SODIUM METASILICATE, ANHYDROUS:

ZIRCONIUM SILICATE:

» Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

SILICA AMORPHOUS:

» The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0  $\mu\text{m}$  (+-) 0.3  $\mu\text{m}$  and with a geometric standard deviation of 1.5  $\mu\text{m}$  (+-) 0.1  $\mu\text{m}$ , i.e..generally less than 5  $\mu\text{m}$ .

Amorphous crystalline silica shows little potential for producing adverse effects on the lung and exposure standards should reflect a particulate of low intrinsic toxicity. Mixtures of amorphous silicas/ diatomaceous earth and crystalline silica should be monitored as if they comprise only the crystalline forms.

The dusts from precipitated silica and silica gel produce little adverse effect on pulmonary functions and are not known to produce significant disease or toxic effect

IARC has classified silica, amorphous as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

PORTLAND CEMENT:

Portland cement is considered to be a nuisance dust that does not cause fibrosis and has little potential to induce adverse effects on the lung.

SODIUM METASILICATE, ANHYDROUS:

» No specific exposure limits have been established for soluble silicates.

For liquids the creation of aerosols should be avoided. For powders, general dust exposure limits according to regulation will apply (typically 1- 10 mg/m<sup>3</sup>). For corrosive soluble silicates (Molar Ratio SiO<sub>2</sub>:M<sub>2</sub>O  $\leq$ 1.6), the exposure limits set for sodium hydroxide should be considered as a guideline (2 mg/m<sup>3</sup>).

CEL TWA: 2 mg/m<sup>3</sup>

[Manufacturer]

FERRIC OXIDE:

» The recommended TLV is thought to reduce the likelihood of respiratory irritation and skin irritation from exposure to aerosols and mists of soluble iron salts.

Inhalation of iron oxide dust or fume may produce a benign pneumoconiosis (siderosis). The TLV-TWA is recommended to minimise the potential for development of X-ray changes in the lung on long-term exposure. These changes are not considered to be associated with any physical impairment of lung function, although more sophisticated physiological testing, including measurement of the lung's mechanical properties and expiratory lung flow is required to reach firm and final conclusions.

CELLULOSE:

» Cellulose is considered a nuisance dust which has little adverse effect on lung and does not produce significant organic disease or toxic effects when appropriate controls are applied.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

## ZIRCONIUM SILICATE:

» OSHA concluded that the recommended TLV-TWA and STEL would protect workers from any significant risk of pulmonary effects. NIOSH conclude that a separate limit should be considered for zirconium tetrachloride (because of the irritancy of hydrogen chloride derived from hydrolysis). This was based on a 60-day inhalation study at 6 mg/m<sup>3</sup> zirconium tetrachloride which found an increase in mortality of rats and guinea pigs due to respiratory infection and reductions of borderline statistical significance in circulating hemoglobin and erythrocyte counts in dogs.

## RED IRON OXIDE:

» It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

## ALUMINIUM:

Twenty seven year experience with aluminium oxide dust (particle size 96% 1,2 um) without adverse effects either systemically or on the lung, and at a calculated concentration equivalent to 2 mg/m<sup>3</sup> over an 8-hour shift has lead to the current recommendation of the TLV-TWA.

The limit should also apply to aluminium pyro powders whose toxicity is reportedly greater than aluminium dusts and should be protective against lung changes.

## PERSONAL PROTECTION

### EYE

- Safety glasses with side shields; or as required,
- 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 lens 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].

### HANDS/FEET

- Wear physical protective gloves, eg. leather.
- Wear safety footwear.

### OTHER

- Overalls.
- Eyewash unit.

### RESPIRATOR

» Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	- AUS P	-
1000	50	-	- AUS P

continued...

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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5000	50	Airline *	-
5000	100	-	- 2 P
10000	100	-	- 3 P
	100+		Airline**

\* - Continuous Flow

\*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

» Use in a well-ventilated area.

• If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

---

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Odourless red brick covered in its upper part by an aluminium tube

### PHYSICAL PROPERTIES

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Not Available

pH (1% solution): 11.5

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (°C): Not Applicable

State: Manufactured

Boiling Range (°C): Not Applicable

Specific Gravity (water= 1): Not Available

pH (as supplied): Not Applicable

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): Not Available

Viscosity: Not Applicable

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

» Product is considered stable and hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

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## Section 11 - TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» Considered to be non toxic.

Not normally a hazard due to physical form of product.

##### EYE

» Not normally a hazard due to physical form of product.

The dust may produce eye discomfort and abrasive eye inflammation.

continued...

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Section 11 - TOXICOLOGICAL INFORMATION

## SKIN

» Not normally a hazard due to physical form of product.

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

## INHALED

» Not normally a hazard due to physical form of product.

The dust may be discomforting.

## CHRONIC HEALTH EFFECTS

» Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. One ingredient of the product has caused skin sensitisation reactions, shown as localised reddening and hives, or may produce respiratory sensitisation characterised by asthma-like symptoms and runny nose.

## TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

## SILICA AMORPHOUS:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

## TOXICITY

Oral (rat) LD50: 3160 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg \*

Inhalation (rat) LC50: >0.139 mg/l/14h \*\* [Grace]

» For silica amorphous:

When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated. If swallowed, the vast majority of SAS is excreted in the faeces and there is little accumulation in the body. Following absorption across the gut, SAS is eliminated via urine without modification in animals and humans. SAS is not expected to be broken down (metabolised) in mammals. After ingestion, there is limited accumulation of SAS in body tissues and rapid elimination occurs. Intestinal absorption has not been calculated, but appears to be insignificant in animals and humans. SASs injected subcutaneously are subjected to rapid dissolution and removal. There is no indication of metabolism of SAS in animals or humans based on chemical structure and available data. In contrast to crystalline silica, SAS is soluble in physiological media and the soluble chemical species that are formed are eliminated via the urinary tract without modification.

Both the mammalian and environmental toxicology of SASs are significantly influenced by the physical and chemical properties, particularly those of solubility and particle size. SAS has no acute intrinsic toxicity by inhalation. Adverse effects, including suffocation, that have been reported were caused by the presence of high numbers of respirable particles generated to meet the required test atmosphere. These results are not representative of exposure to commercial SASs and should not be used for human risk assessment. Though repeated exposure of the skin may cause dryness and cracking, SAS is not a skin or eye irritant, and it is not a sensitiser.

Repeated-dose and chronic toxicity studies confirm the absence of toxicity when SAS is swallowed or upon skin contact.

Long-term inhalation of SAS caused some adverse effects in animals (increases in lung inflammation, cell injury and lung collagen content), all of which subsided after exposure.

Numerous repeated-dose, subchronic and chronic inhalation toxicity studies have been conducted with SAS in a number of species, at airborne concentrations ranging from 0.5 mg/m<sup>3</sup> to 150 mg/m<sup>3</sup>. Lowest-observed adverse effect levels (LOAELs) were typically in the range of 1 to 50 mg/m<sup>3</sup>. When available, the no-observed adverse effect levels (NOAELs) were between 0.5 and 10 mg/m<sup>3</sup>. The difference in values may be explained by different particle size, and therefore the number of particles administered per unit dose. In general, as particle size decreases so does the NOAEL/LOAEL.

Neither inhalation nor oral administration caused neoplasms (tumours). SAS is not mutagenic in vitro. No genotoxicity was detected in in vivo assays. SAS does not impair development of the foetus. Fertility was not specifically studied, but the reproductive organs in long-term studies were not affected.

In humans, SAS is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection)

## IRRITATION

Skin (rabbit): non- irritating \*

Eye (rabbit): non- irritating \*

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may cause mechanical irritation of the eye and drying/cracking of the skin.

There is no evidence of cancer or other long-term respiratory health effects (for example, silicosis) in workers employed in the manufacture of SAS. Respiratory symptoms in SAS workers have been shown to correlate with smoking but not with SAS exposure, while serial pulmonary function values and chest radiographs are not adversely affected by long-term exposure to SAS.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

### FERRIC OXIDE:

» Not available. Refer to individual constituents.

### CELLULOSE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: >5000 mg/kg

Dermal (rabbit) LD50: >2000 mg/kg

### IRRITATION

Nil Reported

### ZIRCONIUM SILICATE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

» OSHA concluded that the recommended TLV-TWA and STEL would protect workers from any significant risk of pulmonary effects. NIOSH conclude that a separate limit should be considered for zirconium tetrachloride (because of the irritancy of hydrogen chloride derived from hydrolysis). This was based on a 60-day inhalation study at 6 mg/m<sup>3</sup> zirconium tetrachloride which found an increase in mortality of rats and guinea pigs due to respiratory infection and reductions of borderline statistical significance in circulating hemoglobin and erythrocyte counts in dogs.

The concentration of dust, for application of respirable dust limits, is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative log-normal function with a median aerodynamic diameter of 4.0 µm (+-) 0.3 µm and with a geometric standard deviation of 1.5 µm (+-) 0.1 µm, i.e. generally less than 5 µm.

Zircon sands may contain trace amounts (106-120 picoCurie per gram or 3.9-4.44 Bq/g) of naturally occurring radioactive uranium and thorium.

However, measurements made by US DuPont during the use of similar mineral sands indicated that by observing OSHA Permitted Exposure Limit (PEL) for respirable quartz dust, i.e. 0.05 mg/m<sup>3</sup> ensured the user is below the permitted limits [radioactive dose annual intake] established for uranium and thorium. [North Refractories Co.]

### LIMESTONE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: 6450 mg/kg

### IRRITATION

Skin (rabbit): 500 mg/24h- Moderate

Eye (rabbit) 0.75: mg/24h -

» The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

No evidence of carcinogenic properties.

No evidence of mutagenic or

teratogenic effects.

### RED IRON OXIDE:

» unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

### TOXICITY

Oral (rat) LD50: >5, 000 mg/kg

### IRRITATION

Skin (rabbit): non- Irritant 24h

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Eye (rabbit): non- Irritant

ALUMINIUM:

» Not available. Refer to individual constituents.

## CARCINOGEN

silica amorphous	International Agency for Research on Cancer (IARC) Carcinogens	Group	3
ferric oxide	International Agency for Research on Cancer (IARC) Carcinogens	Group	3
red iron oxide	International Agency for Research on Cancer (IARC) Carcinogens	Group	3

## Section 12 - ECOLOGICAL INFORMATION

No data

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.

## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**POISONS SCHEDULE: None**

### REGULATIONS

Railtech Thimble (CAS: None):  
No regulations applicable

silica amorphous (CAS: 7631-86-9) is found on the following regulatory lists:

- Australia Exposure Standards
- Australia Hazardous Substances
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines

CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP

- IMO IBC Code Chapter 17: Summary of minimum requirements
- International Agency for Research on Cancer (IARC) Carcinogens
- International Council of Chemical Associations (ICCA) - High Production Volume List
- OECD Representative List of High Production Volume (HPV) Chemicals

silica amorphous (CAS: 112945-52-5) is found on the following regulatory lists:

- Australia - Victoria Occupational Health and Safety Regulations - Schedule 5 Hazardous Substances: Substances

Prohibited for Specified Uses

- Australia Exposure Standards
- Australia Hazardous Substances
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- IMO IBC Code Chapter 17: Summary of minimum requirements

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- International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 67762-90-7) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix C  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4  
IMO IBC Code Chapter 17: Summary of minimum requirements  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68611-44-9) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 68909-20-6) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 112926-00-8) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 61790-53-2) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 60676-86-0) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 91053-39-3) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
OECD Representative List of High Production Volume (HPV) Chemicals  
silica amorphous (CAS: 69012-64-2) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships  
IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products  
OECD Representative List of High Production Volume (HPV) Chemicals
- portland cement (CAS: 65997-15-1) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals
- sodium metasilicate, anhydrous (CAS: 6834-92-0) is found on the following regulatory lists;  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals
- ferric oxide (CAS: 1309-37-1) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
International Agency for Research on Cancer (IARC) Carcinogens  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals
- cellulose (CAS: 9004-34-6) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Inventory of Chemical Substances (AICS)  
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless  
Otherwise Specified, in Accordance with GMP  
OECD Representative List of High Production Volume (HPV) Chemicals  
cellulose (CAS: 68442-85-3) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals
- zirconium silicate (CAS: 14940-68-2) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
zirconium silicate (CAS: 10101-52-7) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Hazardous Substances  
Australia Inventory of Chemical Substances (AICS)

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OECD Representative List of High Production Volume (HPV) Chemicals

limestone (CAS: 1317-65-3) is found on the following regulatory lists;

Australia Exposure Standards

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

red iron oxide (CAS: 1332-37-2) is found on the following regulatory lists;

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

OECD Representative List of High Production Volume (HPV) Chemicals

red iron oxide (CAS: 1309-37-1) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

International Agency for Research on Cancer (IARC) Carcinogens

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

aluminium (CAS: 7429-90-5) is found on the following regulatory lists;

Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIg - inorganic chemicals)

Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)

Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)

Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIg)

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Agricultural uses (Stock)

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
silica amorphous	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
cellulose	9004- 34- 6, 68442- 85- 3
zirconium silicate	14940- 68- 2, 10101- 52- 7
red iron oxide	1332- 37- 2, 1309- 37- 1

### EXPOSURE STANDARD FOR MIXTURES

» "Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

» Composite Exposure Standard for Mixture (TWA) :2 mg/m<sup>3</sup>.

» Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component	Breathing Zone ppm	Breathing Zone mg/m <sup>3</sup>	Mixture Conc (%)
Component		Breathing zone (ppm)	Breathing zone (mg/m <sup>3</sup> )
Mixture Conc (%)		sodium metasilicate, anhydrous	2.0000
0.1			

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» 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/references](http://www.chemwatch.net/references).

» The (M)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.

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