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MATERIAL SAFETY DATA SHEET

Revision No.: 0

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IDENTIFICATION OF MATERIAL AND SUPPLIER

PRODUCT NAME(s): FERRACHLOR

Chemical Name: Ferric Chloride Solution

Product Uses: Coagulant for water and wastewater treatment.

SUPPLIER AND MANUFACTURER: HARDMAN AUSTRALIA PTY. LTD.

EMERGENCY CONTACT INFORMATION:

| | |
|-----------|---|
| Telephone | 61 2 9624 1333 (all hours — message on after hours) Emergency after-hours contact: Mr. John Bradley (0418 974 332) |
| Facsimile | 61 2 9624 5851 |
| Email | info@hardman.com.au |
| Address | 11 Boden Road, Seven Hills, NSW, 2147, AUSTRALIA (P.O. Box 122, Seven Hills) |

HAZARDS IDENTIFICATION

Classified as a **HAZARDOUS SUBSTANCE** according to the criteria of Office of the Australian Safety and Compensation Council (previously NOHSC, the National Occupational Health and Safety Council).

Classified as **DANGEROUS GOODS** by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail.

Risk phrases: R22, Harmful if swallowed, R34; Causes burns, R41; Risk of serious damage to eyes.

Safety phrases: S24/25; Avoid contact with skin and eyes, S26; In case of contact with eyes, rinse immediately with plenty of water and seek medical advice, S36/37/39; Wear suitable protective clothing, gloves and eye/face protection, S45; In case of accident or if you feel unwell, seek medical advice immediately.



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FIRST AID MEASURES

| | |
|-------------------------|--|
| Eyes (contact): | Can cause corneal burns. If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. |
| Skin (contact): | If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor. |
| Inhalation (breathing): | Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. For all but the most minor symptoms arrange for patient to be seen by a doctor as soon as possible, either on site or at the nearest hospital. |
| Ingestion (swallowing): | Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance. |

FIRE FIGHTING MEASURES

| | |
|--------------------------------|---|
| Material: | Non-flammable and non-combustible |
| Precautions for fire fighters: | Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. |
| Suitable Extinguishing Media: | Not combustible, however, if material is involved in a fire use: Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder). |

ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled: Clear area of all unprotected personnel. Slippery when spilt. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Prevent drain or sewer contamination with absorbent such as sand or sawdust etc. Neutralise with lime or soda ash. Collect and seal in properly labelled containers or drums for disposal. Wash area down with excess water. If contamination of sewers or waterways has occurred advise local emergency services.

HANDLING AND STORAGE

This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

Avoid skin and eye contact and breathing in vapour, mists and aerosols.

Store in cool place and out of direct sunlight. Store away from incompatible materials.



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EXPOSURE CONTROLS / PERSONAL PROTECTION

EFFECTS OF EXPOSURE

| | |
|------------------------------|--|
| Eyes (Contact): | Severe eye irritant. Corrosive to eyes and can cause permanent corneal burns. |
| Skin (Contact & absorption): | Severe skin irritant. Corrosive to skin. |
| Inhalation (breathing): | Mist or aerosol could cause irritation to mucous tissue. |
| Ingestion (swallowing): | Nausea, vomiting, diarrhoea, and abdominal discomfort from chemical burns to the gastrointestinal tract. |

SPECIAL PROTECTION INFORMATION

| | |
|-----------------------------|---|
| Respiratory protection: | Fit respirator if application generates mist. |
| Ventilation: | Local exhaust recommended. |
| Protective gloves: | PVC or rubber. |
| Eye protection: | Chemical goggles or safety glasses. |
| Other protective equipment: | Aprons and rubber boots can be used in wet conditions and to prevent splashing on exposed skin. |
| Safety profile: | Severe skin and eye irritant. |

COMPOSITION / INFORMATION ON INGREDIENTS

Reference in AICS: YES

| <i>Name</i> | <i>CAS Number</i> | <i>Proportion</i> |
|-------------------|-------------------|-------------------|
| Ferric Chloride | 7705-08-0 | 30 to 60% |
| Hydrogen Chloride | 7647-01-0 | <1 % |
| Water | 7732-18-5 | to 100% |

PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--------------------------------------|
| Appearance: | Reddish/brown aqueous solution |
| Odour: | Faint Hydrogen chloride |
| Boiling point (°C): | 100-110°C |
| Melting point (°C): | Not available |
| Specific Gravity (H ₂ O = 1): | 1.4 at 20°C |
| pH (7 = neutral): | <1 at 25°C |
| Solubility in water: | Completely miscible |
| Relative vapour density (air = 1): | Not available or applicable |
| Volatile by weight (%): | Not available or applicable |
| Evaporation rate: | Not relevant (n-butyl acetate = 100) |



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STABILITY AND REACTIVITY

| | |
|---------------------------|---|
| Reactivity: | This product is considered stable as it is unlikely to react or decompose under normal conditions of storage. |
| Incompatibilities: | Incompatible with strong bases, oxidising agents, and metals. |
| Conditions to avoid: | Contact with incompatible materials. |
| Decomposition products: | None known. |
| Hazardous polymerisation: | Will not occur. Reacts with metals to liberate flammable hydrogen gas. Hydrolysis will produce hydrogen chloride. |

TOXICOLOGICAL INFORMATION

Long Term Effects: No information available for the product.

Toxicological Data: (ex "Registry of Toxic Effects of Chemical Substances"):

No LD50 data available for the product.

For the constituent Ferric chloride:

Oral rat LD50: 316 mg/kg

Oral mice LD50: 200 mg/kg

For the constituent Ferrous chloride:

Oral rat LD50: 984 mg/kg

ECOLOGICAL INFORMATION

Environmental fate and distribution:

Avoid contaminating waterways. Not a persistent pollutant. Will cause coagulation of solids in aqueous suspension, especially when highly diluted by the water in which the solids are suspended. When not highly diluted with water, this product may form a mixture of partially soluble product and heavy flocculated solids. Until further diluted, this mixture could affect marine life by clogging sensitive respiratory mechanisms in a similar fashion to muds and clays and possibly by toxic effects that are not yet well understood.

DISPOSAL CONSIDERATIONS

Waste disposal method:

Refer to local waste disposal authority.



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TRANSPORT INFORMATION

UN No.: 2582 HAZCHEM: 2Z DG CLASS: 8
Poison Schedule: S5 Packaging Group: III EPG: 8A1

To be shipped using the name: FERRIC CHLORIDE SOLUTION

Classified as DANGEROUS GOODS by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by ROAD AND RAIL.

Classified as DANGEROUS GOODS by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by SEA.

Classified as DANGEROUS GOODS by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by AIR.

REGULATORY INFORMATION

This product is to be found in the public AICS database.

OTHER INFORMATION

References cited:

Registry of Toxic Effects of Chemical Substances. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinnati, 2006.

[This MSDS consists of 5 pages; please advise if your document does not contain the same number of pages as it will not be complete]

This MSDS summarises our best knowledge of health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

Please contact the company if any further information is required.

END OF DOCUMENT



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