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MATERIAL SAFETY DATA SHEET

Revision Number: 12 Date Revised: August 27, 2007

IDENTIFICATION OF MATERIAL AND SUPPLIER

PRODUCT NAME: PAC-PW

OTHER NAMES: Polyaluminium Chloride 10% w/w (Al_2O_3); Polyaluminium Chloride, 30% w/w solution; basic aluminium chloride solution; aluminium hydroxychloride solution.

Recommended uses: treatment of potable water and waste water, phosphate removal

SUPPLIER: 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

R**isk phrases:** R36/38: Irritating to eyes and skin

Safety phrases: S24/25; Avoid contact with skin and eyes, S36/37/39; Wear suitable protective clothing, gloves and eye/face protection.

COMPOSITION/INFORMATION ON INGREDIENTS

Reference in AICS: YES

Name	CAS Number	Proportion
Polyaluminium Chloride	1327-41-9	20 to 40%
Water	7732-18-5	To 100 %

FIRST AID MEASURES

Eyes (contact):	Irrigate / wash eyes for at least 15 minutes with water, consult a doctor or Poisons Information Centre.
Skin (contact):	Wash off with water, remove any contaminated clothing, seek medical attention if irritation persists.
Inhalation (breathing):	No vapour; if mist is present remove to fresh air.
Ingestion (swallowing):	Do not induce vomiting, give large amounts of water to drink. Seek immediate medical attention.

FIRE FIGHTING MEASURES

Flash point (ºC):	Not flammable or combustible.
Auto ignition point (ºC):	Not applicable.

Explosion Limits In Air (% by volume)

Lower:	Not applicable.
Upper:	Not applicable.

Extinguishing media:	Compatible with water, CO_2, foam and dry chemical.
Special Procedures:	None.
Unusual hazards:	None known.
Conditions to avoid:	None known.
Materials to avoid:	Corrosive to most metals. Produces a strong explosion on contact with metallic potassium.
Decomposition products:	Severe overheating to dryness may then produce hydrogen chloride gas.
Hazardous polymerisation:	Will not occur.

ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled: Collect as much liquid as possible in drums for subsequent disposal. Cover residual spilled material with dry earth, sand or other absorbing media, and collect in drums. Use plastic containers as this material is corrosive and will attack metal containers. Any residues remaining after clean-up can be hosed off to drains; larger amounts cannot as the pH will affect local ecology.

HANDLING & STORAGE

Do not store in metal drums. Store in labelled, corrosion-resistant containers that are approved for the storage of dangerous goods. Store in a cool place away from strongly alkaline materials.

EXPOSURE CONTROLS/PERSONAL PROTECTION

EFFECTS OF EXPOSURE

Eyes (Contact):	Irritant

Skin (Contact & absorption):	Slight irritant.
Inhalation (breathing):	Mist may cause irritation to upper respiratory tract, irritating to mucous membranes.
Ingestion (swallowing):	Possible nausea, may cause irritation to mouth and throat.

SPECIAL PROTECTION INFORMATION

Respiratory protection:	To protect against mist use suitable cartridge or RBA.
Ventilation:	Store in a well ventilated area.
Protective gloves:	PVC or rubber.
Eye protection:	Eye goggles or superior protection should be worn.
Other protective equipment:	None recommended.
Safety profile:	A mild irritant.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance & odour:	Colourless, no apparent odour.
Molecular weight:	211.3 (for stoichiometric formula only)
Boiling point (ºC):	>100 (water boiling off)
Melting point (ºC):	Not relevant
Specific Gravity (H_2O = 1):	1.17 to 1.20 at 25ºC
pH (7 = neutral):	2.4. to 3.0 in undiluted form at 25ºC
Vapour pressure (kPa):	Not applicable
Relative vapour density (air = 1):	Not applicable
Volatile by weight (%):	60 to 80%
Solubility in water:	100% fully miscible
Evaporation rate:	Not available (n-butyl acetate = 100)

STABILITY AND REACTIVITY

Reactivity:	This product is unlikely to react or decompose under normal conditions of storage.
Incompatibilities:	Store away from strong alkalis and Cyanides of Class 6.1
Conditions to avoid:	Material may decompose at high temperatures (after water has evaporated and product dries and reaches calcination temperatures) to evolve Hydrogen Chloride vapour.
Decomposition products:	Severe overheating may produce hydrogen chloride gas and aluminium oxide once water has been driven off.
Hazardous polymerisation:	Will not occur.

TOXICOLOGICAL INFORMATION

Toxicology data: (ex "Sax's, Dangerous Properties of Industrial Materials" Ed. 8) -
skn-hmn 7500 mg/#D-I MLD
dnd-mam:lym 40 mmol/L

	ivn-mus TDLo:483 g/kg orl-rat LD50:3311 mg/kg ipr-rat LD50:728 mg/kg orl-mus LD50:1990 mg/kg ipr-mus LD50:940 mg/kg
Toxicity profile:	Material is not a persistent poison, and is not listed in the Standard for the Uniform Scheduling of Drums and Poisons (Vol. 20). Basic aluminium chloride solutions would be expected to hydrolyse on contact with water to form aluminium hydroxide, eventually becoming a part of the eco-system.
Threshold limit value:	2 mg/M^3 based on Al, (Ref ACGIH soluble Aluminium salts)

ECOLOGICAL INFORMATION

Environmental fate and distribution:

Not a persistent pollutant; can cause coagulation of solids in aqueous suspension. Aluminium compounds are common in most soils and are the principle components of Bauxite, a common, naturally occurring mineral. If solids are precipitated from this product they can be expected to become a part of the natural soil profile if not collected. In massive doses, this may form a heavy floc, which will settle as silt but until the floc settles it could affect marine life by clogging sensitive respiratory mechanisms in a similar fashion to muds and clays. When diluted by copious quantities of water (for example, to the point that the concentration is less than about 200 grams per cubic meter), this product will hydrolyse rapidly to form aluminium hydroxide, which can be expected to become a part of the natural soil profile if not recovered. When not highly diluted with water, this product may be slow to hydrolyse and may form a mixture of partially soluble aluminium species and heavy floc of aluminium hydroxide. Until further diluted, this mixture could affect marine and aquatic 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.

Effect on effluent treatment:

Product is occasionally used as a coagulant and as a phosphate removal agent in water treatment and may settle out finely divided solids depending on other factors such as pH, from aqueous streams. May influence pH control as this material in raw state has a pH of roughly 3.3, also may add to solids loading in filter cakes and present as a compressible cake. In large quantity this product is likely to make filter cakes "slimey" and wet. This can also cause "blinding” of filter cloths but these will normally respond to hosing or rinsing off.

DISPOSAL CONSIDERATIONS

Waste disposal method: Refer to local waste disposal authority. This product can be neutralised with alkali to form a mixture of aluminium hydroxide and the chloride salt of the alkali. The resulting mixture is non-hazardous.

TRANSPORT INFORMATION

This product is classified as Dangerous Goods. As a Class 8 substance, it must be separated from other placard loads of Dangerous Goods as follows:

Store 12 metres from Dangerous Goods of Class 1 or 7
Store 12 metres from Dangerous Goods of Class 4.3 or 5 if either load includes bulk
Store 24 metres from cyanides of Class 6.1 by at least 12 metres if neither is bulk or only one is bulk, or 250 metres if both are bulk.

UN No.: 3264	HAZCHEM: 2X	DG CLASS: 8
Poison Schedule: None	Packaging Group: III	EPG: 37

REGULATORY INFORMATION

All of the ingredients in this formulation are to be found in the public AICS database.

OTHER INFORMATION

Changes:

The UN Number of this product has been changed from 1760 (Corrosive Liquid, N.O.S.) to 3264 (Corrosive Liquid, Acidic, Inorganic, N.O.S)

The 16-point format has been finalised.

More ecological information is supplied.

[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.