



MATERIAL SAFETY DATA SHEET

POLYALUMINUM CHLORIDE

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

EABM, INC.
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Product Name: Polyaluminum chloride

Major Update: 01/12/07

CAS #: 1327-41-9

Minor Revision: 09/01/08

Synonyms: Aluminum Chlorohydrate; Poly(aluminum hydroxy) Chloride; PAX-10; PAX-11; PAX-14; PAX-18; PAX-28; PAX-XL1; PAX-XL9; PAX-XL19; PAX-XL30; PAX-XL30A; PAX-XL30C; PAX-XL31, PAX-XL31A; PAX-XL31C; PAX-XL32, PAX-XL32A; PAX-XL32C; PAX-XL37; PAX-XL39; PAX-XL39A; PAX-XL39C; PAX-XL60; PAX-XL70; PAX-XL71; PAX-XL72

MSDS Code: PAX

Product Use: Water treatment chemical

Emergency Contacts (24 hr.)

**FOR EMERGENCIES INVOLVING CHEMICAL SPILL OR RELEASE, CALL
CHEMTREC 1-800-424-9300**

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

| Hazardous Ingredient(s) | % (w/w) | ACGIH TWA | CAS No. |
|-------------------------|-------------------------------|--|-----------|
| Polyaluminum chloride | 8 – 24 (as Aluminum oxide) | 2 mg/m ³ (as Al) (Aluminum salts, soluble) | 1327-41-9 |
| | 20-83 (basicity) | | |

SECTION 3 – HAZARD IDENTIFICATION

Emergency Overview: CORROSIVE! Inhalation, ingestion or skin contact with material may cause injury. Causes eye and skin irritation. Mist and Vapor: Causes respiratory tract and mucous membrane irritation.

Potential Health Effects:**Inhalation:** Irritation to mucous membranes**Skin Contact:** Possible irritation**Eye Contact:** May cause irritation with redness and swelling.**Ingestion:** Irritation of the mouth and stomach.**Sub-chronic Effects:** No data available**Chronic Effects:** None known**Carcinogenicity:** Polyaluminum chloride is not classified as a carcinogen by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as a carcinogen by OSHA (Occupational Safety and Health Administration) and not listed as a carcinogen by NTP (National Toxicology Program).**SECTION 4 – FIRST AID MEASURES****General:** If you feel unwell, seek medical advice (show the label where possible).**Inhalation:** If symptoms are experienced, move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Obtain medical attention.**Skin Contact:** Remove contaminated clothing, jewelry and shoes. Immediately wash skin with soap or mild detergent and running water for at least 15 minutes, until no evidence of chemical remains. For minor skin contact, avoid spreading material on unaffected skin. Obtain medical attention if irritation persists.**Eye Contact:** Immediately flush eyes with running water for at least 15 minutes, occasionally lifting upper and lower lids, until no evidence of chemical remains. Obtain medical attention if irritation persists.**Ingestion:** If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.**NOTE TO PHYSICIAN: Antidote:** There is no specific antidote for aluminum chlorohydrate. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.**SECTION 5 – FIRE FIGHTING MEASURES**

| | |
|--|------------------------------------|
| Flash point | Not applicable. |
| Flammable Limits (Lower) | Not applicable |
| Flammable Limits (Upper) | Not applicable |
| Auto Ignition Temperature | Not applicable |
| Combustion and Thermal Decomposition Products | Hydrogen chloride, aluminum oxides |
| Rate of Burning | Does not burn |
| Explosive Power | Not applicable |
| Sensitivity to Static Discharge | Not available |

Fire and Explosion Hazards: During a fire, irritating/toxic hydrogen chloride gas may be generated.

Extinguishing Media: Water spray, fog or regular foam appropriate for surrounding material. Cool any exposed containers with water.

Special Information:

Fire fighters should wear protective equipment and self-contained breathing apparatus with full-face piece operated in positive pressure mode. Move exposed containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

NOTE: Also see “Section 10 – Stability and Reactivity”

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spills, Leaks or Release:

- Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up.
- Wear adequate personal protective equipment. **DO NOT TOUCH SPILLED MATERIAL.**
- Stop leak if possible without personal risk.
- Small Spills: Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water.
- Large Spills: Prevent entry into sewers and confined areas. Dike if possible. Keep unnecessary people away, isolate hazard area and deny entry. Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water. Consider insitu neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivating Chemicals: Lime, liming agents, sodium carbonate (soda ash), and sodium bicarbonate

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note - Clean-up material may be a RCRA Hazardous Waste on disposal.

SECTION 7 – HANDLING AND STORAGE

Handling: Observe all warnings and precautions listed for the product. Wear rubber gloves, safety glasses and protective work clothing. Keep containers closed when not in use. Empty containers may contain hazardous residues. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

Storage Requirements: Store in corrosion-proof area away from incompatible substances. Store in tightly closed container, preferably the supplier container. Protect from damage. Keep dry. Suitable materials for construction of storage and handling facilities include synthetic rubber-lined steel, corrosion-resistant fiberglass-reinforced plastics (FRP), ceramics, tetrafluoroethylene polymer (PTFE), polyvinylidene fluoride (PVDF), polyethylene, polypropylene, and polyvinyl chloride (PVC). Steel, (stainless and mild), aluminum, nickel, copper, or brass is **NOT** suitable. Read the label before use.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION**PREVENTIVE MEASURES**

Recommendations listed in this section indicate the type of equipment, which will provide protection against over-exposure to this product. Conditions of use, adequacy of engineering or other control measures and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: A ventilation system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Ensure that eyewash station and safety showers are proximal to the workstation location.

PERSONAL PROTECTIVE EQUIPMENT

Eye Protection: Wear splash resistant chemical goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Recommended Protective Material: Neoprene or rubber

Respiratory Protection: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. For exposures under 20 mg/m^3 , a NIOSH/MSHA approved air-purifying respirator with high efficiency particulate cartridge(s) may be used. For unknown concentration, use any supplied air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode.

EXPOSURE GUIDELINES

Product: ACGIH: TLV – 2mg/m^3 (as Al) (Aluminum salts, soluble)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--------------------------|--|
| Alternate Name | Aluminum Chlorohydrate, PAX-10; PAX-11; PAX-14; PAX-18; PAX-28; PAX-XL1; PAX-XL9; PAX-XL19; PAX-XL30; PAX-XL30A; PAX-XL30C; PAX-XL31; PAX-XL31A; PAX-XL31C; PAX-XL32; PAX-XL32A; PAX-XL32C; PAX-XL37; PAX-XL39; PAX-XL39A; PAX-XL39C; PAX-XL60; PAX-XL70; PAX-XL71; PAX-XL72 |
| Chemical Name | Poly(aluminum hydroxy) chloride |
| Chemical Family | Inorganic salt |
| Molecular Formula | $\text{Al}_2(\text{OH})_x\text{Cl}_{6-x}$ $0 < x < 6$ |
| Molecular Weight | 133.5 -174.5 |
| Appearance | Clear, or clear amber to yellow liquid |
| Odor | Pungent chlorine odor |

| | |
|--|-------------------------------|
| pH | 0.5-4.4 |
| Vapor Pressure (mm Hg at 20 °C) | ≈ 18 |
| Vapor Density (Air = 1) | < 1 |
| Freezing Point | -20 to -5° C (-4 to 23° F) |
| Boiling Point | 100 to 110 °C (212 to 320° F) |
| Solubility (Water) | 100% Soluble |
| Solubility (Other) | Not available |
| Specific Gravity | 1.15 to 1.40 @ 25 °C (77° F) |
| Evaporation Rate | Not applicable |
| % Volatile Organic Compounds | Not applicable |

SECTION 10 – STABILITY AND REACTIVITY

Hazardous Decomposition Products: Thermal decomposition: hydrochloric acid, aluminum oxides.

Chemical Stability: Stable at normal temperatures and pressure.

Conditions to Avoid: None

Incompatibility with other Substances: Bases (alkaline materials) such as ammonia and its solutions, carbonates, sodium hydroxide (caustic), and potassium hydroxide. Corrosive to common metals such as aluminum, stainless and mild steel, nickel, copper, and brass.

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Polyaluminum chloride: No data available

Aluminum chloride hydroxide: (base unit of polymer- monomer)

Irritation data: 150mg/m³ day(s)-intermittent skin-human mild

Toxicity data: 25mg/m³/6 hour(s)-2 year(s) intermittent inhalation-rat TCLo;

25g/m³/6 hour(s)-2 year(s) intermittent inhalation-guinea pig TCLo

Mutagenicity: Not available

Reproductive Effects: aluminum chlorohydrate 50% w/w solution:

Reproductive Effector: Oral rat TDLo 13 g/kg 7-19 day(s) pregnant female continuous

Teratogenicity and Fetotoxicity: Not available

Synergistic Materials: Not available

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information: fish toxicity: 10000 µg/L 24 week(s) (Mortality) Coho salmon, silver salmon (Oncorhynchus kisutch)

Persistence and Degradation: No data available

SECTION 13 – DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal.

Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

RCRA: Hazardous if pH is less than 2. Test waste material for corrosivity, D002, prior to disposal.

SECTION 14 – TRANSPORT INFORMATION

| | Canada (TDG) | U.S. (DOT)* |
|------------------------------|---|--------------------|
| Shipping Name | Corrosive liquid, acidic, inorganic, n.o.s. | Excepted |
| Hazard Class/Division | 8: Corrosive liquid | Not applicable |
| Identification No. | UN3264 | UN3264 |
| Packing Group: | III | Not applicable |

***Note:** This product is excepted from DOT regulations under 49 CFR 173.154(d).
Packaging material must not be aluminum, steel or be degraded by this material.

Transportation Emergency Telephone Number: CHEMTREC 1-800-424-9300.

IATA/ICAO Class: 8

SECTION 15 – REGULATORY INFORMATION**USA CLASSIFICATION:**

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 372: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40 CFR 370.21):

Acute: N

Chronic: N

Fire: N

Reactive: N

Sudden Release: N

OSHA Process Safety (29CFR1910.119): N

TSCA Inventory Status: Y

This product does not contain, nor is it manufactured with, ozone-depleting substances.

Other Regulations/Legislation which apply to this product:

California Proposition 65: N

CANADIAN CLASSIFICATION

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all information required by the CPR.

Controlled Products Regulation (WHMIS) Classification:

E: Corrosive

CEPA / Canadian Domestic Substances List (DSL): The substance in this product is on the Canadian Domestic Substances List (CEPA DSL).

EEC CLASSIFICATION

EINECS: 215-477-2

SECTION 16 – OTHER INFORMATION

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and PIONEER will not be liable for any damages, losses, injuries or consequential damages that may result from the use of, or reliance on, any information contained herein. This Material Safety Data Sheet is valid for three years.

National Fire Protection Association (NFPA) Rating**Hazardous Materials Identification System (HMIS) Rating**

| | NFPA | HMIS |
|------------|-------------|-------------|
| HEALTH | 1 | 1 |
| FIRE | 0 | 0 |
| REACTIVITY | 0 | 0 |

4 = Extreme/Severe

3 = High/Serious

2 = Moderate

1 = Slight

0 = Minimum

REFERENCES:

1. American Water Works Association, ANSI/AWWA B408-93, "Liquid Polyaluminum Chloride", Colorado, Dec. 1993
2. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, Updated Nov 1998.
3. NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, June 1997
4. Sax, N.I., "Dangerous Properties of Industrial Materials", 7th Edition, 1989
5. "1999 Threshold Limit Values and Biological Exposure Indices", American Conference of Government Industrial Hygienists, 1999.
6. Merck, 11th Edition, 1989
7. Supplier's Material Safety Data Sheets.

Legend:

| | |
|------------------|--|
| CAS # | - Chemical Abstracts Service Registry Number |
| CERCLA | - Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | - Code of Federal Regulations |
| DOT | - Department of Transportation |
| EPA | - Environmental Protection Agency |
| LC ₅₀ | - The concentration of material in air expected to kill 50% of a group of test animals |
| LD ₅₀ | - Lethal Dose expected to kill 50% of a group of test animals |
| MSHA | - Mine Safety and Health Administration |
| NIOSH | - National Institute for Occupational Safety and Health |
| PEL | - Permissible Exposure Limit |
| PVC | - Polyvinyl chloride |
| RCRA | - Resource Conservation and Recovery Act |
| SARA | - Superfund Amendments and Reauthorization Act of the U.S. EPA |
| STEL | - Short Term Exposure Limit |
| TDG | - Transportation of Dangerous Goods Act/Regulations |
| TLV | - Threshold Limit Value |
| TSCA | - Toxic Substances Control Act |
| TWA | - Time-Weighted Average |

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