

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Trade Name:** Aluminum Fluoride

**Chemical Formula:** AlF<sub>3</sub>

**Manufacturer Item Number:** AL-0070

**Manufacturer:** Lorad Chemical Corporation  
1200 19th Street North  
Saint Petersburg, Florida, 33713  
United States of America

**Telephone:** +1 (727) 826-5511

**Fax:** +1 (727) 826-5510

**Emergency Contact:** (800) 255-3924 (US & Canada)  
+1 (813) 248-0573 (International)

## 2. HAZARD IDENTIFICATION

**Signal Word:** Danger

**Pictograms:**



**Hazard Statements:**

H301 Toxic if swallowed.  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H372 Causes damage to organs through prolonged or repeated exposure.

**Precautionary Statements:**

P260 Do not breathe dust / fumes / gas / mist / vapors / spray.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink, or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves / protective clothing / eye protection / face protection.  
P301+310 IF SWALLOWED: Immediately call a POISON CENTER or physician.  
P301+330+331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P302+352 IF ON SKIN: Wash with plenty of water.  
P303+361+353 IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water.  
P304+340 IN INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  
P310 Immediately call a POISON CENTER or physician.  
P321 Specific treatment - Ingest soluble Calcium in any form such as milk or calcium gluconate solution if ingested. Use Calcium Gluconate paste on skin if skin exposed.  
P330 Rinse mouth.  
P332+313 If skin irritation occurs: Get medical advice / attention.  
P337+313 If eye irritation persists get medical advice / attention.  
P362+364 Take off contaminated clothing and wash it before reuse.  
P403+233 Store in a well ventilated place. Keep container tightly closed.  
P405 Store locked up.  
P501 Dispose of contents / container in accordance with local / regional / national / international regulations.

**HMIS Health Ratings (0-4)**

|                 |   |
|-----------------|---|
| - Health:       | 3 |
| - Flammability: | 0 |
| - Physical:     | 0 |

**3. COMPOSITION**

**Additional Names:** Aluminum Trifluoride

**Percentage:** 100 wt%

**CAS #:** 7784-18-1

**EC #:** 232-051-1

**4. FIRST AID PROCEDURES**

**General Treatment** Consult a physician. Show this SDS to the doctor in attendance. Move out of dangerous area.

**Special Treatment:** Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration / absorption of the fluoride ion. Treatment should be directed towards binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas until the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or milk of magnesia to conscious victims.

**Important Symptoms:** Conditions such as hypocalcemia, hypomagnesemia, and cardiac arrhythmias should be monitored for, since they can occur after exposure.

**Inhalation:** If breathed in, move person to fresh air. If not breathing give artificial respiration. Consult a physician.

**Ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Ingest soluble calcium in any form such as milk, calcium gluconate solution, calcium lactate solution, or tablets of calcium carbonate. Consult a physician.

**Skin:** Wash off with soap and plenty of water. Consult a physician. First treatment with calcium gluconate paste.

**Eyes:** Flush eyes with water as a precaution.

**5. FIREFIGHTING MEASURES**

**Flammability:** Not Flammable.

**Special Hazards from Substance:** Aluminum Fluoride reacts violently when impacted in contact with Sodium, Sodium Oxides or Potassium. When involved in fire, Aluminum Fluoride may evolve highly toxic fumes. Aluminum Fluoride may explode when heated with reducing agents.

**Extinguishing Media:** Use dry chemical, or carbon dioxide.

**Special Fire Fighting Procedures:** Wear self-contained breathing apparatus for firefighting if necessary.

**6. ACCIDENTAL RELEASE MEASURES**

**If Material is Released / Spilled:** Wear appropriate respiratory and protective equipment specified in special protection information. Avoid dust formation. Avoid breathing dust, vapors, mist, or gas. Isolate spill area and provide ventilation. Evacuate personnel to safe areas. Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable closed containers for disposal.

**Environmental Precautions:** Prevent further leakage or spills if safe to do so. Do not allow to enter drains, sewers, or watercourses.

## 7. HANDLING AND STORAGE

**Handling Conditions:** Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

**Storage Conditions:** Keep container tightly closed in a dry and well-ventilated place.

**Work / Hygienic Maintenance:** Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

**Ventilation:** Provide appropriate exhaust ventilation at places where dust is formed.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

| Permissible Exposure Limits: | Authority  | Basis | Limit                  | Remarks  |
|------------------------------|------------|-------|------------------------|--|
|                              | ACGIH      | BEI   | 3.0 mg/g               | Fluorides in urine prior to shift (16 hours after exposure ceases)   |
|                              | ACGIH      | BEI   | 10.0 mg/g              | Fluorides in urine end of shift (as soon as possible after exposure ceases)                                      |
|                              | ACGIH      | BEI   | 2.0 mg/l               | Fluorides in urine prior to shift (16 hours after exposure ceases)   |
|                              | ACGIH      | BEI   | 3.0 mg/l               | Fluorides in urine end of shift (as soon as possible after exposure ceases)                                      |
|                              | California | PEL   | 2.50 mg/m <sup>3</sup> | Fluorides - California permissible exposure limit for chemical contaminants (Title 8, Article 107) (8 hour STEL) |
|                              | OSHA       | PEL   | 15.0 mg/m <sup>3</sup> | Aluminum Oxide (total dust)  |
|                              | OSHA       | PEL   | 5.0 mg/m <sup>3</sup>  | Aluminum Oxide (respirable dust)   |

| Threshold Limit Value: | Authority | Basis | Limit                  | Remarks   |
|------------------------|-----------|-------|------------------------|---|
|                        | OSHA      | OEL   | 2.50 mg/m <sup>3</sup> | Fluorides (as F) - USA Occupational Exposure Limit (Table Z-2)  |
|                        | OSHA      | OEL   | 2.50 mg/m <sup>3</sup> | Fluoride as dust - USA Occupational Exposure Limit (air contaminant) (Table Z-1)  |
|                        | ACGIH     | TLV   | 2.50 mg/m <sup>3</sup> | Bone damage. Fluorosis. Substance for which there is a biological exposure index. Not classifiable as human carcinogen. |
|                        | ACGIH     | TLV   | 1.0 mg/m <sup>3</sup>  | Aluminum Oxide (respirable dust averaged over 8 hour work shift)  |

**Special Equipment:** No Data Available.

**Respiratory Protection:** Respiratory protection is not required but is recommended. Where protection from nuisance levels of dust are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

|                           |  |
|---------------------------|--|
| <b>Protective Gloves:</b> | Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching the glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. |
| <b>Eye Protection:</b>    | Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).   |
| <b>Body Protection:</b>   | Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.  |

## 9. PHYSICAL AND CHEMICAL CHARACTERISTICS

|  |                           |  |                                      |
|--|---------------------------|--|--------------------------------------|
| <b>Color:</b>                          | White                     | <b>Molecular Weight:</b>                       | 83.98 g/mol                          |
| <b>Forms:</b>                          | Powder, Granules, Tablets | <b>Density:</b>                                | 3.1 g/cm <sup>3</sup> at 25°C (77°F) |
| <b>Odor:</b>                           | Odorless                  | <b>pH:</b>                                     | 5.9 at 20°C (68°F)                   |
| <b>Water Solubility:</b>               | 0.0053 g/l at 20°C (68°F) | <b>Auto-Ignition Temperature:</b>              | No Data Available                    |
| <b>Boiling Point:</b>                  | 1,537°C (2,799°F)         | <b>Evaporation Rate:</b>                       | No Data Available.                   |
| <b>Melting Point / Freezing Point:</b> | > 1,291°C (> 2,355.8°F)   | <b>Flammability or Explosive Limits:</b>       | No Data Available.                   |
| <b>Vapor Pressure:</b>                 | No Data Available.        | <b>Partition Coefficient: n-octanol/ water</b> | No Data Available.                   |
| <b>Vapor Density:</b>                  | No Data Available.        | <b>Decomposition Temperature:</b>              | No Data Available.                   |
| <b>Flash Point:</b>                    | No Data Available.        | <b>Viscosity:</b>                              | No Data Available.                   |

## 10. REACTIVITY

|  |   |
|--|---|
| <b>Stability:</b>                        | Stable under recommended storage conditions.  |
| <b>Reacts with:</b>                      | Acids, Sodium / Sodium Oxides, Potassium  |
| <b>Incompatible Conditions:</b>          | No Data Available.  |
| <b>Hazardous Decomposition Products:</b> | Hazardous decomposition products formed under fire conditions includes Hydrogen Fluoride or Aluminum Oxide. |

## 11. TOXICOLOGICAL INFORMATION

|                                      |  |
|--------------------------------------|--|
| <b>Potential Health Effects:</b>     | <p>Eyes: May cause irritation.</p> <p>Skin: Prolonged or repeated contact may lead to irritation.</p> <p>Ingestion: Can cause diffuse abdominal pain, diarrhea, vomiting, excessive salivation, thirst, perspiration, painful spasms of the limbs in some cases, albuminuria. Hypocalcemia at high doses.</p> <p>Inhalation: Acute overexposure can cause respiratory tract irritation and nausea.</p> <p>Chronic: Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Also may lead to excessive calcification of the bones, teeth, ligaments, and tendons.</p> |
| <b>Signs and Symptoms:</b>           | Burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, salivation, abdominal pain, fever, breathing difficulties.  |
| <b>Aggravate Medical Conditions:</b> | Respiratory diseases.  |

|                            |  |
|----------------------------|--|
| <b>Median Lethal Dose:</b> | 1-4 grams by ingestion.  |
| <b>Carcinogen:</b>         | <p>IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.</p> <p>ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.</p> <p>NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.</p> <p>OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.</p> |

## 12. ECOLOGICAL INFORMATION

|                                       |  |
|---------------------------------------|--|
| <b>Aquatic Toxicity:</b>              | <p>Toxicity to fish: LC50 - Danio rerio (zebra fish) -&gt; 10mg/l - 96h (OECD Test Guideline 203)<br/>Remarks: No toxicity at the limit of solubility</p> <p>Toxicity to daphnia and other aquatic invertebrates: LC50 Daphnia magna (water flea) -&gt; 10mg/l - 48h (EECD Test Guideline 202)<br/>Remarks: No toxicity at the limit of solubility</p> <p>Toxicity to algae: LC50 Chlorella vulgaris (fresh water algae) - 8.4 mg/l - 3d</p> |
| <b>Persistence and degradability:</b> | No Data Available.   |
| <b>Bioaccumulative potential:</b>     | No Data Available.   |
| <b>Notes:</b>                         | No Data Available.   |

## 13. DISPOSAL CONSIDERATIONS

|                  |   |
|------------------|---|
| <b>Disposal:</b> | Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Empty containers should be taken to an appropriate waste handling site for recycling or disposal. Dispose of in accordance with local, state, or national regulations. |
|------------------|---|

## 14. TRANSPORTATION DATA

|                   |   |
|-------------------|---|
| <b>Hazardous:</b> | <p><b>DoT:</b> Hazardous for Transportation</p> <p><b>IMDG:</b> Hazardous for Transportation</p> <p><b>IATA:</b> Hazardous for Transportation</p> |
|-------------------|---|

**Pictogram:**



|                       |                          |
|-----------------------|--------------------------|
| <b>Hazard Class:</b>  | 8 - Corrosive Substances |
| <b>Packing Group:</b> | II                       |
| <b>UN Number:</b>     | UN3260                   |

**Proper Shipping Name:** **DoT:** Corrosive solid, acidic, inorganic, n.o.s. (Aluminum Fluoride)

**IMDG:** CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Aluminum Fluoride)  
Marine Pollutant: No  
EMS-No: F-A, S-B

**IATA:** Corrosive solid, acidic, inorganic, n.o.s. (Aluminum Fluoride)

## 15. REGULATORY INFORMATION

**SARA 302 Components** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components** This material does not contain any chemical component with known CAS numbers that exceed the threshold (de minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards** No SARA Hazards.

**Massachusetts Right to Know Components** No components are subject to the Ma. Right to Know Act.

**Pennsylvania Right to Know Components** Aluminum Fluoride (CAS No. 7784-18-1).

**New Jersey Right to Know Components** Aluminum Fluoride (CAS No. 7784-18-1).

**California Prop. 65 Components** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

## 16. OTHER INFORMATION

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