## 1 Identification

- **Product name**
  - **Trade name:** Aluminum fluoride, anhydrous, 99+%
  - **Item number:** 13-0075
  - **CAS Number:** 7784-18-1
  - **EC number:** 232-051-1

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Strem Chemicals, Inc.
    - 7 Mulliken Way
    - NEWBURYPORT, MA 01950
    - USA
    - info@strem.com
  - **Information department:** Technical Department
  - **Emergency telephone number:**
    - EMERGENCY: CHEMTREC: +1 (800) 424-9300
    - During normal opening times: +1 (978) 499-1600

## 2 Hazard(s) identification

- **Classification of the substance or mixture**
  
  ![GHS07](image)

  Skin Irrit. 2  H315  Causes skin irritation.
  Eye Irrit. 2A  H319  Causes serious eye irritation.
  STOT SE 3  H335  May cause respiratory irritation.

- **Label elements**
  - **GHS label elements**
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**

  ![GHS07](image)

- **Signal word** Warning

- **Hazard-determining components of labeling:**
  - aluminium fluoride

- **Hazard statements**
  - H315  Causes skin irritation.
  - H319  Causes serious eye irritation.
  - H335  May cause respiratory irritation.

- **Precautionary statements**
  - P231 Handle under inert gas.
  - P262 Do not get in eyes, on skin, or on clothing.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

(Contd. on page 2)
Trade name: Aluminum fluoride, anhydrous, 99+%

4 First-aid measures

- Description of first aid measures
  - After inhalation: In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact: Immediately wash with water and soap and rinse thoroughly.
  - After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult doctor.
  - Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture: No further relevant information available.
Trade name: Aluminum fluoride, anhydrous, 99+%  

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- Reference to other sections
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

7 Handling and storage

- Handling: Handle under inert gas.
- Precautions for safe handling: Open and handle receptacle with care.
- Information about protection against explosions and fires: No special measures required.
- Conditions for safe storage, including any incompatibilities
- Storage: Store contents under inert gas.
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Not required.
- Further information about storage conditions:
  - Keep receptacle tightly sealed.
  - Store in cool, dry conditions in well sealed receptacles.
- Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters

  - Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL Long-term value: 2.5 mg/m³ as F</th>
<th>REL Long-term value: 2.5 mg/m³ as F</th>
<th>TLV Long-term value: 2.5 mg/m³ as F, BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>7784-18-1 aluminium fluoride</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
· Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Limit Value</th>
<th>Medium</th>
<th>Time</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>7784-18-1 aluminium fluoride</td>
<td>2 mg/L</td>
<td>urine</td>
<td>prior to shift</td>
<td>Fluoride (background, nonspecific)</td>
</tr>
<tr>
<td></td>
<td>3 mg/L</td>
<td>urine</td>
<td>end of shift</td>
<td>Fluoride (background, nonspecific)</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Avoid contact with the eyes and skin.

· Breathing equipment:
  - In case of brief exposure or low pollution use respiratory filter device.
  - In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· Protection of hands:

  Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves
  - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· Penetration time of glove material
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection:

  Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:
  - Form: Powder
  - Color: White
Trade name: Aluminum fluoride, anhydrous, 99+%

· Odor: Odorless
· Odor threshold: Not determined.
· pH-value: Not applicable.
· Change in condition
  Melting point/Melting range: 1291 subl °C (2356 subl °F)
  Boiling point/Boiling range: 1291 °C (2356 °F)
· Flash point: Not applicable.
· Flammability (solid, gaseous): Not determined.
· Ignition temperature:
  Decomposition temperature: Not determined.
· Auto igniting: Not determined.
· Danger of explosion: Product does not present an explosion hazard.
· Explosion limits:
  Lower: Not determined.
  Upper: Not determined.
· Vapor pressure at 1238 °C (2260 °F): 1mm (1238 hPa (1mm (929 mm Hg)
· Density at 20 °C (68 °F): 2.88 g/cm³ (24.034 lbs/gal)
· Relative density Not determined.
· Vapor density Not applicable.
· Evaporation rate Not applicable.
· Solubility in / Miscibility with
  Water: Insoluble.
· Partition coefficient (n-octanol/water): Not determined.
· Viscosity:
  Dynamic: Not applicable.
  Kinematic: Not applicable.
· Solvent content:
  Organic solvents: 0.0 %
  VOC content: 0.0 g/l / 0.00 lb/gl
· Solids content: 100.0 %
· Other information: No further relevant information available.

10 Stability and reactivity

· Reactivity: No further relevant information available.
· Chemical stability
  · Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
  · Possibility of hazardous reactions: No dangerous reactions known.
  · Conditions to avoid: No further relevant information available.
  · Incompatible materials: No further relevant information available.
  · Hazardous decomposition products: No dangerous decomposition products known.
11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
    - Sensitization: No sensitizing effects known.
  - Additional toxicological information:

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - 7784-18-1 aluminium fluoride 3
  - NTP (National Toxicology Program)
    - Substance is not listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    - Substance is not listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability No further relevant information available.
  - Behavior in environmental systems:
  - Bioaccumulative potential No further relevant information available.
  - Mobility in soil No further relevant information available.
  - Additional ecological information:
    - General notes: Not known to be hazardous to water.
    - Results of PBT and vPvB assessment
      - PBT: Not applicable.
      - vPvB: Not applicable.
    - Other adverse effects No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation:
    - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  - Uncleaned packagings:
    - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADN, IMDG, IATA not regulated
- UN proper shipping name
  - DOT, ADN, IMDG, IATA not regulated
Trade name: Aluminum fluoride, anhydrous, 99+% (Contd. of page 6)

- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA
  - Class not regulated

- Packing group
  - DOT, IMDG, IATA not regulated

- Environmental hazards:
  - Marine pollutant: No

- Special precautions for user
  - Not applicable.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- UN "Model Regulation": not regulated

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

  - Section 355 (extremely hazardous substances):
    Substance is not listed.

  - Section 313 (Specific toxic chemical listings):
    Substance is not listed.

  - TSCA (Toxic Substances Control Act):
    Substance is listed.

  - Proposition 65

  - Chemicals known to cause cancer:
    Substance is not listed.

  - Chemicals known to cause reproductive toxicity for females:
    Substance is not listed.

  - Chemicals known to cause reproductive toxicity for males:
    Substance is not listed.

  - Chemicals known to cause developmental toxicity:
    Substance is not listed.

- Carcinogenic categories

  - EPA (Environmental Protection Agency)
    Substance is not listed.

  - TLV (Threshold Limit Value established by ACGIH)
    7784-18-1 aluminium fluoride A4

  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    Substance is not listed.

- GHS label elements
  The substance is classified and labeled according to the Globally Harmonized System (GHS). (Contd. on page 8)
Trade name: Aluminum fluoride, anhydrous, 99+% 

- Hazard pictograms

GHS07

- Signal word Warning

- Hazard-determining components of labeling:
  aluminium fluoride

- Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H335 May cause respiratory irritation.

- Precautionary statements
  P231 Handle under inert gas.
  P262 Do not get in eyes, on skin, or on clothing.
  P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P403+P233 Store in a well-ventilated place. Keep container tightly closed.
  P422 Store contents under inert gas.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS: Technical Department.
- Contact: Technical Director
- Date of preparation / last revision 07/29/2016 / -
- Abbreviations and acronyms:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  BEI: Biological Exposure Limit
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3