SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- Trade name: POTASSIUM ALUMINIUM FLUORIDE
- Chemical name: Aluminium potassium fluoride

1.2 Relevant identified uses of the substance or mixture and uses advised against

Uses of the Substance / Mixture
- Welding and soldering agents
- Abrasive
- Domestic use
- Abrasive

1.3 Details of the supplier of the safety data sheet

Company
SOLVAY FLUORIDES, LLC
3737 Buffalo Speedway,
Suite 800,
Houston, TX 77098
USA
Tel: 800-515-6065

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTREC (24-Hour Number): 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although WHMIS has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

Hazardous Products Regulations (WHMIS 2015)

- Acute toxicity, Category 4: H332: Harmful if inhaled.
- Eye irritation, Category 2A: H319: Causes serious eye irritation.
- Effects on or via lactation: H362: May cause harm to breast-fed children.
- Specific target organ systemic toxicity - repeated exposure, Category 1: H372: Causes damage to organs through prolonged or repeated exposure if inhaled. (Respiratory Tract), Inhalation
- Acute aquatic toxicity, Category 3: H402: Harmful to aquatic life.
- Chronic aquatic toxicity, Category 3: H412: Harmful to aquatic life with long lasting effects.
2.2 Label elements

**Hazardous Products Regulations (WHMIS 2015)**

**Pictogram**

- **Signal Word**
  - Danger

**Hazard Statements**
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H362 May cause harm to breast-fed children.
- H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.
- H412 Harmful to aquatic life with long lasting effects.

**Precautionary Statements**

**Prevention**
- P201 Obtain special instructions before use.
- P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P263 Avoid contact during pregnancy and while nursing.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P273 Avoid release to the environment.
- P280 Wear eye protection/ face protection.

**Response**
- P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308 + P313 IF exposed or concerned: Get medical advice/ attention.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.

2.3 Other hazards which do not result in classification
- H402: Harmful to aquatic life.
- H412: Harmful to aquatic life with long lasting effects.

### SECTION 3: Composition/information on ingredients

#### 3.1 Substance

- Chemical nature  
  Multi constituent substance
### WHMIS Hazardous Ingredients and Impurities

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Identification number CAS-No.</th>
<th>Concentration [% wt/wt or V/V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum potassium fluoride</td>
<td>60304-36-1</td>
<td>&gt;= 99 - &lt;= 100</td>
</tr>
</tbody>
</table>

#### 3.2 Mixture

Not applicable, this product is a substance.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

**In case of inhalation**
- Remove the subject from dusty environment and let him blow his nose.
- Oxygen or artificial respiration if needed.
- If symptoms persist, call a physician.

**In case of skin contact**
- Take off contaminated clothing and wash before reuse.
- Wash off with plenty of water.
- If symptoms persist, call a physician.

**In case of eye contact**
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- If eye irritation persists, consult a specialist.

**In case of ingestion**
- Immediate medical attention is required.
- If victim is conscious:
  - If swallowed, rinse mouth with water (only if the person is conscious).
  - Give to drink a 1% aqueous calcium gluconate solution.
  - Do NOT induce vomiting.
- If victim is unconscious:
  - Artificial respiration and/or oxygen may be necessary.

### 4.2 Most important symptoms and effects, both acute and delayed

**In case of inhalation**

**Symptoms**
- At high concentrations:
  - Chemical pneumonitis

**Effects**
- Irritating to mucous membranes
- Cough

**Repeated or prolonged exposure**
- Risk of sore throat, nose bleeds
- Risk of chronic bronchitis
- Risk of chronic pulmonary inflammation
In case of skin contact

Effects
- slight irritation
- Repeated exposure may cause skin dryness or cracking.
- Chronic exposure may cause dermatitis.

In case of eye contact

Effects
- Moderate eye irritation

In case of ingestion

Symptoms
- Nausea
- Vomiting
- Abdominal pain
- Diarrhea

Effects
- risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician
- Indication of immediate medical attention and special treatment needed, if necessary

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
- None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting
- The product is not flammable.
- Not combustible.
- Heating can release hazardous gases.

Hazardous combustion products:
- Hydrogen fluoride

5.3 Advice for firefighters

Special protective equipment for fire-fighters
- In the event of fire, wear self-contained breathing apparatus.
- Fire fighters must wear fire resistant personnel protective equipment.
- Wear chemical resistant oversuit

Further information
- Control the use of water due to environmental risk (see section 6).
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel
- Keep people away from and upwind of spill/leak.
- Avoid dust formation.

Advice for emergency responders
- Wear self-contained breathing apparatus and protective suit.
- Sweep up to prevent slipping hazard.
- Prevent further leakage or spillage.

6.2 Environmental precautions
- Discharge into the environment must be avoided.
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Prevent product from entering sewage system.

6.3 Methods and materials for containment and cleaning up
- Avoid dust formation.
- Sweep up and shovel into suitable containers for disposal.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.
- Treat recovered material as described in the section "Disposal considerations".

6.4 Reference to other sections
- Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
- Use only in well-ventilated areas.
- Use only equipment and materials which are compatible with the product.
- Keep away from heat.

Hygiene measures
- Use only in an area equipped with a safety shower.
- When using do not eat, drink or smoke.
- Handle in accordance with good industrial hygiene and safety practice.
- Eye wash bottle with pure water

7.2 Conditions for safe storage, including any incompatibilities
Technical measures/Storage conditions

- Keep in a dry place.
- Store in original container.
- Keep container closed.
- Avoid dust formation.
- Refer to protective measures listed in sections 7 and 8.
- Keep away from:
  - Incompatible products

Packaging material

Suitable material
- Paper.
- Polyethylene

Unsuitable material
- No data available

7.3 Specific end use(s)
- Contact your supplier for additional information

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters

Components with workplace occupational exposure limits

Consult local authorities for acceptable exposure limits.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum potassium fluoride</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bone damage, Fluorosis, Substances for which there is a Biological Exposure Index or Indices (see BEI® section), Not classifiable as a human carcinogen, varies Expressed as :Fluorine</td>
</tr>
<tr>
<td>Aluminum potassium fluoride</td>
<td>TWA</td>
<td>0.14 mg/m³</td>
<td>Solvay Acceptable Exposure Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure : Respirable</td>
</tr>
</tbody>
</table>

Biological Exposure Indices

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum potassium fluoride</td>
<td>BEI</td>
<td>2 mg/l Fluoride Urine Prior to shift (16 hours after exposure ceases)</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

Control measures

Engineering measures
- Ensure adequate ventilation.
- Refer to protective measures listed in sections 7 and 8.

Individual protection measures

Respiratory protection
- When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
- In case of insufficient ventilation, wear suitable respiratory equipment.
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/national standards.
- Use NIOSH approved respiratory protection.

Hand protection
- Protective gloves - impervious chemical resistant:
  - PVC

Eye protection
- Dust proof goggles obligatory.

Skin and body protection
- Long sleeved clothing

Hygiene measures
- Use only in an area equipped with a safety shower.
- When using do not eat, drink or smoke.
- Handle in accordance with good industrial hygiene and safety practice.
- Eye wash bottle with pure water

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

Appearance
- Form: powder
- Physical state: solid
- Color: white
- Particle size: 2 - 6 µm (50 %)

Odor
- odorless
SAFETY DATA SHEET

POTASSIUM ALUMINIUM FLUORIDE

Revision Date 01/18/2018

Odor Threshold
No data available

Molecular weight
142 g/mol

pH
5.0 - 7.0 (50 g/l) (68 °F (20 °C))
saturated aqueous solution

Melting point/freezing point
Melting point/range: > 1022 °F (> 550 °C)

Initial boiling point and boiling range
Boiling point/boiling range:
Not applicable

Flash point
Not applicable

Evaporation rate (Butylacetate = 1)
No data available

Flammability (solid, gas)
The product is not flammable.

Flammability / Explosive limit
Explosiveness:
Not explosive

Autoignition temperature
Not applicable

Vapor pressure
Not applicable

Vapor density
No data available

Density
Bulk density: 350 - 550 kg/m3 (68 °F (20 °C))

Relative density
2.94 (68 °F (20 °C))

Solubility
Water solubility:
4.57 g/l (68 °F (20 °C))(pH: 5.8)

Partition coefficient: n-octanol/water
Not applicable

Decomposition temperature
> 1292 °F (> 700 °C)

Viscosity
No data available

Explosive properties
No data available

Oxidizing properties
Not considered as oxidizing.

9.2 Other information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
10.2 Chemical stability
- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
- no data available

10.4 Conditions to avoid
- none

10.5 Incompatible materials
- Strong acids and strong bases

10.6 Hazardous decomposition products
- Hydrogen fluoride

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Acute oral toxicity
LD50: 2,150 mg/kg - Rat, female
The product has a low acute toxicity

LD50: 2,720 mg/kg - Rat, male
The product has a low acute toxicity

Acute inhalation toxicity
LC50 - 4 h (aerosol): 1 - 5 mg/l - Rat, male and female
This product is classified as acute toxicity category 4

Acute dermal toxicity
LD50: > 2,000 mg/kg - Rabbit, male and female
Not classified as hazardous for acute dermal toxicity according to GHS.

Acute toxicity (other routes of administration)
No data available

Skin corrosion/irritation
Rabbit
No skin irritation

Serious eye damage/eye irritation
Rabbit
Irritating to eyes.
Method: OECD Test Guideline 405
Respiratory or skin sensitization

Maximization Test - Guinea pig
Does not cause skin sensitization.
Method: OECD Test Guideline 406

Mutagenicity

Genotoxicity in vitro

Ames test
with and without metabolic activation
negative
Method: OECD Test Guideline 471

In vitro micronucleus test
Strain: Human lymphocytes
with and without metabolic activation
positive
Method: OECD Test Guideline 487

Gene mutation assays in mammalian cells.
Strain: mouse lymphoma cells
with and without metabolic activation
negative
Method: OECD Test Guideline 476

Genotoxicity in vivo

By analogy

Chromosome aberration test in vivo - Rat male
Inhalation
Method: OECD Test Guideline 475
Test substance: Cryolite

negative

Carcinogenicity

By analogy

Rat
Test substance: fluoride
Animal testing did not show any carcinogenic effects.

This product does not contain any ingredient designated as probable or suspected human carcinogens by:
ACGIH
Toxicity for reproduction and development

Toxicity to reproduction / fertility

By analogy

Two-generation study - Rat, male and female
Oral
Fertility NOAEL Parent:  \( \geq 128 \) mg/kg
Test substance, Cryolite

Developmental Toxicity/Teratogenicity

No data available

STOT

STOT-single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.

STOT-repeated exposure

The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1 according to GHS criteria.

Inhalation (aerosol) 90-day - Rat, male and female
NOAEC: 1.21 mg/m3
Target Organs: Respiratory system, Lungs
Method: OECD Test Guideline 413

Experience with human exposure

No data available

Aspiration toxicity

No data available

Further information

Information given is based on data obtained from similar substances.

Harmful by inhalation.

Irritating to eyes.

Chronic exposure may entail dental or skeletal fluorosis

No data available
SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

- LC50 - 96 h: > 10 mg/l - Brachydanio rerio (zebrafish)
  - static test
  - Analytical monitoring: yes
  - Method: OECD Test Guideline 203
  - Harmful to fish.

Acute toxicity to daphnia and other aquatic invertebrates.

- EC50 - 48 h: 22.8 mg/l - Daphnia magna (Water flea)
  - static test
  - Analytical monitoring: yes
  - Method: OECD Test Guideline 202
  - Harmful to aquatic invertebrates.

Toxicity to aquatic plants

- ErC50 - 72 h: 33.5 mg/l - Pseudokirchneriella subcapitata (green algae)
  - static test
  - Analytical monitoring: yes
  - Method: OECD Test Guideline 201
  - Harmful to algae.

- NOEC - 72 h: 11.2 mg/l - Pseudokirchneriella subcapitata (green algae)
  - static test
  - Analytical monitoring: yes
  - Method: OECD Test Guideline 201
  - Growth rate

Toxicity to microorganisms

- EC50 - 3 h: > 75 mg/l - activated sludge
  - static test
  - Analytical monitoring: no
  - Method: OECD Test Guideline 209

Chronic toxicity to fish

No data available

Chronic toxicity to daphnia and other aquatic invertebrates.

No data available

Chronic Toxicity to aquatic plants

No data available

12.2 Persistence and degradability

Abiotic degradation
Stability in water

acid/base equilibrium as a function of pH, complexation/precipitation of inorganic and organic materials

Physical- and photo-chemical elimination

No data available

Biodegradation

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

No data available

Bioconcentration factor (BCF)

Not applicable, inorganic substance

12.4 Mobility in soil

Adsorption potential (Koc)

Adsorption/Soil
Log Koc: 3.18

Air
mobility as solid aerosols

Water
low solubility and mobility

Soil/sediments
adsorption on mineral and organic soil constituents

Known distribution to environmental compartments

No data available

12.5 Results of PBT and vPvB assessment

Not applicable

12.6 Other adverse effects

No data available

Remarks

Harmful to aquatic organisms., Product fate is highly dependent on environmental conditions: pH, temperature, redox potential, mineral and organic content of the medium, ...

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product Disposal

- In accordance with local and national regulations.
- Refer to manufacturer/supplier for information on recovery/recycling.
- Dispose of wastes in an approved waste disposal facility.

Advice on cleaning and disposal of packaging

- Where possible recycling is preferred to disposal or incineration.
- If recycling is not practicable, dispose of in compliance with local regulations.
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

SECTION 14: Transport information

TDG
not regulated

DOT
not regulated

NOM
not regulated

IMDG
not regulated

IATA
not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.
SECTION 15: Regulatory information

15.1 Notification status

<table>
<thead>
<tr>
<th>Inventory Information</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States TSCA Inventory</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td></td>
<td>- Listed under CAS: 60304-36-1</td>
</tr>
<tr>
<td>Mexico INSQ (INSQ)</td>
<td>- In compliance with the inventory</td>
</tr>
<tr>
<td>Canadian Domestic Substances List (DSL)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td></td>
<td>- Listed under CAS: 60304-36-1</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemical Substances</td>
<td>- One or more components not listed on inventory</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Japan. CSCL - Inventory of Existing and New Chemical Substances</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Korea. Korean Existing Chemicals Inventory (KECI)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>China. Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>- One or more components not listed on inventory</td>
</tr>
<tr>
<td>EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)</td>
<td>- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.</td>
</tr>
</tbody>
</table>

15.2 National Regulations

- Canada. CEPA 1999 Significant New Activity (SNAc) List:
  - No substances are subject to a Significant New Activity Notification.

SECTION 16: Other information

Revision Date: 01/18/2018

NFPA (National Fire Protection Association) - Classification

- Health: 2 moderate
- Flammability: 0 minimal
- Instability or Reactivity: 0 minimal
- Special Notices: None
SAFETY DATA SHEET

POTASSIUM ALUMINIUM FLUORIDE

Revision Date 01/18/2018

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2 moderate</td>
</tr>
<tr>
<td>Flammability</td>
<td>0 minimal</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0 minimal</td>
</tr>
<tr>
<td>PPE</td>
<td>Determined by User; dependent on local conditions</td>
</tr>
</tbody>
</table>

Key or legend to abbreviations and acronyms used in the safety data sheet

- TWA 8-hour, time-weighted average
- SAEL Solvay Acceptable Exposure Limit
- ACGIH American Conference of Governmental Industrial Hygienists
- OSHA Occupational Safety and Health Administration
- NTP National Toxicology Program
- IARC International Agency for Research on Cancer
- NIOSH National Institute for Occupational Safety and Health

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.