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

1.1. Product identifier

Product form: Substance
Physical state: Solid
Substance name: AMMONIUM HEXAFLUOROSILICATE
Product code: SIA0705.0
Formula: H8F6N2Si
Synonyms: AMMONIUM FLUOROSILICATE; AMMONIUM SILICOFLUORIDE; AMMONIUM HEXAFLUOROSILICATE; AMMONIUM SILICON FLUORIDE; DIAMMONIUM HEXAFLUOROSILICATE
Chemical family: FLUOROSILICATE

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

Use of the substance/mixture: Chemical intermediate
For research and industrial use only

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification
Acute Tox. 3 (Oral) H301
Acute Tox. 3 (Dermal) H311
Acute Tox. 3 (Inhalation:dust,mist) H331
Skin Irrit. 2 H315
Eye Irrit. 2A H319
STOT SE 3 H335
Aquatic Acute 3 H402

Full text of H statements: see section 16

2.2. Label elements

GHS-US labeling
Hazard pictograms (GHS-US):

Signal word (GHS-US): Danger
Hazard statements (GHS-US): H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H402 - Harmful to aquatic life

Precautionary statements (GHS-US):
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P312 - Call a POISON CENTER if you feel unwell
P261 - Avoid breathing dust
P264 - Wash hands 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
P330 - Rinse mouth
P301+P310 - If swallowed: Immediately call a POISON CENTER
P302+P352 - If on skin: Wash with plenty of water
AMMONIUM HEXAFLUOROSILICATE
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P332+P313 - If skin irritation occurs: Get medical advice/attention
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P363 - Wash contaminated clothing before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to licensed waste disposal facility

2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Mono-constituent</th>
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</thead>
<tbody>
<tr>
<td>Name</td>
<td>AMMONIUM HEXAFLUOROSILICATE</td>
</tr>
<tr>
<td>CAS No</td>
<td>16919-19-0</td>
</tr>
<tr>
<td>EC no</td>
<td>240-968-3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium fluorosilicate</td>
<td>(CAS No) 16919-19-0</td>
<td>95 - 100</td>
<td>Acute Tox. 3 (Oral), H301</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Dermal), H311</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Inhalation), H331</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 3, H402</td>
</tr>
</tbody>
</table>

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general
Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact
Wash with plenty of soap and water. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact
Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion
Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

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

Symptoms/injuries after inhalation
Toxic if inhaled. Danger of serious damage to health by prolonged exposure through inhalation. May cause respiratory irritation. Overexposure causes inflammation and edema of the larynx and bronchii. Symptoms of exposure are a burning sensation, coughing, wheezing and laryngitis.

Symptoms/injuries after skin contact
Toxic in contact with skin. Causes skin irritation. Repeated exposure to this material can result in absorption through skin causing significant health hazard.

Symptoms/injuries after eye contact
Causes serious eye irritation.

Symptoms/injuries after ingestion
Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

Chronic symptoms
May cause osteofluorosis.

4.3. Indication of any immediate medical attention and special treatment needed

Note to Physician: Calcium gluconate is often considered in topical exposures to hydrofluoric acid and may be appropriate for severe exposures to fluorosilicates.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
Not flammable.
5.2. Special hazards arising from the substance or mixture
Fire hazard: Irritating fumes vapors may develop when material is mixed with other materials and exposed to elevated temperatures or open flame.

5.3. Advice for firefighters
Firefighting instructions: Exercise caution when fighting any chemical fire.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
6.1.1. For non-emergency personnel
Protective equipment: Wear protective equipment as described in Section 8.
Emergency procedures: Evacuate unnecessary personnel.
6.1.2. For emergency responders
Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage
7.1. Precautions for safe handling
Precautions for safe handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Use only outdoors or in a well-ventilated area.
Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep container tightly closed. Store locked up.
Incompatible materials: Compatible with most materials.
Storage temperature: Storage stability: at 5°C: approximately 6 months (purity reduced below 95%); at 25°C: approximately 6 weeks (purity reduced below 95%)
Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
<table>
<thead>
<tr>
<th>Ammonium fluorosilicate (16919-19-0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA OSHA</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls: Handle in an enclosing hood with exhaust ventilation.
Personal protective equipment: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection: Neoprene or nitrile rubber gloves.
Eye protection: Chemical goggles. Contact lenses should not be worn.
Skin and body protection: Wear suitable protective clothing.
Respiratory protection: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor/acid gas (yellow cartridge) respirator.
AMMONIUM HEXAFLUOROSILICATE
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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Powder</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>178.14 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
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</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>2.01</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

Dissolves in strong acid or base.

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Compatible with most materials.

10.6. Hazardous decomposition products

Fluoride. NOx.

SECTION 11: Toxicological information

11.1. Information on toxicological effects


AMMONIUM HEXAFLUOROSILICATE (16919-19-0)

<table>
<thead>
<tr>
<th>Route of exposure</th>
<th>Toxicity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
<td>100.000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>300.000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>0.500 mg/l/4h</td>
</tr>
</tbody>
</table>

05/16/2016 EN (English US) SDS ID: SIA0705.0
**Ammonium Hexafluorosilicate**

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<table>
<thead>
<tr>
<th>Ammonium fluorosilicate (16919-19-0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LD50 oral mouse</strong></td>
</tr>
<tr>
<td><strong>LDLo oral rat</strong></td>
</tr>
<tr>
<td><strong>LDLo oral guinea pig</strong></td>
</tr>
<tr>
<td><strong>ATE US (oral)</strong></td>
</tr>
<tr>
<td><strong>ATE US (dermal)</strong></td>
</tr>
<tr>
<td><strong>ATE US (gases)</strong></td>
</tr>
<tr>
<td><strong>ATE US (vapors)</strong></td>
</tr>
<tr>
<td><strong>ATE US (dust, mist)</strong></td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
</tr>
<tr>
<td><strong>Serious eye damage/irritation</strong></td>
</tr>
<tr>
<td><strong>Respiratory or skin sensitization</strong></td>
</tr>
<tr>
<td><strong>Germ cell mutagenicity</strong></td>
</tr>
<tr>
<td><strong>Carcinogenicity</strong></td>
</tr>
<tr>
<td><strong>Reproductive toxicity</strong></td>
</tr>
<tr>
<td><strong>Specific target organ toxicity (single exposure)</strong></td>
</tr>
<tr>
<td><strong>Specific target organ toxicity (repeated exposure)</strong></td>
</tr>
<tr>
<td><strong>Aspiration hazard</strong></td>
</tr>
<tr>
<td><strong>Symptoms/injuries after inhalation</strong></td>
</tr>
<tr>
<td><strong>Symptoms/injuries after skin contact</strong></td>
</tr>
<tr>
<td><strong>Symptoms/injuries after eye contact</strong></td>
</tr>
<tr>
<td><strong>Symptoms/injuries after ingestion</strong></td>
</tr>
<tr>
<td><strong>Chronic symptoms</strong></td>
</tr>
<tr>
<td><strong>Reason for classification</strong></td>
</tr>
</tbody>
</table>

**SECTION 12: Ecological information**

12.1. **Toxicity**

Ecology - general: Harmful to aquatic life.

<table>
<thead>
<tr>
<th>Ammonium fluorosilicate (16919-19-0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LC50 fish 1</strong></td>
</tr>
</tbody>
</table>

12.2. **Persistence and degradability**

No additional information available

12.3. **Bioaccumulative potential**

No additional information available

12.4. **Mobility in soil**

No additional information available

12.5. **Other adverse effects**

Other adverse effects: This substance may be hazardous to the environment.

Effect on ozone layer: No additional information available

Effect on the global warming: No known ecological damage caused by this product.

**SECTION 13: Disposal considerations**

13.1. **Waste treatment methods**

Sewage disposal recommendations: Do not dispose of waste into sewer.

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Large quantities may be recycled by return to the Gelest, the manufacturer.

Ecology - waste materials: Avoid release to the environment.
SECTION 14: Transport information

14.1. UN number
UN-No.(DOT) : 2854
DOT NA no. : UN2854

14.2. UN proper shipping name
Proper Shipping Name (DOT) : Ammonium fluorosilicate
Hazard labels (DOT) : 6.1 - Poison

Packing group (DOT) : III - Minor Danger
DOT Packaging Exceptions (49 CFR 173.xxx) : 153
DOT Packaging Non Bulk (49 CFR 173.xxx) : 213
DOT Packaging Bulk (49 CFR 173.xxx) : 240

14.3. Additional information
Emergency Response Guide (ERG) Number : 151
Other information : No supplementary information available.

Transport by sea
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel
DOT Vessel Stowage Other : 52 - Stow "separated from" acids

Air transport
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 100 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 200 kg

SECTION 15: Regulatory information

15.1. US Federal regulations

Ammonium fluorosilicate (16919-19-0)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

Ammonium fluorosilicate (16919-19-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Canadian DSL (Domestic Substances List)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3. US State regulations

AMMONIUM HEXAFLUOROSILICATE(16919-19-0)

<table>
<thead>
<tr>
<th>Regulation</th>
<th>State</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - Cancer List 65</td>
<td>California</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - Developmental Toxicity</td>
<td>California</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - Reproductive Toxicity - Female</td>
<td>California</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - Reproductive Toxicity - Male</td>
<td>California</td>
<td>No</td>
</tr>
</tbody>
</table>
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Ammonium fluorosilicate (16919-19-0)

<table>
<thead>
<tr>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>Non-significant risk level (NSRL)</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Ammonium fluorosilicate (16919-19-0)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

SECTION 16: Other information

Abbreviations and acronyms:
- Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

Full text of H-phrases:

- **H301**: Toxic if swallowed
- **H311**: Toxic in contact with skin
- **H315**: Causes skin irritation
- **H319**: Causes serious eye irritation
- **H331**: Toxic if inhaled
- **H335**: May cause respiratory irritation
- **H402**: Harmful to aquatic life

HMIS III Rating
- **Health**: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
- **Flammability**: 0 Minimal Hazard
- **Physical**: 0 Minimal Hazard

Prepared by safety and environmental affairs.

Date of issue: 05/16/2016
Version: 1.0

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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