

**MATERIAL SAFETY DATA SHEET****Product Name:** Ammonium bifluoride**CAS No.:** 1341-49-7**Version:** 0**1. Identification**

**Product Code** : 90110, 90319  
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**2. Composition/Information on Ingredients**

<b>Ingredient</b>	<b>CAS No</b>	<b>Percent</b>
AMMONIUM BIFLUORIDE	1341-49-7	100 %

**3. Hazards Identification****Hazard classification**

**Emergency Overview** : DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION AND BURNS TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION AND BURN EFFECTS MAY BE DELAYED. HARMFUL IF ABSORBED THROUGH SKIN.

**Health Rating** : 4 - Extreme (Life)  
**Flammability Rating** : 0 - None  
**Reactivity Rating** : 2 - Moderate  
**Contact Rating** : 4 - Extreme (Corrosive)

**Potential Health Effects** :

**Inhalation** : May cause irritation and burns to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May be absorbed through inhalation of dust; symptoms may parallel those from ingestion exposure. Irritation and burning effects may not appear immediately.

**Ingestion** : May cause salivation, nausea, vomiting, diarrhea, and abdominal pain, followed by symptoms of weakness, tremors, shallow respiration, carpedal spasm, convulsions, and coma. May cause brain and kidney damage. Affects heart and circulatory system. Death may be caused by respiratory paralysis. Lethal dose estimated at between 1 teaspoonful and 1 oz.

**Skin Contact** : Causes irritation and burns to the skin. Effects may not appear immediately.

**Eye Contact:** : Causes irritation. May be extremely irritating with possible burns to

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- Chronic Exposure : eye tissue and permanent eye damage may result.
- Chronic Exposure : Chronic exposure may cause mottling of teeth and bone damage (osteosclerosis) and fluorosis. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health and joint stiffness.
- Aggravation of Pre-existing Conditions : Populations that appear to be at increased risk from the effects of fluoride are individuals that suffer from diabetes insipidus or some forms of renal impairment.

**4. First Aid Measures**

- General information** : Get medical advice/attention if you feel unwell. If medical advice is needed, have product container or label at hand. Show this safety data sheet to the doctor in attendance.
- Ingestion** : Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice.
- Inhalation** : Not expected to require first aid measures. Remove to fresh air. Get medical attention for any breathing difficulty.
- Skin contact** : Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.
- Eye contact** : Not expected to require first aid measures. Wash thoroughly with running water. Get medical advice if irritation develops.

**5. Fire fighting measures**

First aid procedures should be pre-planned for fluoride compound emergencies.

- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. CALL A PHYSICIAN IMMEDIATELY.
- Ingestion** : Administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN IMMEDIATELY.
- Skin Contact** : Wipe off any excess material from skin and then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. CALL A PHYSICIAN IMMEDIATELY.
- Eye Contact:** : Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.
- Note to Physician** : For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

**MATERIAL SAFETY DATA SHEET****Product Name:** Ammonium bifluoride**CAS No.:** 1341-49-7**Version:** 0**6. Accidental Release Measures**

- Personal precautions** : Keep unnecessary personnel away. Keep upwind. Ventilate the area. Avoid inhalation of dust from the spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Environmental precautions** : Prevent further leakage or spillage if safe to do so.
- Methods for containment** : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.
- Methods for cleaning up** : Avoid dust formation.  
Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.  
Large Spills: Collect dust or particulates using a vacuum cleaner with a HEPA filter. Reduce airborne dust and prevent scattering by moistening with water.  
Never return spills in original containers for re-use. Clean contaminated surface thoroughly. Clean up in accordance with all applicable regulations.

**7. Handling and Storage**

- Precautions for safe handling** : Keep formation of airborne dusts to a minimum. Dust may form explosive mixture with air. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Wash thoroughly after handling.
- Conditions for safe storage, including any incompatibilities** : Keep container tightly closed. Store in a well-ventilated place.

**8. Exposure Controls Personal Protection**

- Airborne Exposure Limits**
- OSHA Permissible Exposure Limit (PEL) : 2.5 mg(F)/m<sup>3</sup> (TWA)
- ACGIH Threshold Limit Value (TLV) : 2.5 mg(F)/m<sup>3</sup> (TWA)
- Ventilation System:** : A 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

**MATERIAL SAFETY DATA SHEET****Product Name:** Ammonium bifluoride**CAS No.:** 1341-49-7**Version:** 0**Personal Respirators (NIOSH Approved)**

the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

: If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use Concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerin, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in Oxygen-deficient atmospheres.

**Skin Protection**

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

**Eye Protection**

: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

**9. Physical and Chemical Properties**

<b>Appearance</b>	: White crystals.
<b>Odor</b>	: Odorless.
<b>pH</b>	: 3.5 (5% solution)
<b>Melting point/freezing point</b>	: 124.6C (257F)
<b>Initial boiling point and boiling range</b>	: 240C (464F)
<b>Flash Point</b>	: No information found.
<b>Vapor pressure</b>	: No information found.
<b>Vapor density</b>	: No information found.
<b>Specific gravity</b>	: 1.51
<b>Solubility in water</b>	: 41.5g/100 g Water @ 25C (68F)
<b>Solubility (other)</b>	: No data available.
<b>Formula</b>	: NH <sub>4</sub> F HF
<b>Molecular Weight</b>	: 57.04 g/mol

**10. Stability and Reactivity**

<b>Stability</b>	: Stable under ordinary conditions of use and storage.
<b>Hazardous Decomposition Products</b>	: Carbon dioxide and carbon monoxide may form when heated to decomposition
<b>Hazardous Polymerization</b>	: Will not occur
<b>Incompatibilities</b>	: Strong oxidizers.
<b>Conditions to Avoid</b>	: Moisture and incompatibles

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**11. Toxicological Information****Information on likely routes of exposure**

- Ingestion** : May cause irritation of the gastrointestinal tract.  
**Inhalation** : May cause irritation to the respiratory system.  
**Skin contact** : Causes mild skin irritation.  
**Eye contact** : Causes eye irritation.

**Information on toxicological effects****Acute toxicity (list all possible routes of exposure)**

- Oral Product** : No data available.  
**Dermal Product** : No data available.  
**Inhalation Product** : No data available  
**Repeated dose toxicity Product** : No data available.  
**Skin corrosion/irritation Product** : Causes mild skin irritation.  
**Serious eye damage/eye irritation Product** : Causes eye irritation.  
**Respiratory or skin sensitization Product** : Not a skin sensitizer.  
**Carcinogenicity Product** : This substance has no evidence of carcinogenic properties.  
**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans DIOXANE** : No carcinogenic components identified.  
**US. National Toxicology Program (NTP) Report on Carcinogens DIOXANE** : No carcinogenic components identified.  
**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050** : No carcinogenic components identified.  
**Germ cell mutagenicity**  
**In vitro Product** : No mutagenic components identified.  
**In vivo Product** : No mutagenic components identified.  
**Reproductive toxicity Product** : No components toxic to reproduction.  
**Specific target organ toxicity - single exposure Product** : Respiratory tract irritation.  
**Specific target organ toxicity - repeated exposure Product** : No data available.  
**Aspiration hazard Product** : Not classified  
**Other effects** : None known.

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- Environmental Fate:** : This material is not expected to significantly bioaccumulate. When released into water, this material may biodegrade to a moderate extent.
- Environmental Toxicity:** : This material is not expected to be toxic to aquatic life. The LC50/96-hour values for fish are over 100 mg/l.

**13. Disposal consideration**

- Disposal instructions** : Discharge, treatment, or disposal may be subject to national, state, or local laws.
- Contaminated packaging** : Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

**14. Transport Information**

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
<b>DOT</b>	UN1727	AMMONIUM HYDROGEN DIFLUORIDE, SOLID	8	II	No
<b>IMDG</b>	UN1727	AMMONIUM HYDROGEN DIFLUORIDE, SOLID	8	II	No
<b>IATA</b>	UN1727	AMMONIUM HYDROGEN DIFLUORIDE, SOLID	8	II	No

**15. Regulatory Information**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture  
No Data Available.

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