

Section 1: Product & Company Information

Product Identifier: Ammonium Bifluoride

Other Means of Identification

Product Number: 112000

Recommended Use and Restrictions on Use

Recommended Use: Laboratory chemicals, Synthesis of substances
Restrictions on Use: No data available.

Manufacturer / Importer / Supplier / Distributor Information

Company Name: CORECHEM Inc.

Address: 4320 Greenway Drive
Knoxville, TN 37918
USA

Information Telephone Number: 1-865-524-4239

Fax Number: 1-865-524-3375

Website: www.corecheminc.com

Contact Person: Regulatory Manager

E-mail: regulatory@corecheminc.com

Emergency Phone Number: Chemtrec® 1-800-424-9300 / Outside USA 1-703-527-3887 (monitored 24 hours/day)

Section 2: Hazards Identification

GHS Hazard Classification(s)

In accordance with OSHA Hazard Communication Standard 29 CFR 1910.1200 (HazCom 2012).

Physical Hazard(s)

Not classified.

Health Hazard(s)

Acute Toxicity, Oral - 3
Corrosion/Irritation, Skin - 1B
(Corrosion)Damage/Irritation, Eye - 1

Environmental Hazard(s)

Not classified.

Label Elements

Signal Word

DANGER

Hazard Symbol(s)



Hazard Statement(s)

H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.

Precautionary Statements

General

Not applicable.

Prevention

P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P264: Wash face, hands and any exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

SHEET

Print Date: March 15, 2024

Response

P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340: IF INHALED: Remove to fresh air and keep at rest in a position 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.
 P310: Immediately call a POISON CENTER or doctor/physician.
 P321: Specific treatment (see supplemental first aid instructions on this label).
 P330: Rinse mouth.
 P363: Wash contaminated clothing before reuse.

Storage

P405: Store locked up.

Disposal

P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC)

None known.

Section 3: Composition/Information on Ingredients

Substance

Chemical Identity ²	Common Name/Synonym(s)	CAS # ³	Weight %	Impurity or Stabilizing Additive
Ammonium Bifluoride	Ammonium hydrogen difluoride; Acid ammonium fluoride; Ammonium acid fluoride; Ammonium hydrogen bifluoride; Ammonium hydrogen fluoride	1341-49-7	100%	No

- Information regarding the composition and the percentage ranges of the mixtures ingredients are not presented as it Confidential Business Information (CBI). Where a medical emergency exists (as determined by medical professional), timely disclosure of CBI is assured. The information omitted pertains to only the names of the substances and the concentration in the mixture (product) and can only be requested by a doctor/physician or Local/State/Provincial or Federal Authority.
- Non-hazardous ingredients are not presented as to protect the proprietary formula of the product.
- “—” Indicates ingredient is a mixture and contains multiple ingredients or may have no identifying CAS number.

Section 4: First-Aid Measures

General Information

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

Inhalation

Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention.

Skin Contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

Eye Contact

After eye contact: rinse out with plenty of water. Immediately call an ophthalmologist. Remove contact lenses.

Ingestion

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralize.

Most important symptoms/effects, acute and delayed

Symptoms

Burning sensation.

Indication of immediate medical attention and special treatment needed

Hazards

SHEET

Print Date: March 15, 2024

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of the stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

Treatment

Treat symptomatically. Symptoms may be delayed.

Section 5: Fire-Fighting Measures

General Fire Hazards

In case of fire and/or explosion do not breathe fumes. Use water spray to keep fire-exposed containers cool. Move containers from the fire area if you can do so without risk. Water may be ineffective in fighting fire. Fight fire from a protected location.

Suitable (and Unsuitable) Extinguishing Media

Suitable Extinguishing Media

Extinguishing powder, alcohol resistant foam, carbon dioxide, water fog.

Unsuitable Extinguishing Media

Do not scatter spilled material with high pressure water streams.

Specific Hazards Arising from the Chemical

Nitrogen oxides (NOx) Hydrogen fluoride Combustible. Not combustible. Development of hazardous combustion gases or vapors is possible in the event of fire. Ambient fire may liberate hazardous vapors.

Special Protective Equipment and Precautions for Firefighters

Special Fire-Fighting Equipment Procedures

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Special Protective Equipment for Fire-Fighters

As in any fire, wear self-contained breathing apparatus pressure-demand (OSHA/NIOSH approved or equivalent) and full protective gear.

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Advice for non-emergency personnel: Avoid inhalation of dust. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Methods and Materials for Containment and Clean-Up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take it up carefully. Dispose of properly. Clean up affected area. Avoid generation of dust.

Notification Procedures

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions

Do not let product enter drains

Section 7: Handling and Storage

Precautions for Safe Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for Safe Storage, including any Incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

Section 8: Exposure Controls/Personal Protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Value	Source
Ammonium Bifluoride - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values
Ammonium Bifluoride - as F	PEL	2.5 mg/m3	US OSHA Table Z-1
Ammonium Bifluoride - as F	TWA	2.5 mg/m3	US OSHA Table Z-1
Ammonium Bifluoride - Dust.	TWA	2.5 mg/m3	US OSHA Table Z-1

SHEET

Print Date: March 15, 2024

Biological Limit Values

Chemical Identity	CAS #	Parameter	Value	Biological Specimen	Source
Ammonium Bifluoride	1341-49-7	Fluoride	2 mg/l	Urine	ACGIH – Biological Exposure Indices (BEI)
Remarks: Sampling Time: Prior to shift					
Ammonium Bifluoride	1341-49-7	Fluoride	3 mg/l	Urine	ACGIH – Biological Exposure Indices (BEI)
Remarks: Sampling Time: End of shift					

Appropriate Engineering Controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Individual protection measures, such as personal protective equipment (PPE)

General Information

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/Face Protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles.

Skin Protection

Hand Protection

Wear suitable gloves. Impervious gloves.

Other

Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Respiratory Protection

Required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Hygiene Measures

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

Section 9: Physical and Chemical Properties

Appearance:

Physical State: Solid
Color: White

Odor: Slightly Pungent.

Odor Threshold: No data available.

pH: No data available.

Melting Point/Freezing Point: 124.6 °C (257 °F) - lit.

Initial Boiling Point and Boiling Range: >239.5 °C / °F

Flash Point: No data available.

Evaporation Rate (butyl acetate=1): No data available.

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

Upper/Lower Limit on Flammability or Explosive Limits

Flammability Limit – Upper: No data available.

Flammability Limit – Lower: No data available.

Explosive Limit – Upper: No data available.

Explosive Limit – Lower: No data available.

Vapor Pressure: No data available.

Vapor Density (air =1): No data available.

Relative Density (water=1): 1.5

Solubility(ies):

Solubility in water: Very soluble in water.

Solubility in ethanol: 1.73% @ 25°C

Partition coefficient (n-octanol/water): No data available.

Auto-Ignition Temperature:

No data available.

Decomposition Temperature: No data available.

Viscosity: No data available.

SHEET

Print Date: March 15, 2024

Other Information:

Molecular Weight: 57.04 g/mol
Formula: H5F2N

Section 10: Stability and Reactivity

Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

Chemical Stability

The product is chemically stable under standard ambient conditions (room temperature).

Possibility of Hazardous Reactions

Generates dangerous gases or fumes in contact with acids.
Release of: Hydrogen fluoride, alkaline.
Release of: Ammonia.
Risk of explosion with halogen-halogen compounds.

Conditions to Avoid

Exposure to air or moisture over prolonged periods. Avoid generation of dust. Heat, flames and sparks.

Incompatible Materials

Aluminum, Iron, Glass, Metals, Quartzes/silicate Ceramics, Zinc, Oxidizing Agent, Alkali, Amines, Acids, Bases.

Hazardous Decomposition Products

Thermal decomposition can lead to the release of irritating and toxic gases and vapors. Ammonia. Hydrogen fluoride.

Section 11: Toxicological Information

Information on routes of exposure

Ingestion: Specific test data for the substance or mixture is not available. Causes burns. (Based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Inhalation: Specific test data for the substance or mixture is not available. Corrosive by inhalation. (Based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.

Skin Contact: Specific test data for the substance or mixture is not available. Corrosive. (Based on components). Causes burns.

Eye Contact: Specific test data for the substance or mixture is not available. Causes serious eye damage. (Based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.

Information on Toxicological Effects

Acute Toxicity (List all possible routes of exposure)

Oral

Ammonium Bifluoride: LD 50 (Rat): Approximate 130 mg/kg

Dermal

No data available.

Inhalation

No data available.

Repeated Dose Toxicity

No data available.

Skin Corrosion/Irritation

Causes burns.

Serious Eye Damage/Eye Irritation

Risk of serious damage to eyes. Causes burns.

Respiratory/Skin Sensitization

No data available.

Carcinogenicity

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

SHEET

Print Date: March 15, 2024

Group 3.

US. National Toxicology Program (NTP) Report on Carcinogens

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.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

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.

Germ Cell Mutagenicity

In Vitro

No mutagenic components identified.

In Vivo

No mutagenic components identified.

Reproductive Toxicity

No components toxic to reproduction

Specific Target Organ Toxicity – Single Exposure

No data available.

Specific Target Organ Toxicity – Repeated Exposure

No data available.

Aspiration Hazard

Not classified.

Other Effects

None known.

Section 12: Ecological Information

Ecotoxicity

Acute Hazards to the Aquatic Environment

Fish

No data available.

Aquatic Invertebrates

No data available.

Toxicity to Aquatic Plants

No data available.

Chronic Hazards to the Aquatic Environment

Fish

No data available.

Aquatic Invertebrates

No data available.

Toxicity to Aquatic Plants

No data available.

Persistence and Degradability

Biodegradation

Inherently biodegradable.

BOD/COD Ratio

No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)

No data available.

Mobility in Soil

No data available.

Other Adverse Effects

No information available.

SHEET

Print Date: March 15, 2024

Section 13: Disposal Considerations

Disposal Instructions

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste.

Contaminated Packaging

Handle uncleaned containers like the product itself.

Section 14: Transportation Information

US Department of Transportation (DOT)

UN Number: UN1727
UN Proper Shipping Name: Ammonium hydrogen difluoride, solid
Technical Name:
Hazard Class: 8
Subsidiary Hazard Risk: -
Packing Group: II
DOT Label/Placard Exemptions: Not determined
Special Provisions: IB8, IP2, IP4, N34, T3, TP33.
Packaging Exceptions: 49CFR 173.154
Packaging Non-Bulk: 49CFR 173.212
Packaging Bulk: 49CFR 173.240
Reportable Quantity (RQ): 100lb (45.4kg)
Marine Pollutant: No
Poison Inhalation Hazard: No
Special precautions for user: Transport within the user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Emergency Response Guidebook (ERG) #: 154

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

Section 15: Regulatory Information

US Federal Regulations

Toxic Substance Control Act (TSCA), Chemical Substance Inventory, Section 8(b)

This product or ingredient(s) are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.
Ammonium Bifluoride.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substance List (40 CFR 302.4)

The following chemical(s) in this material are subject to reporting levels established by CERCLA:
Ammonium Bifluoride (CAS# 1341-49-7) - RQ 100 lb final RQ

Clean Air Act (CAA), Section 112(r)

No chemical(s) in this material are subject to the reporting requirements of CAA.

Emergency Planning and Community Right-To-Know Act (EPCRA)

EPCRA 302 Extremely Hazardous Substance

No chemical(s) in this material are subject to the reporting requirements of SARA Title III, Section 302.

EPCRA 304 Emergency Response Notification

No chemical(s) in this material are subject to the reporting requirements of SARA Title III, Section 304.

EPCRA 311/312 Emergency and Hazardous Materials Reporting

Fire Hazard: No
Sudden Release of Pressure: No
Reactive: No
Acute (Immediate) Health Hazard: Yes
Chronic (Delayed) Health Hazard: No

EPCRA 313 Toxic Chemical Release Inventory (TRI) Reporting

The following chemical(s) in this material are subject to reporting levels established by SARA Title III, Section 313:
Ammonium Bifluoride.

US State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

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

SHEET

Print Date: March 15, 2024

Important Note: Due to the changing nature of regulatory requirements, the information in this document should NOT be considered all-inclusive or authoritative. Users should make their own investigations to determine the suitability of the information for their particular purposes. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

Section 16: Other Information

Hazardous Materials Identification System (HMIS®) Classification

Health Hazard: 3
Chronic Health Hazard: /
Flammability: 0
Physical Hazard: 0
Personal Protection: X
(Hazard Rating: 0 – Minimal / 1 – Slight / 2 – Moderate / 3 – Serious / 4 – Severe)

National Fire Protection Association (NFPA 704) Rating

Health Hazard: 3
Fire Hazard: 0
Reactivity Hazard: 0
Special: N/A
(Hazard Rating: 0 – Minimal / 1 – Slight / 2 – Moderate / 3 – Serious / 4 – Severe)

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Key to Abbreviations and Acronyms

ATE - Acute Toxicity Estimate	ACGIH - American Conference of Industrial Hygienists
BCF - Bioconcentration Factor	AIHA - American Industrial Hygiene Association
EC50 - Effective concentration, 50%	BEI - Biological Exposure Indices
IDHL - Immediately Dangerous to Life and Health	CAS - Chemical Abstracts Service
Kg - Kilogram	DOT - US Department of Transportation
l - Liter	EPA - US Environmental Protection Agency
lb - Pound	GHS - Globally Harmonized System of Classification and Labeling of Chemicals
LC50 - Lethal Concentration, 50%	IARC - International Agency for Research on Cancer
LD50 - Lethal Dose, 50%	IATA - International Air Transport Association
mg - milligram	IBC - Intermediate Bulk Container
ml - milliliter	IMDG - International Maritime Dangerous Goods
N/A - Not Applicable	NIOSH - National Institute for Occupational Safety and Health
N/D - Not Determined	NTP - National Toxicology Program
PEL - Permissible Exposure Limit	OSHA - US Occupational Health and Safety Administration
REL - Recommended Exposure Limit	SARA - US EPA Superfund Amendments and Reauthorization Act
STEL - Short-term Exposure Limit	TSCA - US EPA Toxic Substances Control Act
TWA - Time weighted average	UN - United Nations

References

HSDB® - Hazardous Substances Data Bank

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