

Ammonium Bifluoride (32.5%)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ammonium Bifluoride (32.5%)

Synonyms/Generic Names: Neutral ammonium fluoride, ammonium acid fluoride, Ammonium hydrogen fluoride, ammonium hydrofluoride

Product Number: 8120

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd.
Columbus, WI. 53925

For More Information: 920-623-2140 (Monday-Friday 8:00-4:30)

www.columbuschemical.com

In Case of Emergency Call: CHEMTREC - 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

2. HAZARDS IDENTIFICATION

Target Organs: Kidney, Liver, Lung

Signal Words: Danger

Pictograms:



GHS Classification:

Corrosive to metal	Category 1
Acute toxicity, Oral	Category 2
Acute toxicity, Inhalation	Category 2
Acute toxicity, Dermal	Category 1
Skin corrosion	Category 1A
Serious eye damage	Category 1
Specific target organ toxicity, repeated exposure	Category 1

GHS Label Elements, including precautionary statements:

Hazard Statements:

H290	May be corrosive to metals.
H300+H310+H330	Fatal if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.
H372	Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements:

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P262	Do not get in eyes, on skin, or on clothing.
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.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do not induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P310	Immediately call a POISON CENTER/doctor/physician.
P320	Specific treatment is urgent see Section 4 of SDS.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P403+P233+P234	Store in a well-ventilated place. Keep container tightly closed. Keep in original container.
P404+P405	Store in a closed container. Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

Potential Health Effects

Eyes	Causes severe eye burns.
Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	May be fatal if absorbed through skin. Causes skin burns.
Ingestion	May be fatal if swallowed.

NFPA Ratings

Health	3
Flammability	0
Reactivity	0
Specific hazard	Not Available

HMIS Ratings

Health	3
Fire	0
Reactivity	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
Hydrofluoric Acid	11-12	7664-39-3	231-634-8	HF	20.006 g/mol
Ammonium Fluoride	21-22	12125-01-8	235-185-9	NH ₄ F	37.037 g/mol
Water	Balance	7732-18-5	231-791-2	H ₂ O	18.00 g/mol

4. FIRST-AID MEASURES

Eyes	Immediately remove the patient/victim from the source of exposure. Immediately wash eyes with large amounts of tepid water for at least 15 minutes. If irritation persists, continue washing eyes with water or saline. Wash eyes with saline during transport. Use of anesthetic eye drops may increase the patient/victim's comfort and the efficiency of irrigation. Do not
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	use oils, salves, or ointments for injured eyes. Do not use the gel form of calcium gluconate in eyes. Seek medical attention immediately.
Inhalation	Immediately remove the patient/victim from the source of exposure. Evaluate respiratory function and pulse. Ensure that the patient/victim has an unobstructed airway. If shortness of breath occurs or breathing is difficult (dyspnea), administer oxygen. Assist ventilation as required. Always use a barrier or bag-valve-mask device. If breathing has ceased (apnea), provide artificial respiration. Monitor the patient/victim for signs of whole-body (systemic) effects and administer symptomatic treatment, as necessary. See Ingestion first aid. Seek medical attention immediately.
Skin	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Material is absorbed through the skin. Get medical attention immediately. While waiting for medical attention, if practical, immersion of the burned body part into an iced, aqueous solution of a quaternary ammonium compound (e.g., 0.13% benzalkonium chloride) is recommended. If immersion is not practical, soaked compresses of the same iced solution should be applied to the burned area. If immersion in, or use of soaked compresses of, 0.13% benzalkonium chloride is not possible, topical application of 2.5% to 33% calcium gluconate or carbonate gel or slurry has been recommended. Gel or slurry must be continuously massaged into the affected area with gloved hand to be effective. Compresses should be changed or soaked with additional solution approximately every 2 to 4 minutes. Immersion or compresses should be used for at least 2 hours. Monitor the patient/victim for signs of whole-body (systemic) effects. If signs of whole-body (systemic) poisoning appear, see the Ingestion section for treatment recommendations.
Ingestion	Immediately remove the patient/victim from the source of exposure. Ensure that the patient/victim has an unobstructed airway. Do not induce vomiting (emesis). If the patient/victim is alert and able to swallow, immediately administer 4 to 8 ounces (120 to 240 mL) of milk or water (not to exceed 4 ounces/120 mL in a child). Attempt immediate administration of a fluoride binding substance: chewable calcium carbonate tablets (e.g., Tums™) or 4 to 8 ounces (120 to 240 mL) of milk of magnesia or a liquid antacid (e.g., Maalox™). Avoid large amounts of liquid, as this may induce vomiting (emesis). If the victim vomits, clean up and isolate vomited material using paper towels and plastic bags. Use extreme caution, as vomited material may contain hydrogen fluoride/hydrofluoric acid. Observe and evaluate the patient/victim for mouth and gastrointestinal (GI) tract burns. Seek medical attention immediately.
General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is needed. Wash contaminated clothing before reuse.

5. FIREFIGHTING MEASURES

Suitable (and unsuitable) extinguishing media	Use carbon dioxide, dry chemical, dry sand or alcohol resistant foam. For larger fires, use water spray, fog, or alcohol-resistant foam; do not use straight streams. Dike fire control water for later disposal; do not scatter the material.
Special protective equipment and precautions for firefighters	Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.
Specific hazards arising from the chemical	May release toxic hydrogen fluoride. Contact with reactive metals may result in the generation of flammable hydrogen gas. Container explosion may occur. (See also Stability and Reactivity section).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. See section 8 for recommendations on the use of personal protective equipment. Evacuate area. Emergency procedures shall be executed only by specialists or authorized personnel.
Environmental precautions	Prevent spillage from entering drains. Any release to the environment may be subject to a federal/national or local reporting requirements.
Methods and materials for containment and cleaning up	Cleanup personnel need personal protection from inhalation and skin/eye contact. Evacuate and ventilate the area. Emergency procedures shall be executed only by specialists or authorized personnel. Neutralize spill. Absorb neutralized spill with vermiculite or other inert absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste or cleanup materials in accordance with regulations. Containers, even when empty, will retain residue and vapors.

7. HANDLING AND STORAGE

Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols. Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

Conditions for safe storage, including any incompatibilities

Corrosive! Store in a cool, dry, well ventilated area. Keep out of direct sunlight. Keep containers tightly closed. Keep away from incompatible materials (see section 10 for incompatibilities).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Controls:

Component	Exposure Limits	Basis	Entity
Hydrogen fluoride, as F	3 ppm	TWA	OSHA PELs
	0.5 ppm (0.41 mg/m ³)	TWA	ACGIH® TLV®
	2 ppm (1.64 mg/m ³)	CEIL	ACGIH® TLV®
	3 ppm (2.5 mg/m ³)	TWA	NIOSH RELs
	6 ppm (5 mg/m ³)	CEIL *15-min	NIOSH RELs
Fluoride, as F	2.5 mg/m ³	TWA	OSHA PELs
	2.5 mg/m ³	TWA	ACGIH® TLV®
	2.5 mg/m ³	TWA	NIOSH RELs
	5 mg/m ³	STEL	NIOSH RELs

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit usually 15 minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

Personal Protection

Eyes	Wear chemical safety glasses, goggles, face shield; or full-face respirator.
Inhalation	Provide local exhaust, preferably mechanical, and full-face respirator.
Skin	Wear neoprene or rubber gloves, apron and other protective clothing appropriate to the risk of exposure. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Other	Handle in accordance with good industrial hygiene and safety practice.

Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Have supplies and equipment for neutralization and running water available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Colorless fluid which may fume in air
Odor	Sharp irritating odor
Odor threshold	Not Available
pH	Not Available
Melting point/freezing point	Not Available
Initial boiling point and boiling range	Not Available
Flash point	Not Available
Evaporation rate	Not Available
Flammability (solid, gas)	Not Available
Upper/lower flammability or explosive limit	Not Available
Vapor pressure	Not Available
Vapor density	Not Available
Specific gravity	1.0800 – 1.0900
Solubility (ies)	Soluble in water
Partition coefficient: n-octanol/water	Not Available
Auto-ignition temperature	Not Available
Decomposition temperature	Not Available

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal temperatures conditions.
Possibility of Hazardous Reactions	Will not occur.
Conditions to Avoid	Heat, incompatibles.
Incompatible Materials	Acids, bases, alkalis, glass, metals, Nitrogen compounds.
Hazardous Decomposition Products	Ammonia. Will yield hydrogen gas from contact with metals; SiF ₄ from reaction with silica or glass, nitrogen oxides, hydrogen fluoride gas.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Hydrofluoric acid

Skin	LD ₅₀ – mouse – 500 mg/kg
Eyes	Not Available
Respiratory - inhalation	LC ₅₀ – guinea pig – 4327 ppm/15M
Ingestion	TD ₅₀ – man – 143 mg/kg
Other	Not Available

Ammonium fluoride

Skin	Not Available
Eyes	Not Available
Respiratory	Not Available
Ingestion	LD10 – guinea pig -150 mg/kg
Other - intraperitoneal	LD50 – rat – 31 mg/kg

Carcinogenicity

IARC	3: Not classified as to its carcinogenicity to humans (Hydrofluoric acid)
ACGIH	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs & Symptoms of Exposure

Skin	Fatal in contact with skin. Severe skin burns/ulceration, cyanosis, jaundice. Permanent skin damage (scarring).
Eyes	Conjunctivitis, corneal burns, may cause blindness.
Respiratory - Inhalation	Fatal if inhaled. Causes respiratory tract burns. chest pain, shortness of breath, bronchopneumonia, nausea vomiting, diarrhea
Ingestion	Fatal if swallowed. Spitting blood, shock, muscle spasm, convulsions, hematuria, abdominal pain. Causes digestive tract burns.

Chronic Toxicity	Can cause cardiovascular effects. May cause damage to the liver and kidneys. May cause lung edema. Chronic exposure may entail dental or skeletal fluorosis.
Teratogenicity	Not Available
Mutagenicity	Not Available
Embryotoxicity	Not Available
Specific Target Organ Toxicity	Liver, Kidney, testes, skeleton, thyroid gland.
Reproductive Toxicity	Effects on fertility, fetotoxic (Sodium fluoride) (Ammonium fluoride)
Respiratory/Skin Sensitization	Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fluorides

Aquatic Vertebrate	LC50 – Salmo gairdneri (rainbow trout) – 51 mg/l 96h
Aquatic Invertebrate	EC50 – Daphnia magna (water flea) – 97 mg/l 96h
Terrestrial	Not Available

Persistence and Degradability	Not Available
Bioaccumulative Potential	Not Available
Mobility in Soil	Potential adsorption (fluoride)
Mobility in water	Soluble, mobility may spread in water systems.
PBT and vPvB Assessment	Not Available
Other Adverse Effects	Not Available

13. DISPOSAL CONSIDERATIONS

Waste Product or Residues	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue.
Product Containers	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORT INFORMATION

US DOT	UN2922, Corrosive liquids, Toxic, n.o.s.,(Hydrofluoric acid and Ammonium fluoride), 8 (6.1), pg II
TDG	UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S.,(HYDROFLUORIC ACID AND AMMONIUM FLUORIDE), 8 (6.1), PG II
IMDG	UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S.,(HYDROFLUORIC ACID AND AMMONIUM FLUORIDE), 8 (6.1), PG II
Marine Pollutant	No
IATA/ICAO	UN2922, Corrosive liquids, Toxic, n.o.s.,(Hydrofluoric acid and Ammonium fluoride), 8 (6.1), pg II

15. REGULATORY INFORMATION

TSCA Inventory Status	All ingredients are listed on the TSCA Active inventory.
DSL / NDSL	All ingredients are listed on the DSL inventory.
California Proposition 65	Not Listed
Massachusetts: Toxic or Hazardous Substance List	Listed: Hydrofluoric acid, Ammonium fluoride
New Jersey: Right to Know Hazardous Substance List	Listed: Hydrofluoric acid, Ammonium fluoride
Pennsylvania: Hazardous Substance List	Listed: Hydrofluoric acid, Ammonium fluoride
Rhode Island: Hazardous Substance List	Listed: Hydrofluoric acid, Ammonium fluoride
SARA 302	Listed: Hydrofluoric acid
SARA 304	Listed: Hydrofluoric acid
SARA 311	Reactive Physical Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 312	Reactive Physical Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 313	Listed: Hydrogen fluoride
WHMIS Canada	Class D1A: Poisonous and infectious material – immediate and serious effects – very toxic Class D2A: Poisonous and infectious material – other effects – Veery toxic Class E: Corrosive material.

16. OTHER INFORMATION

Revision	Date
Revision 1	07/01/2011
Revision 2	07/22/2014
Revision 3	10/13/2016
Revision 4	11/15/2017
Revision 5	04/15/2021

Disclaimer: The information provided in this Safety Data Sheet ("SDS") is correct to the best of our knowledge, information and belief at the date of publication. The information in this SDS relates only to the specific Product identified under Section 1, and does not relate to its use in combination with other materials or products, or its use as to any particular process. Those handling, storing or using the Product should satisfy themselves that they have current information regarding the particular way the Product is handled, stored or used and that the same is done in accordance with federal, state and local law. WE DO NOT MAKE ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) WARRANTIES WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN OR WITH RESPECT TO FITNESS FOR ANY PARTICULAR USE. WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, INJURY, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT.