Mallinckrodt Baker

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name AMMONIUM FLUORIDE 40% SOLUTION

Version # 01

Revision date 09-30-2010

CAS # Mixture

Product Codes J.T.Baker: 0702, 0712, 5357, 5864, 5874

Synonym(s) Ammonium fluoride solution; neutral ammonium fluoride solution

Manufacturer Mallinckrodt Baker, Inc.

Address 222 Red School Lane
Phillipsburg, NJ 08865
US

Customer Service 800-582-2537

24 Hour Emergency 908-859-2151

Chemtrec 800-424-9300

2. Hazards Identification

Emergency overview DANGER

May be fatal if swallowed or inhaled. Irritating to eyes, respiratory system and skin. May cause burns. Effects of contact or inhalation may be delayed. Causes central nervous system effects. Harmful if absorbed through skin.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.

Eyes Contact may irritate or burn eyes. Risk of serious damage to eyes. Do not get this material in contact with eyes.

Skin Contact may irritate or burn skin. Symptoms may be delayed. Harmful if absorbed through skin. Do not get this material in contact with skin.

Inhalation May be fatal if inhaled. Vapors irritate the respiratory system, and may cause coughing and difficulties in breathing. Sore throat. Symptoms may be delayed. Do not breathe dust/fume/gas/mist/vapors/spray.

Ingestion May be fatal if swallowed. Irritating. May cause nausea, stomach pain and vomiting. Diarrhoea. Ingestion of this product may result in central nervous system stimulation including muscle twitching, generalized weakness, difficulty breathing and coma. Tremors, convulsions. May cause damage to the liver and kidneys. Brain damage. Large doses can lead to respiratory or cardiac arrest and death. Do not ingest.

Target organs Eyes. Skin. Teeth. RESPIRATORY SYSTEM. Bone structure. Kidneys. Liver. Heart. Blood and/or blood-forming organs. Circulatory system. Central nervous system.

Chronic effects Harmful if absorbed through skin. Intake of more than 6 mg of fluorine per day may result in fluorosis, bone and joint damage. Hypocalcemia and hypomagnesemia can occur from absorption of fluoride ion into blood stream. May cause damage to the liver and kidneys. Can cause cardiovascular effects. Causes central nervous system effects.

Potential environmental effects Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
AMMONIUM FLUORIDE	12125-01-8	40

Non-hazardous components	CAS #	Percent
WATER	7732-18-5	60

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. Wash clothing separately before reuse.

Inhalation If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Ingestion IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Rinse mouth thoroughly. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Notes to physician In case of shortness of breath, give oxygen. Keep victim warm. Symptoms may be delayed.

General advice Immediate medical attention is required. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties Not flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing media

Suitable extinguishing media Water. Carbon dioxide (CO2). Foam. Dry chemical powder.

Protection of firefighters

Protective equipment and precautions for firefighters In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.

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

Specific methods In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

Hazardous combustion products May include oxides of nitrogen.

6. Accidental Release Measures

Personal precautions Ensure adequate ventilation. Keep unnecessary personnel away. Keep upwind. Local authorities should be advised if significant spillages cannot be contained. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ventilate closed spaces before entering them. Avoid skin contact and inhalation of vapors during disposal of spills.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Should not be released into the environment. Do not flush to sewer.

Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece).

Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination.

7. Handling and Storage

Handling

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not breathe dust/fume/gas/mist/vapors/spray. Do not use in areas without adequate ventilation. Wear personal protective equipment. Handle and open container with care. Avoid prolonged exposure. Wash thoroughly after handling.

Storage

Store in a cool, dry place. Store in a well-ventilated place. Keep container tightly closed. Store in a closed container away from incompatible materials. Will attack glass and most ceramics. Do not store in metal containers. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
AMMONIUM FLUORIDE (12125-01-8)	TWA	2.5000 mg/m3

U.S. - OSHA

Components	Type	Value	Form
AMMONIUM FLUORIDE (12125-01-8)	PEL	2.5000 mg/m3	
	TWA	2.5000 mg/m3	Dust.

Engineering controls

Ensure adequate ventilation, especially in confined areas. 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. Provide shower facilities near the work place.

Personal protective equipment

Eye / face protection

Chemical goggles are recommended. Face-shield. Do not get in eyes.

Skin protection

Wear appropriate chemical resistant clothing. Chemical resistant gloves. Do not get this material in contact with skin.

Respiratory protection

If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection. Chemical respirator with acid gas cartridge. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. WARNING! Air-purifying respirators do not protect workers in oxygen deficient atmospheres.

General hygeine considerations

Do not get in eyes. Do not get this material in contact with skin. Do not breathe vapors or spray mist. Do not get this material on clothing. Wash hands before breaks and immediately after handling the product. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance

Clear.

Color

Colorless.

Odor	Slight.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	-22 °F (-30 °C)
Freezing point	Not available.
Boiling point	228.2 °F (109 °C)
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	1.0151 estimated
Relative density	Not available.
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Incompatible materials	Strong acids. Strong bases. Oxidizing agents. Glass. Metals.
Hazardous decomposition products	Hydrogen fluoride. Nitrogen oxides (NOx). Ammonia.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects	May be fatal if inhaled or swallowed. Harmful if absorbed through skin. Irritating to eyes, respiratory system and skin. May cause burns.
Chronic effects	Intake of more than 6 mg of fluorine per day may result in fluorosis, bone and joint damage. Hypocalcemia and hypomagnesemia can occur from absorption of fluoride ion into blood stream. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH Carcinogens

AMMONIUM FLUORIDE (CAS 12125-01-8)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

AMMONIUM FLUORIDE (CAS 12125-01-8)	3 Not classifiable as to carcinogenicity to humans.

Skin corrosion/irritation	Not available.
Epidemiology	Not available.

12. Ecological Information

Ecotoxicity	Components of this product are hazardous to aquatic life.
Environmental effects	Harmful to aquatic organisms.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations. Do not allow this material to drain into sewers/water supplies.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN2505
Proper shipping name	Ammonium fluoride solution
Hazard class	6.1
Packing group	III

Additional information:

Special provisions	IB8, IP3, T1, TP33
Packaging exceptions	153
Packaging non bulk	213
Packaging bulk	240
ERG number	154

IATA

Basic shipping requirements:

UN number	2505
Proper shipping name	Ammonium fluoride Solution
Hazard class	6.1
Packing group	III

IMDG

Basic shipping requirements:

UN number	2505
Proper shipping name	AMMONIUM FLUORIDE SOLUTION
Hazard class	6.1
Packing group	III

DOT

IATA

IMDG

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

AMMONIUM FLUORIDE (CAS 12125-01-8) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

AMMONIUM FLUORIDE (CAS 12125-01-8) Listed.

CERCLA (Superfund) reportable quantity

AMMONIUM FLUORIDE: 100.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical
Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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

US - Pennsylvania RTK - Hazardous Substances: Listed substance

AMMONIUM FLUORIDE (CAS 12125-01-8) Listed.

Saf-T-Data
Health: 2 - Moderate (Poison)
Flammability: 0 - None
Reactivity: 1 - Slight
Contact: 3 - Severe
Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: B - Blue (Health)

16. Labeling Info

Label Hazard Warning
DANGER

May be fatal if swallowed or inhaled. Irritating to eyes, respiratory system and skin. May cause burns. Effects of contact or inhalation may be delayed. Causes central nervous system effects. Harmful if absorbed through skin.

Label Precautions
Do not get in eyes, on skin, or on clothing. Do not breathe mist or vapor. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid
Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Oxygen or artificial respiration if needed. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

17. Other Information

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Disclaimer

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