



PURITAN PRODUCTS
Custom Formulated and Specialty Chemicals

2290 Avenue A, Bethlehem, PA 18017

Effective Date: 11/21/2008

NON-EMERGENCY TELEPHONE
610-866-4225

24-HOUR CHEMTREC EMERGENCY TELEPHONE
800-424-9300

Material Safety Data Sheet

Ammonium Fluoride, 40%

1. Product Identification

Synonyms: Ammonium fluoride solution; neutral ammonium fluoride solution

CAS No.: 12125-01-8

Molecular Weight: 37.04

Chemical Formula: NH₄F (40% in H₂O)

Product Codes:

2. Composition/Information on Ingredients

| Ingredient | CAS No. | Percent | Hazardous |
|-------------------|------------|---------|-----------|
| Ammonium Fluoride | 12125-01-8 | 40% | Yes |
| Water | 7732-18-5 | 60% | No |

3. Hazards Identification

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.

Potential Health Effects

If inhaled or swallowed, this compound can cause fluoride poisoning. Early symptoms include nausea, vomiting, diarrhea, and weakness. Later effects include central nervous system effects, cardiovascular effects and death.

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 weakness, tremors, shallow respiration, cardopedal spasm, convulsions, and coma. May cause brain and kidney damage. Death may be caused by respiratory paralysis. Affects heart and circulatory system.

Skin Contact:

Solution is acidic and can cause severe burns, especially in sensitive areas of the skin. Effects may not appear immediately. May be absorbed through the skin with possible systemic effects.

Eye Contact:

May cause irritation and serious eye damage.

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

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.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard. If involved in a fire, can emit toxic fumes and irritating and corrosive gases.

Explosion:

May react with metals to form flammable hydrogen gas.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Water spray may be used to extinguish surrounding fire and

cool exposed containers. Water spray will also reduce fume and irritant gases.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from acids and alkalis. Solution is acid. Can cause glass and metal corrosion. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):

2.5 mg (F)/m³ (TWA)

- ACGIH Threshold Limit Value (TLV):

2.5 mg (F)/m³ (TWA) A4 - not classifiable as a human carcinogen.

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 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.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) 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, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece 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 a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Slight characteristic odor.

Solubility:

Miscible in water.

Density:

ca. 1.01

pH:

No information found.

% Volatiles by volume @ 21C (70F):

No information found.

Boiling Point:

ca. 109C (ca. 228F)

Melting Point:

ca. -30C (ca. -22F)

Vapor Density (Air=1):

Essentially the same as water.

Vapor Pressure (mm Hg):

Essentially the same as water.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Emits toxic fumes of hydrogen fluoride, nitric oxides, and ammonia when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Reaction with strong acids to produce hazardous HF gas or hydrofluoric acid, with strong bases to yield ammonia. Avoid strong oxidizing agents. Corrodes glass and metals.

Conditions to Avoid:

Heat, incompatibles.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----

---NTP Carcinogen---

| Ingredient | Known | Anticipated | IARC Category |
|--------------------------------|-------|-------------|---------------|
| Ammonium Fluoride (12125-01-8) | No | No | None |
| Water (7732-18-5) | No | No | None |

12. Ecological Information

Environmental Fate:

No information found.

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 Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: Ammonium Fluoride Solution

Hazard Class: 6.1

UN/NA: UN2505

Packing Group: III

Information reported for product/size: 7LB

International (Water, I.M.O.)

Proper Shipping Name: Ammonium Fluoride Solution

Hazard Class: 6.1

UN/NA: UN2505

Packing Group: III

Information reported for product/size: 7LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

| Ingredient | TSCA | EC | Japan | Australia | |
|--------------------------------|------|-----|-------|-----------|-----|
| Ammonium Fluoride (12125-01-8) | Yes | Yes | Yes | Yes | |
| Water (7732-18-5) | | Yes | Yes | Yes | Yes |

-----\Chemical Inventory Status - Part 2\-----

--Canada--

| Ingredient | Korea | DSL | NDSL | Phil. | |
|--------------------------------|-------|-----|------|-------|-----|
| Ammonium Fluoride (12125-01-8) | Yes | Yes | No | Yes | |
| Water (7732-18-5) | | Yes | Yes | No | Yes |

| -----\Federal, State & International Regulations - Part 1\----- | | | | | |
|---|------------|-----|--------------------|----------|-------|
| Ingredient | -SARA 302- | | -----SARA 313----- | | |
| | RQ | TPQ | List | Chemical | Catg. |
| Ammonium Fluoride (12125-01-8) | No | No | No | No | |
| Water (7732-18-5) | | No | No | No | No |

| -----\Federal, State & International Regulations - Part 2\----- | | | | |
|---|--------|--------|------|----|
| Ingredient | -RCRA- | -TSCA- | | |
| | CERCLA | 261.33 | 8(d) | |
| Ammonium Fluoride (12125-01-8) | 100 | No | No | |
| Water (7732-18-5) | | No | No | No |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2X

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

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.

Label Precautions:

- Do not get in eyes, on skin, or on clothing.
- Avoid breathing mist.
- Keep container closed.
- Use with adequate ventilation.
- Wash thoroughly after handling.

Label First Aid:

In all cases call a physician immediately. First Aid procedures should be pre-planned for fluoride compound emergencies. If swallowed, administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give artificial respiration. In case of skin contact wipe off any excess material 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. In case of eye contact, immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 3, 8, 14.

Disclaimer:

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