MSDS Number: **F2608** * * * * * *Effective Date:* ***04/04/00*** * * * * * *Supercedes:* ***11/06/97***
MSDS
MATERIAL SAFETY DATA SHEET **CHEMTREC:** 800-424-9300 (USA)

703-527-3887(Outside USA and Canada)

CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc
222 Red School Lane
Phillipsburg, NJ 08865 NOTE:
Use CHEMTREC and CANUTEC

phone numbers only in the event
Emergency Telephone Number: 908-859-2151 of a chemical emergency.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.
J. T. B A K E R

FLUOBORIC ACID

1. Product Identification

Synonyms: Fluoboric acid solution; Fluoroboric acid; hydrogen tetrafluoroborate; tetrafluoroboric acid; borofluoric acid
CAS No.: 16872-11-0
Molecular Weight: 87.81
Chemical Formula: BF4H
Product Codes: 9528

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Fluoboric Acid	16872-11-0	48 - 50%	Yes
Water	7732-18-5	50 - 52%	No

3. Hazards Identification

Emergency Overview

DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT.
Potential Health Effects

Inhalation:
Inhalation of vapor is irritating to the upper respiratory tract. In severe cases, burns and pulmonary edema may result.
Ingestion:
Corrosive. Harmful if swallowed. May be fatal.
Skin Contact:
Corrosive. Causes severe skin irritation and burns.
Eye Contact:
Corrosive. Causes severe eye irritation and burns.
Chronic Exposure:
No information found.

Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:
Not considered to be an explosion hazard. Can react with metals to produce hydrogen gas, which is highly flammable.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.

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!
J. T. Baker NEUTRASORB(R) or TEAM(R) 'Low Na+' acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Open containers with care to

relieve pressure. 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 for fluorides
-ACGIH Threshold Limit Value (TLV):
25 mg(F)/m3 for fluorides, 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, a full facepiece respirator with an acid gas cartridge and dust/mist 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. 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 protective gloves and clean body-covering clothing.
Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Odorless.
Solubility:
Soluble in water. Miscible.
Density:
1.84
pH:
No information found.
% Volatiles by volume @ 21C (70F):
No information found.
Boiling Point:
130C (266F)
Melting Point:
No information found.
Vapor Density (Air=1):

3.0
Vapor Pressure (mm Hg):
5-10 @ 20C (68F)
Evaporation Rate (BuAc=1):
1

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Hydrogen fluoride and boron may be released when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Fluoboric Acid is incompatible with alkalis, acetic anhydride, heaxafluoroisopropylideneaminolithium, metals (forms flammable hydrogen gas).
Conditions to Avoid:
Exposure to metals and other incompatibles.

11. Toxicological Information

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

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

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Fluoboric Acid (16872-11-0)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.

Environmental Toxicity:
No information found.

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: FLUOROBORIC ACID
Hazard Class: 8
UN/NA: UN1775
Packing Group: II
Information reported for product/size: 500ML

International (Water, I.M.O.)

Proper Shipping Name: FLUOROBORIC ACID
Hazard Class: 8
UN/NA: UN1775
Packing Group: II
Information reported for product/size: 500ML

International (Air, I.C.A.O.)

Proper Shipping Name: FLUOROBORIC ACID
Hazard Class: 8
UN/NA: UN1775
Packing Group: II
Information reported for product/size: 500ML

\Chemical Inventory Status - Part 1\

Ingredient	TSCA	EC	Japan	Australia
Fluoboric Acid (16872-11-0)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

\Chemical Inventory Status - Part 2\

Ingredient	Korea	Canada DSL	Canada NDSL	Phil.
Fluoboric Acid (16872-11-0)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

\Federal, State & International Regulations - Part 1\

Ingredient	SARA 302 RQ	SARA 302 TPQ	SARA 313 List	SARA 313 Chemical Catg.
Fluoboric Acid (16872-11-0)	No	No	No	No
Water (7732-18-5)	No	No	No	No

\Federal, State & International Regulations - Part 2\

Ingredient	CERCLA	RCRA 261.33	TSCA 8(d)

Fluoboric Acid (16872-11-0)	No	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: No information found.
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. HARMFUL IF INHALED. CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT.
Label Precautions:
Do not breathe vapor or mist.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Label First Aid:
In all cases get medical attention immediately. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 3, 4, 10, 16.
Disclaimer:
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Prepared by: Strategic Services Division
Phone Number: (314) 654-1600 (U.S.A.)