

## Material Safety Data Sheet

Date Printed: 08/NOV/2005

Date Updated: 13/MAR/2004

Version 1.2

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

---

1 - Product and Company Information

---

Product Name	TETRABUTYLAMMONIUM FLUORIDE, 1.0M SOLUTION IN THF CONTAINING CA. 5 WT. % WATER
Product Number	216143
Company	Sigma-Aldrich Pty. Ltd. 12 Anella Avenue Castle Hill NSW 2154 Australia
Technical Phone #	+61 2 9841 0555 (1800 800 097)
Fax	+61 2 9841 0500 (1800 800 096)
Emergency Phone #	+44 8701906777 (1800 448 465)

---

2 - Composition/Information on Ingredients

---

Product Name	CAS #	EC no	Annex I Index Number
TETRABUTYLAMMONIUM FLUORIDE, 1.0M SOLUTION IN THF CONTAINING CA. 5 WT. % WATER	None	None	None

Ingredient Name	Percent	CAS #	EC no	Annex I Index Number
TETRAHYDROFURAN (Inhibitor free) Symbols: F-Xi R-Phrases: 11-19-36/37 Highly flammable. May form explosive peroxides. Irritating to eyes and respiratory system.	>= 69.35 <= 69.85	109-99-9	203-726-8	603-025-00-0

TETRABUTYLAMMONIUM FLUORIDE Symbols: C R-Phrases: 34 Causes burns.	26.15	429-41-4	207-057-2	None
--	-------	----------	-----------	------

WATER	>= 4.5 <= 5	7732-18-5	231-791-2	None
-------	----------------	-----------	-----------	------

Formula	C16H36FN
Molecular Weight	261.47 AMU

---

3 - Hazards Identification

---

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT  
Highly flammable. May form explosive peroxides. Causes burns.

---

## 4 - First Aid Measures

---

### AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

### AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

### AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately. Do not induce vomiting.

---

## 5 - Fire Fighting Measures

---

### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

### SPECIAL RISKS

Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions. Vapor may travel considerable distance to source of ignition and flash back.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

---

## 6 - Accidental Release Measures

---

### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

---

## 7 - Handling and Storage

---

### HANDLING

Directions for Safe Handling: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep tightly closed. Keep away from heat, sparks, and open flame.

SPECIAL REQUIREMENTS: Hygroscopic.

---

## 8 - Exposure Controls / Personal Protection

---

### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Use only in a chemical fume hood.

### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

Special Protective Measures: Faceshield (8-inch minimum).

---

## 9 - Physical and Chemical Properties

---

Appearance	N/A	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	N/A	
Flash Point	- 17.0 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	N/A	
SG/Density	0.903 g/cm <sup>3</sup>	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

---

## 10 - Stability and Reactivity

---

### STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Hydrogen fluoride, Nitrogen oxides Carbon monoxide, Carbon dioxide.

11 - Toxicological Information

---

## SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Symptoms may be delayed up to 24 hours depending upon the fluoride ion concentration. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets, or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia, and cardiac arrhythmias should be monitored for, since they can occur after exposure. Symptoms of fluoride overexposure may include salivation, nausea, vomiting, abdominal pain, fever, and labored breathing. Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Prolonged exposure to fluoride dusts, vapors, or mists results in perforation of the nasal septum. Chronic effects include excessive calcification of the bones, ligaments, and tendons. Exposure to high airborne concentrations can cause anesthetic effects. Can cause CNS depression. Coughing, chest pains, difficulty in breathing. Exposure can cause:

## ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes burns.

Inhalation: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

## TARGET ORGAN INFORMATION

Central nervous system. Liver. Kidneys.

## CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

---

12 - Ecological Information

---

No data available.

---

13 - Disposal Considerations

---

## SUBSTANCE DISPOSAL

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

---

14 - Transport Information

---

## RID/ADR

UN#: 2924

Class: 3

PG: II

Subrisk: 8

Proper Shipping Name: Flammable liquid, corrosive,

n.o.s.

IMDG

UN#: 2924  
Class: 3  
PG: II  
Subrisk: 8  
Proper Shipping Name: FLAMMABLE LIQUID, CORROSIVE,  
N.O.S.  
Marine Pollutant: No  
Severe Marine Pollutant: No  
Technical Name: Required

IATA

UN#: 2924  
Class: 3  
PG: II  
Subrisk: 8  
Proper Shipping Name: Flammable liquid, corrosive,  
n.o.s.  
Inhalation Packing Group I: No  
Technical Name: Required

---

15 - Regulatory Information

---

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

INDICATION OF DANGER: F-C  
Highly Flammable. Corrosive.  
R-PHRASES: 11-19-34  
Highly flammable. May form explosive peroxides. Causes burns.  
S-PHRASES: 16-26-36/37/39-45  
Keep away from sources of ignition - no smoking. In case of  
contact with eyes, rinse immediately with plenty of water and  
seek medical advice. Wear suitable protective clothing, gloves,  
and eye/face protection. In case of accident or if you feel  
unwell, seek medical advice immediately (show the label where  
possible).

---

16 - Other Information

---

WARRANTY

The above information is believed to be correct but does not  
purport to be all inclusive and shall be used only as a guide. The  
information in this document is based on the present state of our  
knowledge and is applicable to the product with regard to  
appropriate safety precautions. It does not represent any  
guarantee of the properties of the product. Sigma-Aldrich Inc.,  
shall not be held liable for any damage resulting from handling or  
from contact with the above product. See reverse side of invoice  
or packing slip for additional terms and conditions of sale.  
Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited  
paper copies for internal use only.

DISCLAIMER

For R&D use only. Not for drug, household or other uses.