



# Safety Data Sheet - Version 5.0

Preparation Date 8/25/2014

Latest Revision Date (If Revised) 8/2/2019

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier

**Chemical Name** Tetrabutylammonium Fluoride (1.0 M in THF)

**Catalogue #** T291235

### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

**Product Uses** To be used only for scientific research and development. Not for use in humans or animals.

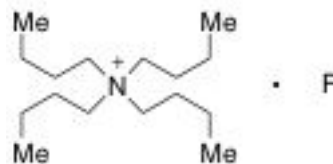
### 1.3 Details of the Supplier of the Safety Data Sheet

**Company** Toronto Research Chemicals  
2 Brisbane Road  
Toronto, ON M3J 2J8  
CANADA

**Telephone** +14166659696

**FAX** +14166654439

**Email** orders.trc@lqcgroup.com



### 1.4 Emergency Telephone Number

**Emergency#** +1(416) 665-9696 between 0800-1700 (GMT-5)

## 2. HAZARDS IDENTIFICATION

### 2.1/2.2 Classification of the Substance or Mixture and Label Elements

#### GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Skin Corrosion (Category 1B)

Eye Damage/Irritation (Category 1)

Flammable Liquids (Category 2)

Carcinogenicity (Category 2)

Specific Target Organ Toxicity, Single Exposure; Respiratory Tract Irritation (Category 3)

#### GHS Hazards Identification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

**Signal Word** Danger



#### GHS Hazard Statements

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H225 Highly flammable liquid and vapour.

H351 Suspected of causing cancer.

H335 May cause respiratory irritation.

#### GHS Precautionary Statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303/P361/P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305/P351/P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P201 Obtain special instructions before use.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray

P308/P313 IF exposed or concerned: Get medical advice/attention.

**2.3 Unclassified Hazards/Hazards Not Otherwise Classified**

No data available

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

**Molecular Formula:** C<sub>10</sub>H<sub>21</sub>FN

**Molecular Weight:** 261.46

**CAS Registry #:** 429-41-4

**EC#:** 207-057-2

**Synonyms**

Tetrabutylammonium Fluoride; Tetrabutylammonium Fluoride; TBAF; N,N,N-Tributyl-1-butanaminium Fluoride

**3.2 Mixtures**

<u>Ingredient</u>	<u>CAS#</u>	<u>EC#</u>	<u>Index-No.</u>	<u>%Composition</u>
Tetrahydrofuran	109-99-9	203-726-8	603-025-00-0	>= 60 - < 80%
Tetrabutylammonium fluoride	429-41-4	207-057-2		>= 10 - < 30%

**4. FIRST AID MEASURES**

**4.1 Description of First Aid Measures**

**General Advice**

If medical attention is required, show this safety data sheet to the doctor.

**If Inhaled**

If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

**In Case of Skin Contact**

Remove contaminated clothing and shoes. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**In Case of Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.

**If Swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

Self-protection of the first aider

Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

**4.2 Most Important Symptoms and Effects, Both Acute and Delayed**

Burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Salivation, Abdominal pain, Fever, Difficulty in breathing. Exposure to high airborne concentrations can cause anesthetic effects.

**4.3 Indication of any Immediate Medical Attention and Special Treatment Needed**

No data available.

**5. FIREFIGHTING MEASURES**

**5.1 Extinguishing Media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**5.2 Special Hazards Arising from the Substance or Mixture**

Carbon oxides, Hydrogen fluoride, Nitrogen oxides

**5.3 Advice for Firefighters**

Wear self contained breathing apparatus for fire fighting if necessary. Use personal protection equipment.

**5.4 Further Information**

No data available.

**6. ACCIDENTAL RELEASE MEASURES**

**6.1 Personal Precautions, Protective Equipment and Emergency Procedures**

Use recommended personal protective equipment (see Section 8). Adequate ventilation must be provided to ensure vapours or mists are not inhaled. Vapours are heavier than air and may accumulate in low areas. All sources of ignition, including sources of static discharge, must be removed from area.

**6.2 Environmental Precautions**

Material should not be allowed to enter the environment. Prevent further spillage or discharge into drains, if safe to do so.

**6.3 Methods and Materials for Containment and Cleaning Up**

Contain the spill and then collect using non-combustible absorbent material (such as clay, diatomaceous earth, vermiculite or other appropriate material). Place material in a suitable, sealable container and then dispose according to local/national regulations and guidance (see Section 13).

**6.4 Reference to Other Sections**

For protective equipment, refer to Section 8. For disposal, see Section 13.

**7. HANDLING AND STORAGE**

**7.1 Precautions for Safe Handling**

Avoid contact with skin and eyes. Ventilation and proper handling are to be used to prevent the formation of vapours and mists. Remove all sources of ignition and take precautionary measures to prevent the buildup of electrostatic discharge (ground and bond containers as appropriate). No smoking, eating or drinking around this material. Wash hands after use.

**7.2 Conditions for Safe Storage, Including any Incompatibilities**

Ensure container is kept securely closed before and after use. Keep in a well ventilated area and do not store with strong oxidizers or other incompatible materials (see Section 10).

Storage conditions: 4°C

**7.3 Specific End Uses**

For scientific research and development only. Not for use in humans or animals.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control Parameters**

**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Tetrahydrofuran	109-99-9	TWA	50 ppm	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
			147 mg/m3	
		STEL	100 ppm	
Remarks			295 mg/m3	
		Substance may be readily absorbed through intact skin		
		TWA	50 ppm	Canada. British Columbia OEL
		STEL	100 ppm	Canada. British Columbia OEL
Contributes significantly to the overall exposure by the skin route.				
		TWAEV	100 ppm	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
			300 mg/m3	
		TWA	50 ppm	USA. ACGIH Threshold Limit Values (TLV)
		STEL	100 ppm	USA. ACGIH Threshold Limit Values (TLV)

**8.2 Exposure Controls**

**Appropriate Engineering Controls**

A laboratory fumehood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

**Personal Protective Equipment**

All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

**Eye/Face Protection**

Safety glasses or safety goggles. All equipment should have been tested and approved under appropriate standards, such as NIOSH (US), CSA (Canada), or EN 166 (EU).

**Skin Protection**

Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of

contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated “low chemical resistant” or “waterproof” by EU standard EN 374. Unrated gloves are not recommended.

Suggested gloves: AnsellPro nitrile gloves style 92-500 or 92-600, 5 mil thickness.

Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated “chemical resistant” as per EN 734 with the resistance codes corresponding to the anticipated use of the material.

Suggested gloves: AnsellPro Viton/Butyl gloves style 38-612, 4/8 mil thickness.

Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

**Body Protection**

Fire resistant (Nomex) lab coat or coveralls.

**Respiratory Protection**

Recommended respirators are NIOSH-approved OV/Multi-Gas/P95 or CEN-approved ABEK-P2 respirators. These are to be only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

9.1 Information on Basic Physical and Chemical Properties

**A) Appearance**

Clear Colourless Solution

**C) Odour Threshold**

No data available

**E) Melting Point/Freezing Point**

**G) Flash point**

No data available

**I) Flammability (Solid/Gas)**

No data available

**K) Vapour Pressure**

No data available

**M) Relative Density**

No data available

**O) Partition Coefficient: n-octanol/water**

No data available

**Q) Decomposition Temperature**

No data available

**S) Explosive Properties**

No data available

**B) Odour**

No data available

**D) pH**

No data available

**F) Initial Boiling Point/Boiling Range**

No data available

**H) Evaporation Rate**

No data available

**J) Upper/Lower Flammability/Explosive Limits**

No data available

**L) Vapour Density**

No data available

**N) Solubility**

Chloroform (Slightly), DMSO (Slightly), Methanol (Slightly)

**P) Auto-Ignition Temperature**

No data available

**R) Viscosity**

No data available

**T) Oxidizing Properties**

No data available

9.2 Other Information

no data available

**10. STABILITY AND REACTIVITY**

10.1 Reactivity

No data available

10.2 Chemical Stability

Stable under recommended storage conditions.

Contains the following stabiliser(s):

2,6-di-tert-Butyl-p-cresol (250 ppm)

10.3 Possibility of Hazardous Reactions

Vapours may form explosive mixture with air.

10.4 Conditions to Avoid

Heat, flames and sparks.

10.5 Incompatible Materials

Oxidizing agents, Oxygen.

#### **10.6 Hazardous Decomposition Products**

In the event of fire: See section 5. **Other decomposition products:** No data available.

## **11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on Toxicological Effects**

#### **A) Acute Toxicity**

No data available

#### **B) Skin Corrosion/Irritation**

No data available

#### **C) Serious Eye Damage/Irritation**

No data available

#### **D) Respiratory or Skin Sensitization**

No data available

#### **E) Germ Cell Mutagenicity**

No data available

#### **F) Carcinogenicity**

No data available

#### **G) Reproductive Toxicity/Teratogenicity**

No data available

#### **H) Single Target Organ Toxicity - Single Exposure**

No data available

#### **I) Single Target Organ Toxicity - Repeated Exposure**

No data available

#### **J) Aspiration Hazard**

No data available

#### **K) Potential Health Effects and Routes of Exposure**

##### **Inhalation**

May be harmful if inhaled. Material is extremely destructive to the mucous membranes and respiratory tract.

##### **Ingestion**

May be harmful if swallowed.

##### **Skin**

May be harmful if absorbed through skin. Causes skin burns.

##### **Eyes**

Causes severe eye burns and possible permanent eye damage.

#### **L) Signs and Symptoms of Exposure**

Burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Salivation, Abdominal pain, Fever, Difficulty in breathing. Exposure to high airborne concentrations can cause anesthetic effects.

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

#### **M) Additional Information**

RTECS: Not listed

Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia, perforation of the nasal septum, Central nervous system depression, chest pain.

## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

No data available

### **12.2 Persistence and Degradability**

No data available

### **12.3 Bioaccumulative Potential**

No data available

### **12.4 Mobility in Soil**

No data available

### **12.5 Results of PBT and vPvB Assessment**

No data available

### **12.6 Other Adverse Effects**

No data available

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods

#### A) Product

Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

#### B) Contaminated Packaging

Dispose of as above.

#### C) Other Considerations

Product is not to be disposed of in sanitary sewers, storm sewers, or landfills.

## 14. TRANSPORT INFORMATION

### 14.1 UN Number

DOT (US): UN2924

IATA: UN2924

IMDG: UN2924

ADR/RID: UN2924

### 14.2 UN Proper Shipping Name

DOT (US)/IATA:

Flammable liquids, corrosive, n.o.s. (Tetrabutylammonium fluoride, Tetrahydrofuran)

IMDG/ARD/RID:

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Tetrabutylammonium fluoride, Tetrahydrofuran)

### 14.3 Transport Hazard Class(es)

DOT (US): 3 (8)

IATA: 3 (8)

IMDG: 3 (8)

ADR/RID: 3 (8)

### 14.4 Packing Group

DOT (US): II

IATA: II

IMDG: II

ADR/RID: II

### 14.5 Environmental Hazards

DOT (US): None

IATA: None

IMDG: None

ADR/RID: None

### 14.6 Special Precautions for User

None

## 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

### 15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

#### A) Canada

**DSL/NDSL Status:** This product or a component of this product is registered on the Canadian DSL/NDSL.

#### B) United States

**TSCA Status:** This product or a component is listed on the US EPA TSCA.

#### C) European Union

**ECHA Status:** This product is not registered with the EU ECHA.

### 15.2 Chemical Safety Assessment

No data available

## 16. OTHER INFORMATION

### 16.1 Revision History

Original Publication Date: 8/25/2014

### 16.2 List of Abbreviations

LD50	Median lethal dose of a substance required to kill 50% of a test population.
LC50	Medial lethal concentration of a substance required to kill 50% of a test population.
LDLo	Lowest known lethal dose
TDLo	Lowest known toxic dose
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances

### 16.3 Further Information

Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.

