

## SAFETY DATA SHEET

Version 5.9  
Revision Date 10/01/2018  
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**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : Tetrabutylammonium fluoride solution

Product Number : 216143  
Brand : Aldrich

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich Canada Co.  
2149 Winston Park Drive  
OAKVILLE ON L6H 6J8  
CANADA

Telephone : +1 9058299500  
Fax : +1 9058299292

**1.4 Emergency telephone number**

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

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**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)**

Flammable liquids (Category 2), H225

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

Hazard statement(s)

H225

Highly flammable liquid and vapour.

H314

Causes severe skin burns and eye damage.

H335

May cause respiratory irritation.

Precautionary statement(s)

P210

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

P233

Keep container tightly closed.

P240

Ground and bond container and receiving equipment.

P241

Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242

Use non-sparking tools.

P243

Take action to prevent static discharges.

P261

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

|                           |   |
|---------------------------|---|
| P264                      | Wash skin thoroughly after handling.  |
| P271                      | Use only outdoors or in a well-ventilated area.   |
| P280                      | Wear protective gloves/ protective clothing/ eye protection/ face protection.   |
| P301 + P330 + P331        | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  |
| P303 + P361 + P353        | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  |
| P304 + P340 + P310        | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.   |
| P305 + P351 + P338 + P310 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. |
| P363                      | Wash contaminated clothing before reuse.  |
| P370 + P378               | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  |
| P403 + P233               | Store in a well-ventilated place. Keep container tightly closed.  |
| P403 + P235               | Store in a well-ventilated place. Keep cool.  |
| P405                      | Store locked up.  |
| P501                      | Dispose of contents/ container to an approved waste disposal plant.   |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

May form explosive peroxides.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixtures

|                  |                                      |
|------------------|--------------------------------------|
| Formula          | : C <sub>16</sub> H <sub>36</sub> FN |
| Molecular weight | : 261.46 g/mol                       |

#### Hazardous components

| Component                          | Classification        | Concentration* |
|------------------------------------|-----------------------|----------------|
| <b>Tetrahydrofuran</b>             |                       |                |
| CAS-No.                            | 109-99-9              | 50 - 70 %      |
| EC-No.                             | 203-726-8             |                |
| Index-No.                          | 603-025-00-0          |                |
| Registration number                | 01-2119444314-46-XXXX |                |
| * Weight percent                   |                       |                |
| <b>Tetrabutylammonium fluoride</b> |                       |                |
| CAS-No.                            | 429-41-4              | 20 - 30 %      |
| EC-No.                             | 207-057-2             |                |
| * Weight percent                   |                       |                |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

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

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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**5. FIREFIGHTING MEASURES****5.1 Extinguishing media****Suitable extinguishing media**

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

**5.2 Special hazards arising from the substance or mixture**

No data available

**5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

Use water spray to cool unopened containers.

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**6. ACCIDENTAL RELEASE MEASURES****6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

**6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**6.3 Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

**6.4 Reference to other sections**

For disposal see section 13.

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**7. HANDLING AND STORAGE****7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C

Hygroscopic. Store under inert gas. Dry residue is explosive. Store under inert gas. Test for peroxide formation periodically and before distillation.

Storage class (TRGS 510): 3: Flammable liquids

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## 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<br>147 mg/m <sup>3</sup>  | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)   |
| Remarks         | Substance may be readily absorbed through intact skin                |       |                                  |   |
|                 |  | STEL  | 100 ppm<br>295 mg/m <sup>3</sup> | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)   |
|                 | Substance may be readily absorbed through intact skin                |       |                                  |   |
|                 |  | TWA   | 50 ppm                           | Canada. British Columbia OEL  |
|                 | Contributes significantly to the overall exposure by the skin route. |       |                                  |   |
|                 |  | STEL  | 100 ppm                          | Canada. British Columbia OEL  |
|                 | Contributes significantly to the overall exposure by the skin route. |       |                                  |   |
|                 |  | TWAEV | 100 ppm<br>300 mg/m <sup>3</sup> | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants |
|                 |  | 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

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### Personal protective equipment

##### Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

##### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

##### Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 10 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |   |                             |
|---|-----------------------------|
| a) Appearance                                   | Form: liquid                |
| b) Odour  | No data available           |
| c) Odour Threshold                              | No data available           |
| d) pH   | No data available           |
| e) Melting point/freezing point                 | No data available           |
| f) Initial boiling point and boiling range      | No data available           |
| g) Flash point                                  | -17 °C (1 °F) - closed cup  |
| h) Evaporation rate                             | No data available           |
| i) Flammability (solid, gas)                    | No data available           |
| j) Upper/lower flammability or explosive limits | No data available           |
| k) Vapour pressure                              | No data available           |
| l) Vapour density                               | No data available           |
| m) Relative density                             | 0.903 g/mL at 25 °C (77 °F) |
| n) Water solubility                             | No data available           |
| o) Partition coefficient: n-octanol/water       | No data available           |
| p) Auto-ignition temperature                    | No data available           |
| q) Decomposition temperature                    | No data available           |
| r) Viscosity                                    | No data available           |
| s) Explosive properties                         | No data available           |
| t) Oxidizing properties                         | No data available           |

### 9.2 Other safety information

No data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

Contains the following stabiliser(s):  
BHT (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

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NO<sub>x</sub>), Hydrogen fluoride

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. (Tetrahydrofuran)

#### Reproductive toxicity

No data available

No data available

#### Specific target organ toxicity - single exposure

No data available

#### Specific target organ toxicity - repeated exposure

No data available

#### Aspiration hazard

No data available

#### Additional Information

RTECS: Not available

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, Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia., perforation of

the nasal septum, Central nervous system depression, chest pain, Exposure to high airborne concentrations can cause anesthetic effects., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence (Tetrahydrofuran)

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## 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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

No data available

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## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### Contaminated packaging

Dispose of as unused product.

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## 14. TRANSPORT INFORMATION

### TDG (Canada)

UN number: 2924      Class: 3 (8)      Packing group: II  
Proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S.

### IMDG

UN number: 2924      Class: 3 (8)      Packing group: II      EMS-No: F-E, S-C  
Proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Tetrabutylammonium fluoride, Tetrahydrofuran)

### IATA

UN number: 2924      Class: 3 (8)      Packing group: II  
Proper shipping name: Flammable liquid, corrosive, n.o.s. (Tetrabutylammonium fluoride, Tetrahydrofuran)

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## 15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

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## 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.      Acute toxicity  
Eye Dam.      Serious eye damage

|            |  |
|------------|--|
| Eye Irrit. | Eye irritation                                   |
| Flam. Liq. | Flammable liquids                                |
| H225       | Highly flammable liquid and vapour.              |
| H302       | Harmful if swallowed.                            |
| H314       | Causes severe skin burns and eye damage.         |
| H318       | Causes serious eye damage.                       |
| H319       | Causes serious eye irritation.                   |
| H335       | May cause respiratory irritation.                |
| Skin Corr. | Skin corrosion                                   |
| STOT SE    | Specific target organ toxicity - single exposure |

Further information

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