

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Description:** Tetrabutylammonium fluoride, 1M solution in THF  
**Cat No. :** 433511000; 433518000  
**Synonyms** TBAF

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

**Recommended Use** Laboratory chemicals.  
**Uses advised against** No Information available

### 1.3. Details of the supplier of the safety data sheet

#### Company

**UK entity/business name**  
 Fisher Scientific UK  
 Bishop Meadow Road,  
 Loughborough, Leicestershire LE11 5RG, United Kingdom

**EU entity/business name**  
 Thermo Fisher Scientific  
 Janssen Pharmaceuticaaan 3a, 2440 Geel, Belgium

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

##### Physical hazards

Flammable liquids Category 2 (H225)

##### Health hazards

Acute oral toxicity Category 4 (H302)  
 Skin Corrosion/Irritation Category 1 B (H314)  
 Serious Eye Damage/Eye Irritation Category 1 (H318)

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Carcinogenicity  
Specific target organ toxicity - (single exposure)

Category 2 (H351)  
Category 3 (H335) (H336)

## Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

## 2.2. Label elements



Signal Word

Danger

## Hazard Statements

H225 - Highly flammable liquid and vapor  
H302 - Harmful if swallowed  
H314 - Causes severe skin burns and eye damage  
H335 - May cause respiratory irritation  
H336 - May cause drowsiness or dizziness  
H351 - Suspected of causing cancer  
EUH019 - May form explosive peroxides

## Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician

## 2.3. Other hazards

Toxic to terrestrial vertebrates  
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2. Mixtures

| Component       | CAS No   | EC No     | Weight % | GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|-----------------|----------|-----------|----------|---|
| Tetrahydrofuran | 109-99-9 | 203-726-8 | 65-70    | Flam. Liq. 2 (H225)<br>Acute Tox. 4 (H302)<br>Eye Irrit. 2 (H319)<br>STOT SE 3 (H335)   |

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|   |           |                   |       |  |
|---|-----------|-------------------|-------|--|
|   |           |                   |       | STOT SE 3 (H336)<br>Carc. 2 (H351)<br>(EUH019) |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | 429-41-4  | EEC No. 207-057-2 | 25-30 | Skin Corr. 1B (H314)<br>Eye Dam. 1 (H318)      |
| Water                                     | 7732-18-5 | 231-791-2         | <8    | -  |

| Component       | Specific concentration limits (SCL's)                                    | M-Factor | Component notes |
|-----------------|--|----------|-----------------|
| Tetrahydrofuran | Acute Tox. 4 :: C>82.5%<br>Eye Irrit. 2 :: C>=25%<br>STOT SE 3 :: C>=25% | -        | -               |

Full text of Hazard Statements: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

|   |  |
|---|--|
| <b>General Advice</b>                     | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.  |
| <b>Eye Contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.  |
| <b>Skin Contact</b>                       | Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Call a physician immediately.  |
| <b>Ingestion</b>                          | Do NOT induce vomiting. Clean mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately.   |
| <b>Inhalation</b>                         | If not breathing, give artificial respiration. Remove from exposure, lie down. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately. |
| <b>Self-Protection of the First Aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.   |

### 4.2. Most important symptoms and effects, both acute and delayed

Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Causes central nervous system depression

### 4.3. Indication of any immediate medical attention and special treatment needed

|                           |   |
|---------------------------|---|
| <b>Notes to Physician</b> | Treat symptomatically. Symptoms may be delayed. |
|---------------------------|---|

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

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## Suitable Extinguishing Media

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers.

## Extinguishing media which must not be used for safety reasons

No information available.

## 5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

## Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Nitrogen oxides (NO<sub>x</sub>), Hydrogen fluoride, peroxides.

## 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges.

### 6.2. Environmental precautions

Should not be released into the environment.

### 6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

## Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

### 7.2. Conditions for safe storage, including any incompatibilities

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Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Keep refrigerated. Flammables area. Shelf life 12 months. May form explosive peroxides on prolonged storage. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. Corrosives area.

Technical Rules for Hazardous Substances (TRGS) 510 Class 3  
Storage Class (LGK) (Germany)

## 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure limits

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE** - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

| Component       | The United Kingdom  | European Union  | Ireland   |
|-----------------|---|---|---|
| Tetrahydrofuran | STEL: 100 ppm 15 min<br>STEL: 300 mg/m <sup>3</sup> 15 min<br>TWA: 50 ppm 8 hr<br>TWA: 150 mg/m <sup>3</sup> 8 hr<br>Skin | TWA: 50 ppm (8h)<br>TWA: 150 mg/m <sup>3</sup> (8h)<br>STEL: 100 ppm (15min)<br>STEL: 300 mg/m <sup>3</sup> (15min)<br>Skin | TWA: 50 ppm 8 hr.<br>TWA: 150 mg/m <sup>3</sup> 8 hr.<br>STEL: 100 ppm 15 min<br>STEL: 300 mg/m <sup>3</sup> 15 min<br>Skin |

#### Biological limit values

List source(s):

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

| Component                             | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---------------------------------------|------------------------------|---------------------------------|--------------------------------|-----------------------------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) |                              |                                 |                                | DNEL = 12.6mg/kg<br>bw/day        |

| Component                             | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---------------------------------------|----------------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | DNEL = 300mg/m <sup>3</sup>      | DNEL = 96mg/m <sup>3</sup>          | DNEL = 150mg/m <sup>3</sup>        | DNEL = 72.4mg/m <sup>3</sup>          |

#### Predicted No Effect Concentration (PNEC)

See values below.

| Component                             | Fresh water     | Fresh water sediment            | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture)          |
|---------------------------------------|-----------------|---------------------------------|--------------------|------------------------------------|-----------------------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | PNEC = 4.32mg/L | PNEC = 23.3mg/kg<br>sediment dw | PNEC = 21.6mg/L    | PNEC = 4.6mg/L                     | PNEC = 2.13mg/kg<br>soil dw |

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| Component                             | Marine water     | Marine water sediment           | Marine water intermittent | Food chain             | Air |
|---------------------------------------|------------------|---------------------------------|---------------------------|------------------------|-----|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | PNEC = 0.432mg/L | PNEC = 2.33mg/kg<br>sediment dw |                           | PNEC = 67mg/kg<br>food |     |

## 8.2. Exposure controls

### Engineering Measures

Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles (European standard - EN 166)

#### Hand Protection

Protective gloves

| Glove material  | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|-----------------|-------------------|-----------------|-------------|-----------------------|
| Butyl rubber    | See manufacturers | -               | EN 374      | (minimum requirement) |
| Nitrile rubber  | recommendations   |                 |             |                       |
| Viton (R)       |                   |                 |             |                       |
| Neoprene gloves |                   |                 |             |                       |

#### Skin and body protection

Long sleeved clothing.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

#### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

#### Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** low boiling organic solvent Type AX Brown conforming to EN371 or Organic gases and vapours filter Type A Brown conforming to EN14387

#### Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141  
When RPE is used a face piece Fit Test should be conducted

#### Environmental exposure controls

No information available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

#### Physical State

Liquid

#### Appearance Odor

Amber  
Odorless

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|   |                          |                                   |
|---|--------------------------|-----------------------------------|
| Odor Threshold                          | No data available        |                                   |
| Melting Point/Range                     | No data available        |                                   |
| Softening Point                         | No data available        |                                   |
| Boiling Point/Range                     | No information available |                                   |
| Flammability (liquid)                   | Highly flammable         | On basis of test data             |
| Flammability (solid,gas)                | Not applicable           | Liquid                            |
| Explosion Limits                        | No data available        |                                   |
| Flash Point                             | -17 °C / 1.4 °F          | Method - No information available |
| Autoignition Temperature                | No data available        |                                   |
| Decomposition Temperature               | No data available        |                                   |
| pH                                      | No information available |                                   |
| Viscosity                               | No data available        |                                   |
| Water Solubility                        | Moderately soluble       |                                   |
| Solubility in other solvents            | No information available |                                   |
| Partition Coefficient (n-octanol/water) |                          |                                   |
| Component                               | log Pow                  |                                   |
| Tetrahydrofuran                         | 0.45                     |                                   |
| Vapor Pressure                          | No data available        |                                   |
| Density / Specific Gravity              | 0.887                    |                                   |
| Bulk Density                            | Not applicable           | Liquid                            |
| Vapor Density                           | 9.01                     | (Air = 1.0)                       |
| Particle characteristics                | Not applicable (liquid)  |                                   |

## 9.2. Other information

**Explosive Properties** Vapors may form explosive mixtures with air

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

### 10.2. Chemical stability

May form explosive peroxides.

### 10.3. Possibility of hazardous reactions

**Hazardous Polymerization** Hazardous polymerization does not occur.  
**Hazardous Reactions** None under normal processing.

### 10.4. Conditions to avoid

Incompatible products. Excess heat. Exposure to air. Exposure to moisture. Keep away from open flames, hot surfaces and sources of ignition.

### 10.5. Incompatible materials

Strong oxidizing agents. Bases.

### 10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>). Hydrogen fluoride. peroxides.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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## Product Information

### (a) acute toxicity;

Oral

Category 4

Dermal

Based on available data, the classification criteria are not met

Inhalation

Based on available data, the classification criteria are not met

## Toxicology data for the components

| Component       | LD50 Oral          | LD50 Dermal           | LC50 Inhalation                               |
|-----------------|--------------------|-----------------------|---|
| Tetrahydrofuran | 1650 mg/kg ( Rat ) | > 2000 mg/kg (Rabbit) | 180 mg/L ( Rat ) 1 h<br>53.9 mg/L ( Rat ) 4 h |
| Water           | -                  | -                     | -   |

### (b) skin corrosion/irritation;

Category 1 B

### (c) serious eye damage/irritation;

Category 1

### (d) respiratory or skin sensitization;

Respiratory

No data available

Skin

No data available

| Component                             | Test method                                       | Test species | Study result    |
|---------------------------------------|---|--------------|-----------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | Local Lymph Node Assay<br>OECD Test Guideline 429 | mouse        | non-sensitising |

### (e) germ cell mutagenicity;

No data available

| Component                             | Test method   | Test species          | Study result |
|---------------------------------------|---|-----------------------|--------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | OECD Test Guideline 476<br>Gene cell mutation           | in vivo<br>Mammalian  | negative     |
|                                       | OECD Test Guideline 473<br>Chromosomal aberration assay | in vitro<br>Mammalian | negative     |

### (f) carcinogenicity;

Category 2

The table below indicates whether each agency has listed any ingredient as a carcinogen  
Limited evidence of a carcinogenic effect

| Component       | EU | UK | Germany | IARC     |
|-----------------|----|----|---------|----------|
| Tetrahydrofuran |    |    |         | Group 2B |

### (g) reproductive toxicity;

No data available

| Component                             | Test method             | Test species / Duration | Study result      |
|---------------------------------------|-------------------------|-------------------------|-------------------|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) | OECD Test Guideline 416 | Rat<br>2 Generation     | NOAEL = 3,000 ppm |

### (h) STOT-single exposure;

Category 3

Results / Target organs

Respiratory system, Central nervous system (CNS).

### (i) STOT-repeated exposure;

No data available

Target Organs

None known.

### (j) aspiration hazard;

No data available



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**Symptoms / effects, both acute and delayed** Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Causes central nervous system depression.

## 11.2. Information on other hazards

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### Ecotoxicity effects

| Component       | Freshwater Fish   | Water Flea                                   | Freshwater Algae |
|-----------------|---|--|------------------|
| Tetrahydrofuran | 2160 mg/l LC50 = 96 h<br>Pimephales promelas<br>Leuciscus idus: LC50: 2820 mg/L/48h | EC50 48 h 3485 mg/l<br>EC50: >10000 mg/L/24h |                  |

### 12.2. Persistence and degradability

#### Persistence

Soluble in water, Persistence is unlikely, based on information available.

### 12.3. Bioaccumulative potential

Bioaccumulation is unlikely

| Component       | log Pow | Bioconcentration factor (BCF) |
|-----------------|---------|-------------------------------|
| Tetrahydrofuran | 0.45    | No data available             |

### 12.4. Mobility in soil

The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

### 12.5. Results of PBT and vPvB assessment

No data available for assessment.

### 12.6. Endocrine disrupting properties

#### Endocrine Disruptor Information

| Component       | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances |
|-----------------|--|--|
| Tetrahydrofuran | Group III Chemical                       |  |

### 12.7. Other adverse effects

#### Persistent Organic Pollutant Ozone Depletion Potential

This product does not contain any known or suspected substance

This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

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|  |  |
|--|--|
| <b>Waste from Residues/Unused Products</b> | Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.   |
| <b>Contaminated Packaging</b>              | Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.   |
| <b>European Waste Catalogue (EWC)</b>      | According to the European Waste Catalog, Waste Codes are not product specific, but application specific.   |
| <b>Other Information</b>                   | Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms. |

## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

|   |  |
|---|--|
| <b>14.1. UN number</b>                  | UN2924   |
| <b>14.2. UN proper shipping name</b>    | FLAMMABLE LIQUID, CORROSIVE, N.O.S.                        |
| <b>Technical Shipping Name</b>          | Tetrahydrofuran, 1-Butanaminium, N,N,N-tributyl-, fluoride |
| <b>14.3. Transport hazard class(es)</b> | 3  |
| <b>Subsidiary Hazard Class</b>          | 8  |
| <b>14.4. Packing group</b>              | II   |

### ADR

|   |  |
|---|--|
| <b>14.1. UN number</b>                  | UN2924   |
| <b>14.2. UN proper shipping name</b>    | FLAMMABLE LIQUID, CORROSIVE, N.O.S.                        |
| <b>Technical Shipping Name</b>          | Tetrahydrofuran, 1-Butanaminium, N,N,N-tributyl-, fluoride |
| <b>14.3. Transport hazard class(es)</b> | 3  |
| <b>Subsidiary Hazard Class</b>          | 8  |
| <b>14.4. Packing group</b>              | II   |

### IATA

|   |  |
|---|--|
| <b>14.1. UN number</b>                  | UN2924   |
| <b>14.2. UN proper shipping name</b>    | FLAMMABLE LIQUID, CORROSIVE, N.O.S.                        |
| <b>Technical Shipping Name</b>          | Tetrahydrofuran, 1-Butanaminium, N,N,N-tributyl-, fluoride |
| <b>14.3. Transport hazard class(es)</b> | 3  |
| <b>Subsidiary Hazard Class</b>          | 8  |
| <b>14.4. Packing group</b>              | II   |

|  |                                  |
|--|----------------------------------|
| <b>14.5. Environmental hazards</b>                                   | No hazards identified            |
| <b>14.6. Special precautions for user</b>                            | No special precautions required. |
| <b>14.7. Maritime transport in bulk according to IMO instruments</b> | Not applicable, packaged goods   |

## SECTION 15: REGULATORY INFORMATION

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

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## International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component                                 | CAS No    | EINECS    | ELINCS | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|---|-----------|-----------|--------|-----|-------|------|----------|------|------|
| Tetrahydrofuran                           | 109-99-9  | 203-726-8 | -      | -   | X     | X    | KE-33454 | X    | X    |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | 429-41-4  | 207-057-2 | -      | -   | X     | X    | KE-33273 | -    | -    |
| Water                                     | 7732-18-5 | 231-791-2 | -      | -   | X     | X    | KE-35400 | X    | -    |

| Component                                 | CAS No    | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|---|-----------|------|---|-----|------|------|-------|-------|
| Tetrahydrofuran                           | 109-99-9  | X    | ACTIVE  | X   | -    | X    | X     | X     |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | 429-41-4  | X    | ACTIVE  | X   | -    | X    | X     | X     |
| Water                                     | 7732-18-5 | X    | ACTIVE  | X   | -    | X    | X     | X     |

Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

## Authorisation/Restrictions according to EU REACH

| Component                                 | CAS No    | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|---|-----------|---|---|---|
| Tetrahydrofuran                           | 109-99-9  | -   | Use restricted. See entry 75. (see link for restriction details)              | -   |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | 429-41-4  | -   | -   | -   |
| Water                                     | 7732-18-5 | -   | -   | -   |

## REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

## Seveso III Directive (2012/18/EC)

| Component                                 | CAS No    | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|---|-----------|---|--|
| Tetrahydrofuran                           | 109-99-9  | Not applicable  | Not applicable   |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | 429-41-4  | Not applicable  | Not applicable   |
| Water                                     | 7732-18-5 | Not applicable  | Not applicable   |

## Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

## Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

# SAFETY DATA SHEET

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## National Regulations

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**WGK Classification** Water endangering class = 3 (self classification)

| Component                                 | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|---|---------------------------------------|-------------------------|
| Tetrahydrofuran                           | WGK1                                  |                         |
| 1-Butanaminium, N,N,N-tributyl-, fluoride | WGK3                                  |                         |

| Component       | France - INRS (Tables of occupational diseases)      |
|-----------------|--|
| Tetrahydrofuran | Tableaux des maladies professionnelles (TMP) - RG 84 |

| Component                             | Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81) | Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC) | Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure |
|---------------------------------------|--|---|---|
| Tetrahydrofuran<br>109-99-9 ( 65-70 ) |  | Group I   |   |

## 15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

## SECTION 16: OTHER INFORMATION

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

H302 - Harmful if swallowed  
H314 - Causes severe skin burns and eye damage  
H318 - Causes serious eye damage  
H335 - May cause respiratory irritation  
H336 - May cause drowsiness or dizziness  
H351 - Suspected of causing cancer  
EUH019 - May form explosive peroxides  
H225 - Highly flammable liquid and vapor  
H319 - Causes serious eye irritation

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer  
Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

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**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

## Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

## Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

**Physical hazards** On basis of test data

**Health Hazards** Calculation method

**Environmental hazards** Calculation method

## Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

**Creation Date** 27-Oct-2009

**Revision Date** 06-Dec-2024

**Revision Summary** SDS sections updated.

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

## Disclaimer

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**End of Safety Data Sheet**