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

1.1. Product identification

Product Description: Tetrabutylammonium fluoride, 1M solution in THF, containing ca. 5% water
Cat No.: 201950000; 201950050; 201951000; 201955000
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: Acros Organics BVBA
Janssen Pharmaceuticaalaaan 3a
2440 Geel, Belgium
E-mail address: begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information US call: 001-800-ACROS-01 / 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

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards
Flammable liquids Category 2

Health hazards
Skin Corrosion/irritation Category 1 B
Serious Eye Damage/Eye Irritation Category 1
Carcinogenicity Category 2
Specific target organ toxicity - (single exposure) Category 3

Environmental hazards
Based on available data, the classification criteria are not met

2.2. Label elements

ACR20195
Signal Word  Danger

Hazard Statements
H225 - Highly flammable liquid and vapor
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/sparks/open flames/hot surfaces. - No smoking
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ 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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>EC-No.</th>
<th>Weight %</th>
<th>CLP Classification - Regulation (EC) No 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>109-99-9</td>
<td>EEC No. 203-726-8</td>
<td>69</td>
<td>Flam. Liq. 2 (H225)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 (H302)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2 (H319)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3 (H335)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3 (H336)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Carc. 2 (H351)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(EUH019)</td>
</tr>
<tr>
<td>1-Butanaminium, N,N,N-tributyl-, fluoride</td>
<td>429-41-4</td>
<td>EEC No. 207-057-2</td>
<td>26</td>
<td>Skin Corr. 1B (H314)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1 (H318)</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
SAFETY DATA SHEET
Tetrabutylammonium fluoride, 1M solution in THF, containing ca. 5% water

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Call a physician immediately.

Ingestion
Do not induce vomiting. Clean mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately.

Inhalation
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.

Protection of First-aiders
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
Notes to Physician
Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media
Suitable Extinguishing Media
CO₂, dry chemical, dry sand, alcohol-resistant foam.

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.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NOx), 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. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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.

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. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest.

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 before re-use. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. 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.

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits


<table>
<thead>
<tr>
<th>Component</th>
<th>European Union</th>
<th>The United Kingdom</th>
<th>France</th>
<th>Belgium</th>
<th>Spain</th>
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</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>TWA: 50 ppm 8 hr</td>
<td>STEL: 100 ppm 15 min</td>
<td>TWA / VME: 50 ppm (8 heures), restrictive limit</td>
<td>TWA: 50 ppm 8 uren</td>
<td>TWA / VLA-EC: 100 ppm (15 minutos), restrictive limit</td>
</tr>
<tr>
<td></td>
<td>TWA: 150 mg/m³ 8 hr</td>
<td>TWA: 150 mg/m³ 8 hr</td>
<td>TWA / VME: 150 mg/m³ (8 heures), restrictive limit</td>
<td>TWA: 150 mg/m³ 8 uren</td>
<td>TWA / VLA-EC: 300 mg/m³ (15 minutos), restrictive limit</td>
</tr>
<tr>
<td></td>
<td>STEL: 100 ppm 15 min</td>
<td>STEL: 300 mg/m³ 15 min</td>
<td>STEL / VLCT: 300 mg/m³, restrictive limit</td>
<td>STEL: 300 mg/m³ 15 min</td>
<td>STEL / VLA-EC: 50 ppm (8 horas), restrictive limit</td>
</tr>
<tr>
<td></td>
<td>STEL: 300 mg/m³ 15 min</td>
<td>TWA: 150 mg/m³ 8 hr</td>
<td>Huid</td>
<td>TWA / VLA-ED: 150 mg/m³ (8 horas)</td>
<td>Piel</td>
</tr>
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<table>
<thead>
<tr>
<th>Component</th>
<th>Italy</th>
<th>Germany</th>
<th>Portugal</th>
<th>The Netherlands</th>
<th>Finland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>TWA: 50 ppm 8 ore.</td>
<td>TWA: 50 ppm (8 Stunden), AGW-exposure factor 2</td>
<td>TWA: 600 mg/m³ 15 minuten</td>
<td>TWA: 50 ppm 8 tunteina</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Media Ponderata nel Tempo</td>
<td>TWA: 150 mg/m³ 8 ore.</td>
<td>STEL: 100 ppm 15 minuten</td>
<td>TWA: 150 mg/m³ 8 uren</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA: 150 mg/m³ 8 ore.</td>
<td>TWA: 150 mg/m³ 8 ore.</td>
<td>ST:EL 300 mg/m³ 15 minuten</td>
<td>TWA: 150 mg/m³ 8 uren</td>
<td></td>
</tr>
</tbody>
</table>

ACR20195
### SAFETY DATA SHEET

**Tetrabutylammonium fluoride, 1M solution in THF, containing ca. 5% water**

**Revision Date** 29-Feb-2016

<table>
<thead>
<tr>
<th>Component</th>
<th>Austria</th>
<th>Denmark</th>
<th>Switzerland</th>
<th>Poland</th>
<th>Norway</th>
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</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Haut</td>
<td>Haut/Peau</td>
<td>MAK-KZW: 100 ppm 15 Minuten</td>
<td>STEL: 300 mg/m³ 15 minutach</td>
<td>TWA: 150 mg/m³ 8 godzinach</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAK-KZW: 300 mg/m³ 15 Minuten</td>
<td>TWA: 150 mg/m³ 8 timer</td>
<td>TWA: 150 mg/m³ 8 timer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAK-TMW: 50 ppm 8 Stunden</td>
<td>TWA: 150 mg/m³ 8 timer</td>
<td>Stel: 100 ppm 15 Minuten</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAK-TMW: 150 mg/m³ 8 Stunden</td>
<td>TWA: 150 mg/m³ 8 timer</td>
<td>HUD</td>
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<table>
<thead>
<tr>
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<th>Croatia</th>
<th>Cyprus</th>
<th>Czech Republic</th>
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<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>koža</td>
<td>koža</td>
<td>Skin-potential for cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA-VG: 50 ppm 8 satima.</td>
<td>TWA-VG: 150 mg/m³ 8 satima.</td>
<td>TWA: 100 ppm 15 min</td>
<td>TWA: 150 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA-KVG: 100 ppm 15 minutama.</td>
<td>STEL-KVG: 300 mg/m³ 15 minutama.</td>
<td>TWA: 300 mg/m³ 15 min</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Estonia</th>
<th>Gibraltar</th>
<th>Greece</th>
<th>Hungary</th>
<th>Iceland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Näk</td>
<td>Skin notation</td>
<td>TWA: 50 ppm 8 hr.</td>
<td>STEL: 300 mg/m³ 15 percekben. CK</td>
<td>TWA: 150 mg/m³ 8 hodinách.</td>
</tr>
<tr>
<td></td>
<td>TWA: 150 mg/m³ 8 tundides.</td>
<td>TWA: 50 ppm 8 hr.</td>
<td>TWA: 75 mg/m³</td>
<td>TWA: 150 mg/m³ 8 órában. AK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA: 100 ppm 15 min</td>
<td>TWA: 150 mg/m³ 8 tundides.</td>
<td>STEL: 200 ppm</td>
<td>lehetséges boron</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL: 300 mg/m³ 15 min</td>
<td>STEL: 500 mg/m³</td>
<td>TWA: 590 mg/m³</td>
<td>keresztüli felszívódás</td>
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<table>
<thead>
<tr>
<th>Component</th>
<th>Latvia</th>
<th>Lithuania</th>
<th>Luxembourg</th>
<th>Malta</th>
<th>Romania</th>
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</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>skin - potential for cutaneous exposure</td>
<td>TWA: 50 ppm IPRD</td>
<td>possibility of significant uptake through the skin</td>
<td>Skin notation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL: 100 ppm</td>
<td>TWA: 150 mg/m³ IPRD</td>
<td>TWA: 50 ppm</td>
<td>TWA: 50 ppm 8 ore</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL: 300 mg/m³</td>
<td>Oda</td>
<td>Stunden</td>
<td>TWA: 150 mg/m³</td>
<td>Stel: 100 ppm 15 minute</td>
</tr>
<tr>
<td></td>
<td>TWA: 50 ppm</td>
<td></td>
<td>TWA: 150 mg/m³ 8 Stunden</td>
<td>TWA: 150 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA: 150 mg/m³</td>
<td></td>
<td>TWA: 100 ppm 15 Minuten</td>
<td>STEL: 300 mg/m³ 15 Minuten</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
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<th>Slovak Republic</th>
<th>Slovenia</th>
<th>Sweden</th>
<th>Turkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>MAC: 100 mg/m³</td>
<td>Ceiling: 300 mg/m³</td>
<td>TWA: 50 ppm 8 8 urah</td>
<td>STV: 80 ppm 15 minute</td>
<td>Deri</td>
</tr>
<tr>
<td></td>
<td>Potential for cutaneous absorption</td>
<td>TWA: 150 mg/m³ 8 urah</td>
<td>TWA: 150 mg/m³ 8 urah Koža</td>
<td>STV: 250 mg/m³ 15 minute</td>
<td>TWA: 50 ppm 8 saat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 150 mg/m³</td>
<td>TWA: 150 mg/m³ 8 urah Koža</td>
<td>LLV: 50 ppm 8 timmar</td>
<td>TWA: 150 mg/m³ 8 saat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Koža</td>
<td>STEL: 100 ppm 15 minute</td>
<td>LLV: 150 mg/m³ 8 timmar</td>
<td>STEL: 100 ppm 15 dakika</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 300 mg/m³ 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Page 5 / 11**
SAFETY DATA SHEET
Tetrabutylammonium fluoride, 1M solution in THF, containing ca. 5% water

Biological limit values
List source(s):

<table>
<thead>
<tr>
<th>Component</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Tetrahydrofuran: 2 mg/L urine end of shift</td>
<td>Tetrahydrofuran: 2 mg/L urine (end of shift)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Gibraltar</th>
<th>Latvia</th>
<th>Slovak Republic</th>
<th>Luxembourg</th>
<th>Turkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Tetrahydrofuran: 2 mg/L urine end of exposure or work shift</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
MDHS70 General methods for sampling airborne gases and vapours
MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography
MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL)
No information available

Predicted No Effect Concentration (PNEC)
No information available.

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

<table>
<thead>
<tr>
<th>Glove material</th>
<th>Breakthrough time</th>
<th>Glove thickness</th>
<th>EU standard</th>
<th>Glove comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl rubber</td>
<td>See manufacturers</td>
<td>-</td>
<td>EN 374</td>
<td>(minimum requirement)</td>
</tr>
<tr>
<td>Nitrile rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viton (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neoprene gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 compatibility, 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.
Large scale/emergency use
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly. 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Amber</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>No data available</td>
</tr>
<tr>
<td>Softening Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>-17 °C / 1.4 °F    Method - No information available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
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</tr>
<tr>
<td>Flammability (solid, gas)</td>
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<tr>
<td>Explosion Limits</td>
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</tr>
<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Vapor Density</td>
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</tr>
<tr>
<td>Specific Gravity / Density</td>
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<tr>
<td>Bulk Density</td>
<td>Not applicable     Liquid</td>
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<tr>
<td>Water Solubility</td>
<td>Moderately soluble</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
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</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>log Pow</td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
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<td>Autoignition Temperature</td>
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<td>Decomposition Temperature</td>
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<td>Viscosity</td>
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<td>Explosive Properties</td>
<td>No information available Vapors may form explosive mixtures with air</td>
</tr>
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<td>Oxidizing Properties</td>
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</tr>
</tbody>
</table>

#### 9.2. Other information

---

### SECTION 10: STABILITY AND REACTIVITY

#### 10.1. Reactivity

None known, based on information available

#### 10.2. Chemical stability

Air sensitive: Moisture sensitive: 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


10.5. Incompatible materials

Strong oxidizing agents. Bases.

10.6. Hazardous decomposition products


SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

Oral No data available
Dermal No data available
Inhalation No data available

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; No data available

(d) respiratory or skin sensitization;

Respiratory No data available
Skin No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

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

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

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

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

ACR20195
be investigated: Causes central nervous system depression

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
Ecotoxicity effects

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Fish</th>
<th>Water Flea</th>
<th>Freshwater Algae</th>
<th>Microtox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>2160 mg/l LC50 = 96 h</td>
<td>Pimephales promelas</td>
<td>EC50 48 h 3485 mg/l</td>
<td>EC50: &gt;10000 mg/L/24h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leuciscus idus: LC50: 2820 mg/L/48h</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

12.3. Bioaccumulative potential
Bioaccumulation is unlikely

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>0.45</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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. Other adverse effects
Endocrine Disruptor Information

<table>
<thead>
<tr>
<th>Component</th>
<th>EU - Endocrine Disrupters Candidate List</th>
<th>EU - Endocrine Disruptors - Evaluated Substances</th>
<th>Japan - Endocrine Disruptor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Group III Chemical</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
Waste from Residues / Unused Products
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.

Contaminated Packaging
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.

European Waste Catalogue (EWC)
According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Other Information
Do not dispose of waste into sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be 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

14.1. UN number
UN2924

14.2. UN proper shipping name
FLAMMABLE LIQUID, CORROSIVE, N.O.S

14.3. Transport hazard class(es)
3
Subsidiary Hazard Class
8

14.4. Packing group
II
SAFETY DATA SHEET
Tetrabutylammonium fluoride, 1M solution in THF, containing ca. 5% water

Revision Date 29-Feb-2016

ADR
14.1. UN number UN2924
14.2. UN proper shipping name FLAMMABLE LIQUID, CORROSIVE, N.O.S
14.3. Transport hazard class(es) 3
   Subsidiary Hazard Class 8
14.4. Packing group II

IATA
14.1. UN number UN2924
14.2. UN proper shipping name FLAMMABLE LIQUID, CORROSIVE, N.O.S
14.3. Transport hazard class(es) 3
   Subsidiary Hazard Class 8
14.4. Packing group II

14.5. Environmental hazards No hazards identified
14.6. Special precautions for user No special precautions required
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
International Inventories
Australia Complete Regulatory Information contained in following SDS's X = listed China
Canada The product is classified and labeled according to EC directives or corresponding national laws The product is classified and labeled in accordance with Directive 1999/45/EC Europe TSCA Korea Philippines

<table>
<thead>
<tr>
<th>Component</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>PICCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>AICS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>203-726-8</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1-Butanaminium, N,N,N-tributyl-, fluoride</td>
<td>207-057-2</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>Water</td>
<td>231-791-2</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

National Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Germany - Water Classification (VwVwS)</th>
<th>Germany - TA-Luft Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>WGK 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>France - INRS (Tables of occupational diseases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>Tableaux des maladies professionnelles (TMP) - RG 84</td>
</tr>
</tbody>
</table>

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.
Take note of Dir 94/33/EC on the protection of young people at work
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

15.2. Chemical safety assessment

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

SECTION 16: OTHER INFORMATION

Full Text of H-/EUH-Statements Referred to Under Section 3
H225 - Highly flammable liquid and vapor
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage

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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

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
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

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 29-Feb-2016
Revision Summary SDS sections updated, 2, 11.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer
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End of Safety Data Sheet