SECTION 1: Identification

1.1. Identification

Product name: TRIMETHYLSILYL TRIFLUOROMETHANESULFONATE
Product code: SIT8620.0
Product form: Substance
Physical state: Liquid
Formula: C4H9F3O3SSi
Synonyms: TRIMETHYLSILYLTRIFLATE
TRIMETHYLSILANOL TRIFLUOROMETHANESULFONATE
TRIFLUOROMETHANESULFONIC ACID TRIMETHYLSILYL ESTER
Chemical family: ORGANOSILANE

1.2. Recommended use and restrictions on use

Recommended use: Chemical intermediate

1.3. Supplier

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Flammable liquids Category 3 - H226 - Flammable liquid and vapor
Skin corrosion/irritation Category 1B - H314 - Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1 - H318 - Causes serious eye damage
Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling
Hazard pictograms (GHS US):

Signal word (GHS US): Danger
Hazard statements (GHS US):
H226 - Flammable liquid and vapor
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage

Precautionary statements (GHS US):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe vapors.
P264 - Wash hands thoroughly after handling.
P310 - Immediately call a doctor
P210 - Keep away from heat, open flames, sparks. - No smoking.
P370+P378 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish.
P233 - Keep container tightly closed.
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical equipment
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
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/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P363 - Wash contaminated clothing before reuse.
P403+P235 - Keep in a cool place
TRIMETHYLSILYL TRIFLUOROMETHANESULFONATE
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P405 - Store locked up.
P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Hazards not otherwise classified (HNOC)
Other hazards not contributing to the classification: Material will generate trifluoromethanesulfonic acid on contact with moisture on skin eyes or mucous membranes.

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances
Substance type: Mono-constituent
Name: TRIMETHYLSILYL TRIFLUOROMETHANESULFONATE
CAS-No.: 27607-77-8

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
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<tbody>
<tr>
<td>Trimethylsilyl trifluoromethanesulfonate</td>
<td>(CAS-No.) 27607-77-8</td>
<td>97 - 100</td>
<td>Flam. Liq. 3, H226</td>
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<td></td>
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<td>Skin Corr. 1B, H314</td>
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<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures
First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.
First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact: Wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)
Symptoms/effects: Causes severe skin burns and eye damage.
Symptoms/effects after inhalation: May cause irritation to the respiratory tract. Overexposure may cause: Coughing. Headache. Nausea.
Symptoms/effects after skin contact: Causes (severe) skin burns.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.

4.3. Immediate medical attention and special treatment, if necessary
No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media: Do not use straight streams.

5.2. Specific hazards arising from the chemical
Fire hazard: Flammable liquid and vapor. Irritating fumes of trifluoromethanesulfonic acid and organic acid vapors may develop when material is exposed to water or open flame.
Explosion hazard: May form flammable/explosive vapor-air mixture.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.
Prohibition during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.
Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures: Eliminate ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel
Protective equipment: Wear protective equipment as described in Section 8.
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Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up
For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Use only non-sparking tools.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapor and mist. Take precautionary measures against static discharge. Containers and transfer lines require grounding during use. Provide good ventilation in process area to prevent accumulation of vapors. Use only non-sparking tools.
Hygiene measures : Wash contaminated clothing before reuse. Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures : Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical/ventilating/lighting equipment.
Storage conditions : Keep container tightly closed. Keep in a cool place. Store locked up.
Storage area : Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
| Trimethylsilyl trifluoromethanesulfonate (27607-77-8) |
|-----------------|-----------------|-----------------|
| ACGIH TWA (ppm) | < 3 ppm (Gelest Recommendation) |

8.2. Appropriate engineering controls
Appropriate engineering controls : Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment
Personal protective equipment:
Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:
Neoprene or nitrile rubber gloves

Eye protection:
Chemical goggles or face shield. Contact lenses should not be worn

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor/acid gas (yellow cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state : Liquid
Appearance : Clear liquid.
Molecular mass : 222.25 g/mol
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Color: Straw.
Odor: Acrid.
Odor threshold: No data available
Refractive index: 1.36
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: No data available
Freezing point: < 0 °C
Boiling point: 140 - 141 °C
Flash point: 40 °C
Auto-ignition temperature: 405 °C
Decomposition temperature: No data available
Flammability (solid, gas): Flammable liquid and vapor
Vapor pressure: 14 mm Hg @ 25°C
Relative vapor density at 20 °C: > 1
Relative density: 1.225
% Volatiles: 100 %
Solubility: Reacts with water.
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Explosion limits: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable in sealed containers stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air, liberating trifluoromethanesulfonic acid.

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Not classified
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified

None of the components in this product at concentrations >0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Reproductive toxicity: Not classified
Specific target organ toxicity – single exposure: Not classified
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Specific target organ toxicity – repeated exposure: Not classified
Aspiration hazard: Not classified
Symptoms/effects after inhalation: May cause irritation to the respiratory tract. Overexposure may cause: Coughing. Headache. Nausea.
Symptoms/effects after skin contact: Causes (severe) skin burns.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
Other adverse effects: This substance may be hazardous to the environment.
Effect on the ozone layer: No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods
Sewage disposal recommendations: Do not dispose of waste into sewer.
Product/Packaging disposal recommendations: May be incinerated. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
UN-No. (DOT) : 2920
DOT NA no. : UN2920

14.2. UN proper shipping name
Transport document description: UN2920 Corrosive liquids, flammable, n.o.s. (TRIMETHYLSILYL TRIFLUOROMETHANESULFONATE), 8 (3), II
Proper Shipping Name (DOT) : Corrosive liquids, flammable, n.o.s. (TRIMETHYLSILYL TRIFLUOROMETHANESULFONATE)
Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : II - Medium Danger
Hazard labels (DOT) : 8 - Corrosive, 3 - Flammable liquid

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 243
DOT Packaging Exceptions (49 CFR 173.xxx) : None
DOT Symbols : G - Identifies PSN requiring a technical name

14.3. Additional information
Emergency Response Guide (ERG) Number: 132
Other information: No supplementary information available.

Transport by sea
DOT Vessel Stowage Location: C - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel.
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DOT Vessel Stowage Other : 25 - Protected from sources of heat, 40 - Stow "clear of living quarters"

Air transport
DOT Quantity Limitations Passenger aircraft/rail : 1 L (49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only : 30 L (49 CFR 175.75)

SECTION 15: Regulatory information
15.1. US Federal regulations

Trimethylsilyl trifluoromethanesulfonate (27607-77-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA
Trimethylsilyl trifluoromethanesulfonate (27607-77-8)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations
Trimethylsilyl trifluoromethanesulfonate (27607-77-8)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Trimethylsilyl trifluoromethanesulfonate (27607-77-8)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Full text of H-phrases:

| H226 | Flammable liquid and vapor |
| H314 | Causes severe skin burns and eye damage |
| H318 | Causes serious eye damage |

Abbreviations and acronyms
Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating
Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability : 2 Moderate Hazard - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F. (Classes II & IIIA)
Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.
Print date: 04/11/2019 EN (English US) SDS ID: SIT8620.0 6/7
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