

SDS – SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: TRIFLUOROETHANOL

Synonyms: 2,2,2-Trifluoroethanol, TFE

Chemical Formula: C₂H₃F₃O

Recommended Use of the Chemical: Drug intermediates. Industrial use.

Uses Advised Against: No information available

Manufacturer / Supplier: HALOCARBON PRODUCTS CORPORATION

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2. HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture:

Flammable liquids (Category 3)

Acute toxicity, Oral (Category 3)

Acute toxicity, Inhalation (Category 3)

Skin irritation (Category 2)

Serious eye damage (Category 1)

Reproductive toxicity (Category 1B)

Specific target organ toxicity - repeated exposure (Category 2)

Risk and Safety Phrases:

R10: Flammable.

R23/25: Toxic by inhalation and if swallowed.

R38: Irritating to skin.

R41: Risk of serious damage to eyes.

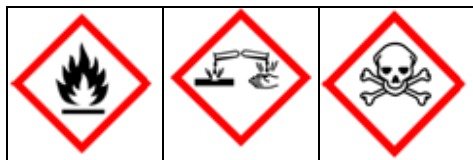
R48/20: Danger of serious damage to health by prolonged exposure through inhalation.

R62: Possible risk of impaired fertility.

Label Elements:

Signal Word: Danger

Pictogram:



Hazard Statements:

H226: Flammable liquid and vapor.

H301 + H331: Toxic if swallowed or if inhaled.

H315: Causes skin irritation.

H318: Causes serious eye damage.

H360: May damage fertility or the unborn child.

H373: May cause damage to organs through prolonged or repeated exposure by skin contact.

Precautionary Statements:

- P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P240: Ground / bond container and receiving equipment.
 P241: Use explosion-proof electrical / ventilating / lighting equipment.
 P242: Use only non-sparking tools.
 P243: Take precautionary measures against static discharge.
 P260: Do not breathe gas / mist / vapors / spray.
 P264: Wash thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P280: Wear protective gloves / protective clothing / eye protection / face protection.
 P301 + 310 + 330: IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician. Rinse mouth.
 P332 + 353 + 361: IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower.
 P304 + 340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
 P308 + 313: IF exposed or concerned: Get medical advice / attention.
 P37 + /378: In case of fire: Use foam, carbon dioxide, dry powder, or water fog for extinction.

Other Hazards:**Substance Meets the Criteria for PBT According to Regulation (EC) No. 1907/2006 Annex XIII:**

PBT: Not available (see Section 12)

Substance Meets the Criteria for vPvB According to Regulation (EC) No. 1907/2006 Annex XIII:

vPvB: Not available (see Section 12)

Other Hazards Which Do Not Result in Classification: Not available**3. COMPOSITION INFORMATION / INGREDIENTS**

Ingredient	CAS Number	EC Number	Percent
2,2,2-Trifluoroethanol	75-89-8	200-913-6	<= 100%

4. FIRST-AID MEASURES**Description of First Aid Measures:**

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Get medical attention immediately.

Ingestion: DO NOT INDUCE VOMITING! Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact: Take off contaminated clothing and shoes immediately. In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take victim immediately to hospital. Get medical attention.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Consult a physician.

Most Important Symptoms and Effects, Both Acute and Delayed:**Potential Acute Health Effects:**

Inhalation: Harmful if inhaled. Danger of serious damage to health by prolonged exposure through inhalation.

Ingestion: Material is toxic if swallowed.

Skin Contact: Prolonged or repeated contact may dry skin and cause irritation.

Eye Contact: Risk of serious damage to eyes.

Over-exposure Signs / Symptoms: Harmful if inhaled. Danger of serious damage to health by prolonged exposure through inhalation.

5. FIRE-FIGHTING MEASURES

Extinguishing Media:

Suitable Extinguishing Media: In case of fire, use foam, carbon dioxide, dry powder, or water fog for extinction.

Unsuitable Extinguishing Media: None known.

Special Hazards Arising From the Substance or Mixture:

Hazards From the Substance or Mixture: Heat may cause the containers to explode. Due to low heat of combustion (-211,9 Kcals/mole) it will not sustain its own flame.

Hazardous Thermal Decomposition Products: Thermal decomposition products are toxic and corrosive. See Section 10.

Advice for Fire-Fighters:

Special Precautions for Fire-Fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Remove product from fire area if it is safe to do so. Cool containers with water spray until well after fire is out. For larger fires, use regular foam or flood with fine spray.

Special Protective Equipment for Fire-Fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Ventilate area of leak or spill. Avoid breathing vapors. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions: Prevent further leakage or spillage if it is safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains.

Methods and Materials for Containment and Cleaning Up: Contain and recover liquid when possible. Do not let product enter drains. Absorb with an inert material (e. g. dry sand, earth,) and place in a chemical waste container. Do not use combustible materials, such as saw dust.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid breathing dust / fumes / gas / mist / vapors / spray. Do not wash out container and use it for other purposes. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid.) Observe all warnings and precautions listed for the product.

Conditions for Safe Storage, Including Any Incompatibilities: Store in a cool, dry, ventilated storage area. Keep container tightly closed. Protect from physical damage. Separate from incompatibles. Keep out of reach of children. See Section 10 for additional details related to storage concerns.

Specific End Uses: Drug intermediates. Industrial use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits: USA. Workplace Environmental Exposure Levels (WEEL): TWA 0.3 ppm

Ventilation System: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded, and for emergencies or instances where the exposure levels are not known, use a full face piece positive-pressure, air supplied respirator. **WARNING:** Air purifying respirators do not protect workers in Oxygen deficient atmospheres.

Skin Protection: Wear appropriate chemical resistant gloves and additional protection including impervious boots, apron, or coveralls to prevent skin contact.

Eye Protection: Use chemical safety goggles and a full face shield. Maintain eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless liquid

Odor: No data available

Odor Threshold: Not determined

pH: Alkaline

Melting Point: -44C (-47.2F)

Boiling Point / Boiling Range: 74C (165.2F)

Flash Point: 30C (86F)

Evaporation Rate (BuAC=1): Not determined

Flammability: Flammable

Upper / Lower Flammability or Explosive Limits: UEL: 42%, LEL: 5.5%

Vapor Pressure (mm Hg): 70 mmHg (25C)

Vapor Density (Air=1): 3.45

Relative Density: 1.38 g/cm³

Solubility: No data available

Partition Coefficient: n-octanol / water: No data available

Auto-ignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: No data available

Explosive Properties: Not determined

Oxidizing Properties: Not determined

Other Information: No specific data

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical Stability: Stable under ordinary conditions of use and storage.

Possibility of Hazardous Reactions: Vapors may form explosive mixture with air.

Conditions to Avoid: Avoid heat, sparks, flames, and incompatible materials.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Thermal decomposition products are corrosive and toxic. Carbon oxides, Hydrogen Fluoride.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:

Oral rat LD50: 240 mg/kg; Inhalation rat LC50: 470 ppm 6 hr; Dermal rat LD50: 1680 mg/kg

Potential Health Effects:

Inhalation: Inhalation: Harmful if inhaled. Danger of serious damage to health by prolonged exposure through inhalation.

Ingestion: Material is toxic if swallowed.

Skin Contact: Prolonged or repeated contact may dry skin and cause irritation.

Eye Contact: Risk of serious damage to eyes.

Chronic Exposure: No data available

Aggravation of Pre-existing Conditions: No data available

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System): No data available

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System): May cause harmful hematological effects through prolonged or repeated exposure by inhalation.

Germ Cell Mutagenicity: No data available

Reproductive Toxicity: May damage fertility: harmful effects to the male reproductive system if swallowed or inhaled.

Aspiration Hazard: No data available

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	Known	Anticipated	IARC Category
2,2,2-Trifluoroethanol (75-89-8)	No	No	None

12. ECOLOGICAL INFORMATION

Ecotoxicity: LC50 Fathead minnow (*Pimephales promelas*): 105 - 135 mg/l 96 hours

Persistence and Degradability: No data available

Bioaccumulative Potential: No data available

Mobility in Soil: No data available

Results of PBT and vPvB assessment: PBT / vPvB assessment not available as chemical safety assessment not required / not conducted.

Other adverse effects: The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

UN Number: UN1992

UN Proper Shipping Name:

FLAMMABLE LIQUID, TOXIC, N.O.S. (2,2,2-TRIFLUOROETHANOL) (2,2,2-TRIFLUOROETHANOL)

Packing Group: III

Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)

Transport Hazard Class(es): 3 (6.1)

Maritime Transport IMDG/GGVSea

Transport Hazard Class(es): 3 (6.1)

EMS No: F-E, S-D

Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR

Transport Hazard Class(es): 3 (6.1)

Transport in Bulk (According to Annex II of MARPOL 73/78 and the IBC Code): Not Applicable

Special Precautions for User: No additional information

15. REGULATORY INFORMATION

Federal, State & International Regulations - Part 1

Ingredient	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
2,2,2-Trifluoroethanol (75-89-8)	No	No	No	No

Federal, State & International Regulations - Part 2

Ingredient	RCRA		TSCA	
	CERCLA	261.33	8(d)	
2,2,2-Trifluoroethanol (75-89-8)	No	No	No	

Chemical Weapons Convention: No		TSCA 12(b): No		CDTA: No	
SARA 311/312:	Acute: Yes	Chronic: Yes	Fire: Yes	Pressure: No	
Reactivity: No		Pure / Liquid			

16. OTHER INFORMATION

Effective Date: 06/15/15 – Standardized for GHS / REACH

Previous Revisions: 01/28/11 –Prepared to GHS Rev03

HMIS

Health	3
Flammability	3
Reactivity	0

Disclaimer: Halocarbon believes the information given here to be correct. However, we cannot guarantee its accuracy or be responsible for loss or damage that result from the use of such information.