

SDS – SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: TRIFLUOROACETIC ANHYDRIDE

Synonyms: TFAA

Chemical Formula: C₄F₆O₃

Recommended Use of the Chemical: Chemical intermediate

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:

Acute toxicity, Inhalation (Category 2)

Skin irritation (Category 1A)

Serious eye damage (Category 1)

Acute chronic toxicity (Category 3)

Risk and Safety Phrases:

R14: Reacts violently with water.

R20: Harmful by inhalation.

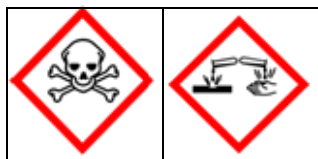
R35: Causes severe burns.

R52/53: Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Label Elements:

Signal Word: Danger

Pictogram:



Hazard Statements:

H314: Causes severe skin burns and eye damage.

H332: Harmful if inhaled.

H412: Harmful to aquatic life with long lasting effects.

EUH014: Reacts violently with water.

Precautionary Statements:

P260: Do not breathe mist / vapors.

P264: Wash thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear protective gloves / protective clothing / eye protection / face protection.

P284: Wear respiratory protection.

P362: Take off contaminated clothing and wash before reuse.
 P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P303+361+353: 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.
 P342+311: Call a POISON CENTER or doctor / physician.
 P403: Store in a well ventilated place.
 P404: Store in a closed container.
 P501: Dispose of contents / container in accordance with local / regional / national / international regulations.

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: Reacts violently with water to form corrosive Trifluoroacetic Acid. Trifluoroacetic acid is harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION INFORMATION / INGREDIENTS

Ingredient	CAS Number	EC Number	Percent
Trifluoroacetic Anhydride	407-25-0	206-982-9	<= 100%

4. FIRST-AID MEASURES

Description of First Aid Measures: Show this safety data sheet to the doctor in attendance. Get medical attention immediately.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Get medical attention immediately.

Ingestion: DO NOT INDUCE VOMITING! If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration. Call a physician or poison control center 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. Consult a physician. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

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

Most Important Symptoms and Effects, Both Acute and Delayed:

Potential Acute Health Effects: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

Inhalation: Corrosive. Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Harmful if inhaled. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. May cause burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

Ingestion: Causes digestive tract burns

Skin Contact: Causes severe skin burns.

Eye Contact: Causes serious eye damage.

Over-exposure Signs / Symptoms: Contact with this material will cause burns to the skin, eyes and mucous membranes. Repeated inhalation may cause chronic bronchitis.

5. FIRE-FIGHTING MEASURES

Extinguishing Media:

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

Unsuitable Extinguishing Media: Water. Reacts violently with water to form corrosive Trifluoroacetic Acid.

Special Hazards Arising From the Substance or Mixture:

Hazards From the Substance or Mixture: Reacts violently with water to form corrosive Trifluoroacetic Acid.

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.

Special Protective Equipment for Fire-Fighters: Fire-fighters should wear appropriate protective equipment for corrosive acidic vapor conditions 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 (product reacts violently with water) or sanitary sewer system. Prevent product from entering drains. Do not allow ANY environmental contamination.

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 mist / vapors. 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: Chemical intermediate

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits: None established

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): For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a CEN-approved, full face piece positive-pressure, air supplied respirator with a cartridge or canister. **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: Vinegar-like

Odor Threshold: Not determined

pH: No data available

Melting Point: -65C (-85F)

Boiling Point / Boiling Range: 40C (104F)

Flash Point: No data available

Evaporation Rate (BuAC=1): Not determined

Flammability: Not applicable

Upper / Lower Flammability or Explosive Limits: Not applicable

Vapor Pressure (mm Hg): 400 mmHg at 21 C (70F)

Vapor Density (Air=1): Not determined

Relative Density: 1.511 g/cm³ at 20C (68F)

Solubility: Reacts violently with water

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

Auto-ignition Temperature: Not applicable

Decomposition Temperature: No data available

Viscosity: No data available

Explosive Properties: Not applicable

Oxidizing Properties: Not applicable

Other Information: No specific data

10. STABILITY AND REACTIVITY

Reactivity: Reacts violently with water to form corrosive Trifluoroacetic Acid.

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

Possibility of Hazardous Reactions: Reacts violently with water.

Conditions to Avoid: Water, moisture, strong acids, strong oxidizing agents, strong bases, alcohols, amines.

Incompatible Materials: bases, water, strong oxidizing agents, metals, alcohols, epoxides.

Hazardous Decomposition Products: Carbon oxides, Hydrogen Fluoride, Fluorophosgene. Thermal decomposition or combustion may liberate toxic gases or fumes.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: No data available

Potential Health Effects:

Inhalation: Corrosive. Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Harmful if inhaled. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. May cause burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

Ingestion: Causes digestive tract burns

Skin Contact: Causes severe skin burns.

Eye Contact: Causes serious eye damage.

Chronic Exposure: Repeated inhalation may cause chronic bronchitis.

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): No data available

Germ Cell Mutagenicity: No data available

Reproductive Toxicity: No data available

Aspiration Hazard: No data available

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	Known	Anticipated	IARC Category
Trifluoroacetic Anhydride (407-25-0)	No	No	None

12. ECOLOGICAL INFORMATION

Ecotoxicity: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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: 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: UN3265

UN Proper Shipping Name:

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (TRIFLUOROACETIC ANHYDRIDE)

Packing Group: I

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

Transport Hazard Class(es): 8

Maritime Transport IMDG/GGVSea

Transport Hazard Class(es): 8

EMS No: F-A, S-B

Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR

Transport Hazard Class(es): 8

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

Special Precautions for User: Corrosive

15. REGULATORY INFORMATION

Federal, State & International Regulations - Part 1

Ingredient	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
Trifluoroacetic Anhydride (407-25-0)	No	No	No	No

Federal, State & International Regulations - Part 2

Ingredient	RCRA		TSCA	
	CERCLA	261.33	8(d)	
Trifluoroacetic Anhydride (407-25-0)	No	No	No	

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

16. OTHER INFORMATION

Effective Date: 08/21/17-corrected HMIS

Previous Revisions: 01/28/11 –Prepared to GHS Rev03; 06/15/15 – Standardized for GHS / REACH

HMIS

Health	3
Flammability	0
Reactivity	2

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.