

SDS – SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: TRIFLUOROACETYL CHLORIDE

Synonyms: TFAC

Chemical Formula: C₂ClF₃O

Recommended Use of the Chemical: Agricultural intermediates

Manufacturer / Supplier: HALOCARBON PRODUCTS CORPORATION

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Emergency CHEMTREC Phone: (800) 424-9300 United States / 001-703-527-3887 International and Maritime

2. HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture:

Acute inhalation toxicity (Category 2)

Skin irritation / corrosion (Category 1A)

Serious eye damage / irritation (Category 1)

Risk Phrases:

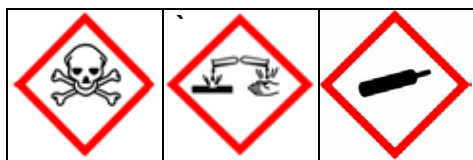
R14: Reacts violently with water.

R23: Toxic by inhalation.

R35: Causes severe burns.

Label Elements:

Signal Word: Danger



Hazard Statements:

H280: Contains gas under pressure; may explode if heated.

H302: Harmful if swallowed.

H312: Harmful in contact with skin.

H314: Causes severe skin burns and eye damage.

H318: Causes serious eye damage.

H330: Fatal if inhaled.

Precautionary Statements:

P231 + P232: Handle under inert gas. Protect from moisture.

P251: Pressurized container – Do not pierce or burn, even after use.

P260: Do not breathe dust / fume / gas / mist / vapors / spray.

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

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P360: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

3. COMPOSITION INFORMATION / INGREDIENTS

Ingredient	CAS Number	EC Number	Percent
Trifluoroacetyl Chloride	354-32-5	206-556-2	99.5-100%
Phosgene	75-44-5	200-870-3	<0.5%

4. FIRST-AID MEASURES

Immediate medical attention is required. Show this Safety Data Sheet to the doctor in attendance.

Inhalation: Move to fresh air. Call a physician or Poison Control Center immediately. If not breathing, give artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. If breathing is difficult, give Oxygen.

Ingestion: Call a physician or Poison Control Center immediately. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Remove from exposure, lie down.

Skin Contact: Immediate medical attention is required. Wash off immediately with plenty of water. Remove and isolate contaminated clothing and shoes. Contact with moisture forms Hydrochloric and Trifluoroacetic Acid, which are corrosive acids. Contact of liquid Trifluoroacetic Acid with skin causes immediate diffusion into the skin and destroys the tissue as it penetrates. Affected skin must be treated as 3rd degree burn even though appearance may not indicate severity of skin damage. Subcutaneous injection of calcium gluconate are not indicated.

Eye Contact: Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Notes to Physician: 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. Treat symptomatically.

Protection of First-aiders: Use personal protective equipment. Avoid contact with skin, eyes and clothing.

5. FIRE-FIGHTING MEASURES

Fire: Not considered to be flammable.

Explosion: Cylinders may rupture and become rockets under fire conditions.

Fire Extinguishing Media: Contact with water liberates toxic gas. Dry powder is preferred. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers with flooding quantities of water until well after fire is out.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent contact with skin or eyes. Contact with water liberates toxic gas. Cylinders exposed to fire may vent and release toxic and / or corrosive gas through pressure relief devices. Ruptured cylinders may rocket. The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating, corrosive, toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Avoid contact with skin, eyes and inhalation of vapors. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Wear self-contained breathing apparatus to handle spills. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Keep people away from and upwind of spill / leak.

Environmental Precautions and Methods and Materials for Containment and Cleaning Up: Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow material to contaminate ground water system. Prevent product from entering drains. Small amounts may be reacted carefully with caustic soda to give Sodium Trifluoroacetate and Salt. Since hydrolysis to acids take place with moisture, area may be flooded with copious amount of water if personnel are adequately protected. Observe all federal, state and local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Ensure adequate ventilation. Wear personal protective equipment. Prevent contact with skin, eyes and clothing. Prevent breathing of mist or vapors. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from open flames, hot surfaces and sources of ignition. Contents under pressure. Do not puncture or incinerate. Reacts violently with water.

Conditions for Safe Storage, Including Any Incompatibilities: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep away from children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

For Trifluoroacetyl Chloride (354-32-5):

No OSHA or ACGIH exposure limits have been established. Safe work practices should always be followed.

For Phosgene (75-44-5):

ACGIH Threshold Limit Values (TLV): TWA = 0.1 ppm

Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants: 0.1 ppm / approximate 0.4 mg/m³

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): Wear a positive-pressure supplied-air respirator with full face-piece.

Skin Protection: Wear full protective suit. Impervious clothing. Impervious gloves. Boots. Protective gloves.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquified gas, colorless

Odor: Pungent

Odor Threshold: Not determined

pH: Acidic

Melting Point: -146C (-230.8F)

Boiling Point / Boiling Range: -28C (-18.4F)

Flash Point: No data available

Evaporation Rate (BuAC=1): No data available

Flammability: Not flammable

Upper / Lower Flammability or Explosive Limits: No data available

Vapor Pressure (mm Hg): 2,585 mmHg

Vapor Density (Air=1): 4.6

Relative Density: 1.38

Solubility: Reacts with water

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

Auto-ignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: No data available

10. STABILITY AND REACTIVITY

Reactivity and / or Chemical Stability: Reacts violently with water.

Possibility of Hazardous Reactions and Conditions to Avoid: See Incompatible Materials. Exposure to water. Contact with water or moist air liberates irritating gas.

Incompatible Materials: Water. Alcohols. Amines. Bases.

Hazardous Decomposition Products: Thermal decomposition can lead to release of toxic / corrosive gases and vapors. Phosgene gas. Trifluoroacetic Acid. Hydrogen Chloride.

11. TOXICOLOGICAL INFORMATION

Emergency Overview: Poison - may be fatal if inhaled. Corrosive to respiratory system. Corrosive to the skin and eyes and may cause severe damage including blindness.

Potential Health Effects:

Inhalation: Poison - may be fatal if inhaled. Corrosive to respiratory system.

LClo 6 hr 35 ppm (rat)

LClo 6 hr 35 ppm (mouse)

LClo 6 hr 35 ppm (guinea pig)

LC50 200 ppm (estimate based on UN transportation classification)

Ingestion: Ingestion causes burns of the upper digestive and respiratory tract. May cause additional effects as listed under "Inhalation."

Skin Contact: Corrosive. Contact with moisture forms corrosive and irritating acids (Hydrochloric Acid and Trifluoroacetic Acid.) Diffuses into skin and destroys the tissue as it penetrates. Unlike the Monofluoroacetate ion, the Trifluoroacetate ion is not toxic. Contact with product may cause frostbite.

Eye Contact: Corrosive to the eyes and may cause severe damage including blindness.

Chronic Exposure: No data available.

Aggravation of Pre-existing Conditions: No data available.

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System): May cause respiratory irritation.

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
Trifluoroacetyl Chloride (354-32-5)	No	No	None
Phosgene (75-44-5)	No	No	None

Acute Toxicity:

LC50 Inhalation: Phosgene 0.084 mg/L (rat) 30 min

12. ECOLOGICAL INFORMATION

Ecotoxicity: Discharge to water will affect pH and harm aquatic organisms.

Persistence and Degradability: Reacts with water to form Trifluoroacetic Acid and Hydrogen Chloride.

Bioaccumulative Potential: Bioaccumulation is unlikely.

Mobility in Soil: No data available.

Results of PBT and vPvB assessment: No data available.

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS

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

Note for 150 cylinders: No relief valves are allowed per CGA. If exposed to fire, cool to avoid the possibility of rupture. In the event of rupture, isolate for 500 feet in all directions, then provide protection for 0.1 to 0.9 miles downwind.

UN Number: UN3057

UN Proper Shipping Name: TRIFLUOROACETYL CHLORIDE

Packing Group: No Packing Group

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

Transport Hazard Class(es): 2.3, 8

Classification Code: 2TC

Maritime Transport IMDG/GGVSea

Transport Hazard Class(es): 2.3, 8

EmS Number: F-C, S-U

Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR

Not permitted for air transport

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

Special Precautions for User: TOXIC INHALATION HAZARD ZONE B

15. REGULATORY INFORMATION

Chemical Inventory Status – Part 1

Ingredient	TSCA	EC	Japan	Australia
Trifluoroacetyl Chloride (354-32-5)	Yes	Yes	Yes	No
Phosgene (75-44-5)	Yes	Yes	Yes	Yes

Chemical Inventory Status – Part 2

Ingredient	Korea	Canada		Phil.
		DSL	NDSL	
Trifluoroacetyl Chloride (354-32-5)	Yes	No	Yes	No
Phosgene (75-44-5)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

Ingredient	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
Trifluoroacetyl Chloride (354-32-5)	No	No	No	No
Phosgene (75-44-5)	10	10	Yes	P095

Federal, State & International Regulations - Part 2

Ingredient	RCRA		TSCA
	CERCLA	261.33	8(d)
Trifluoroacetyl Chloride (354-32-5)	No	No	No
Phosgene (75-44-5)	Yes	No	No

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

16. OTHER INFORMATION

Effective Date: March 1, 2016 – Address change

Previous Revisions: 08/08/09 – First Issue: 09/15/14 – Standardized for GHS / REACH

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.