

SAFETY DATA SHEET

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Section 1, Identification

- **Catalog Number:** CLEAVEKIT-R, CLEAVEKIT-U
- **Product Name:** Trifluoroacetic Acide (76-05-1)
- **Alternate Name:** TFA
- **Chemical Formula:** $C_2HF_3O_2$
- **Chemical family:** Solvent
- **Recommended Use:** Pharmaceutical, agricultural applications

Section 2, Hazard(s) Identification



Classification of the Substance or Mixture:

- Acute toxicity, Inhalation (Category 4)
- Skin corrosion (Category 1A)
- Serious eye damage (Category 1)
- Acute aquatic toxicity (Category 3)

Risk Phrases:

- R20: Harmful by inhalation
- R35: Causes severe burns
- R52: Harmful to aquatic organisms
- R53: May cause long-term adverse effects in the aquatic environment

Label Elements:

Hazard Statements:

- H314: Causes severe skin burns and eye damage
- H332: Harmful if inhaled
- H412: harmful to aquatic life with long lasting effects

Precautionary Statements:

- P261: Avoid breathing vapors
- 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.
- P310: Immediately call a POISON CENTER or doctor / physician

Section 3, Composition/Information on Ingredients

Ingredients	CAS Number	EC Number	Index Number	Percent
Trifluoroacetic Acid	76-05-1	200-929-3	607-091-00-1	100%

Section 4, 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! Give a cup of water or milk. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration. Get medical attention immediately.
- **Skin Contact:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Destroy or thoroughly clean clothing and shoes before reuse. Get medical attention immediately.
- **Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Remove contact lenses, if present and easy to do. Get medical attention immediately.

Section 5, Fire-Fighting Measures

- **Fire:** Not flammable
- **Explosion:** Not combustible
- **Fire Extinguishing Media:** Water, water fog, foam, dry chemical powder, Carbon Dioxide
- **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

Section 6, Accidental Release Measures

- **Personal Precautions, Protective Equipment and emergency Procedures:** Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
- **Environmental Precautions and Methods and Materials for Containment and Cleaning Up:** Contain and recover liquid when possible. Do not let product enter drains. Collect liquid in an appropriate container or absorb with an inert material (e. g. vermiculite, dry sand, earth, etc.) and place in a chemical waste container. Do not flush to sewer!

Section 7, Handling and Storage

- **Precautions for Safe Handling:** use only with adequate ventilation. Do not breathe mist or vapor. Do not get in eyes, on skin, on clothing. Do not taste or swallow. Wash thoroughly after handling.
- **Conditions for Safe Storage, Including Any Incompatibilities:** Protect against physical damage. Keep container tightly closed and store in a cool, dry well-ventilated location. Containers of this material may be hazardous when empty since they retain product residue (vapors, liquid.) Keep out of reach of children.

Section 8, Exposure Controls/Personal Protection

- **Airborne Exposure Limits:** No OSHA or ACGIH exposure limits have been established. This does not mean that this substance is not harmful. Safe work practices should always be followed.
 - Latvia-and Lithuania specific OELS (TWA): 2mg/m³
- **Ventilation System:** A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne 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):** Respirator type: Wear a CEN approved respirator, with appropriate cartridge or canister, suitable for airborne concentration levels present.
- **Skin Protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron, or coveralls, as appropriate, to prevent skin contact. Halocarbon prefers neoprene acid-resistant coat and pants.
- **Eye Protection:** Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9, Physical and Chemical Properties

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| • Appearance: | Clear, colorless liquid |
| • Odor: | Vinegar-like |
| • Odor Threshold: | Not determined |
| • pH: | 1 at 1 g/l at 20°C (68°F) |
| • Melting Point: | -15°C (5°F) |
| • Boiling Point / Boiling Range: | 72°C (162°F) |
| • Flash Point: | Not applicable |
| • Evaporation Rate (BuAC=1): | No data available |
| • Flammability: | Not flammable |
| • Upper / Lower flammability or Explosive Limits: | Not applicable |
| • Vapor Pressure (mm Hg): | 107 mm Hg -25°C (77°F) |
| • Vapor density (Air=1): | No data available |
| • Relative Density: | 1.48 g/cm ³ at 20°C (68°F) |
| • Solubility: | Soluble |
| • Partition Coefficient: n-octanol / water: | No data available |
| • Auto-ignition Temperature: | Not applicable |
| • Decomposition Temperature: | No data available |
| • Viscosity: | No data available |

Section 10, Stability and Reactivity

- **Reactivity and / or Chemical Stability:** Stable under ordinary conditions of use and storage.
- **Possibility of Hazardous Reactions and Conditions to Avoid:** See Incompatible Materials.
- **Incompatible Materials:** Strong bases, metals, oxidizing agents, alcohols, epoxides, steel (all types and surface treatments), Aluminum, Exothermic in contact with water. Reacts violently with: Alkali metals.
- **Hazardous Decomposition Products:** Thermal decomposition or combustion may liberate toxic gases or fumes, including Carbon oxides, Hydrogen Fluoride, Fluorophosgene.

Section 11, Toxicological Information

- **Emergency Overview:** Although the toxicity of Trifluoroacetic Acid is low, contact with the skin causes immediate burns. The acid diffuses into skin and destroys tissue as it penetrates. Acid fumes are also irritating. Wash any affected area at least 15 minutes and treat as third degree burns even though appearance may not indicate severity of skin damage.
- **Potential Health Affects:**
 - **Inhalation:** Corrosive. Inhalation produces damaging effects on the mucous membranes and upper respiratory tract
 - **Ingestion:** Causes digestive tract burns.
 - **Skin Contact:** Causes severe skin burns.
 - **Eye Contact:** Causes serious eye damage.
 - **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):** 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 Acid (76-05-1)	No	NO	None

- **Acute Toxicity:**

Acute Inhalation LC50 Mouse: 13.5 mg/l; Acute Inhalation LC50 Rat: 10 mg/l
Acute Oral LD50 Rat: 200 mg/kg; Acute LD50 Mouse: 1200 mg/kg

Section 12, Ecological Information

- **Ecotoxicity:** Harmful to aquatic organisms, may cause long-term adverse affects in the aquatic environment. Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia magna (Water flea) – 55.00 mg/l – 24 h
- **Persistence and Degradability:** No data available
- **Bioaccumulative Potential:** No data available
- **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.

Section 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.

Section 14, Transport Information

- **UN Number:** UN2699
- **Un Proper Shipping Name:** Trifluoroacetic Acid
- **Packaging 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:** No additional information

Section 15, Regulatory Information

Chemical Inventory Status – Part 1

Ingredient	TSCA	EC	Japan	Australia
Trifluoroacetic Acid (76-05-1)	Yes	Yes	Yes	Yes

Chemical Inventory Status – Part 2

Ingredient	Korea	Canada		Phil.
		DSL	NDSL	
Trifluoroacetic Acid (76-05-1)	Yes	Yes	No	Yes

Federal, State & International Regulations – Part 1

Ingredients	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
Trifluoroacetic Acid (76-05-1)	No	No	No	No

Federal, State & International regulations – Part 2

Ingredients	RCRA		TSCA	
	RQ	TPQ	List Chemical	Catg.
Trifluoroacetic Acid (76-05-1)	No	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: No		Pure / Liquid		

Poison Schedule: None allocated

Section 16, Other Information

The information accumulated herein is believed to be accurate but is not warranted to be whether origination with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Gyros Protein Technologies.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).