

## MATERIAL SAFETY DATA SHEET

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Version 1.7

## Section 1 - Product and Company Information

Product Name TRIFLUOROACETIC ACID, REDISTILLED,  
99+%,SUITABLE FOR PROTEIN  
SEQUENCING  
Product Number 299537  
Brand ALDRICH  
Company Sigma-Aldrich  
Street Address 3050 Spruce Street  
City, State, Zip, Country SAINT LOUIS MO 63103 US  
Technical Phone: 314 771 5765  
Emergency Phone: 414 273 3850 Ext. 5996  
Fax: 800 325 5052

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
TRIFLUOROACETIC ACID	76-05-1	No
Formula	C2HF3O2	
Synonyms	Kyselina trifluoroctova (Czech) * Perfluoroacetic acid * Trifluoroacetic acid * Trifluoroethanoic acid	
RTECS Number:	AJ9625000	

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Corrosive.

Harmful by inhalation. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Target organ(s): Liver.

## HMIS RATING

HEALTH: 3\*

FLAMMABILITY: 0

REACTIVITY: 1

## NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 1

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

## ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is

conscious. Call a physician. Do not induce vomiting.

#### INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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### Section 5 - Fire Fighting Measures

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#### FLASH POINT

N/A

#### AUTOIGNITION TEMP

N/A

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Do not use water.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

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### Section 7 - Handling and Storage

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#### HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Suitable: Keep tightly closed.

#### SPECIAL REQUIREMENTS

Hygroscopic. Store under inert gas.

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## Section 8 - Exposure Controls / PPE

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### ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

Other: Faceshield (8-inch minimum).

### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

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## Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Clear liquid Color: Colorless Odor: Pungent	
Property	Value	At Temperature or Pressure
Molecular Weight	114.02 AMU	
pH	1	20 °C Concentration: 1 g/l
BP/BP Range	72 °C	760 mmHg
MP/MP Range	-15.4 °C	
Freezing Point	15 °C	
Vapor Pressure	107 mmHg	25 °C
Vapor Density	3.9 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.48 g/cm <sup>3</sup>	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	0.81 Pas	25 °C
Surface Tension	N/A	
Partition Coefficient	Log Kow: -2.1	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	1.3	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Reactions to Avoid: Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable

and/or explosive hydrogen gas.  
Conditions to Avoid: Protect from moisture. Protect from heat.  
Materials to Avoid: Strong bases, Metals, Oxidizing agents,  
Alcohols, Epoxides, Steel, Aluminum, Exothermic in contact with  
water, Reacts violently with alkali.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide,  
Hydrogen fluoride.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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### Section 11 - Toxicological Information

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#### ROUTE OF EXPOSURE

Skin Contact: Causes severe burns.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes severe burns.  
Inhalation: Harmful if inhaled. Material is extremely  
destructive to the tissue of the mucous membranes and upper  
respiratory tract.  
Ingestion: May be harmful if swallowed.

#### TARGET ORGAN(S) OR SYSTEM(S)

Liver.

#### SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous  
membranes and upper respiratory tract, eyes, and skin.  
Inhalation may result in spasm, inflammation and edema of the  
larynx and bronchi, chemical pneumonitis, and pulmonary edema.  
Symptoms of exposure may include burning sensation, coughing,  
wheezing, laryngitis, shortness of breath, headache, nausea, and  
vomiting.

#### TOXICITY DATA

Inhalation

Rat

10,000 mg/m<sup>3</sup>

LC50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and  
Taste): Eye: Conjunctive irritation. Behavioral: Somnolence  
(general depressed activity). Lungs, Thorax, or  
Respiration: Dyspnea.

Inhalation

Mouse

13,500 mg/m<sup>3</sup>

LC50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and  
Taste): Eye: Conjunctive irritation. Behavioral: Somnolence  
(general depressed activity). Lungs, Thorax, or  
Respiration: Dyspnea.

Intravenous

Mouse

1200 MG/KG

LD50

Remarks: Behavioral: Change in motor activity (specific assay).

## CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 1650 MG/KG  
Route of Application: Oral  
Exposure Time: (10-20D PREG)  
Result: Specific Developmental Abnormalities: Hepatobiliary system. Effects on Newborn: Growth statistics (e.g., reduced weight gain).

## CHRONIC EXPOSURE - MUTAGEN

Mutation test: Histidine reversion (Ames)

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### Section 12 - Ecological Information

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N/A

#### ACUTE ECOTOXICITY TESTS

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 24 h  
Value: 55 mg/l

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### Section 13 - Disposal Considerations

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#### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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### Section 14 - Transport Information

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#### DOT

Proper Shipping Name: Trifluoroacetic acid  
UN#: 2699  
Class: 8  
Packing Group: Packing Group I  
Hazard Label: Corrosive  
PIH: Not PIH

#### IATA

Proper Shipping Name: Trifluoroacetic acid  
IATA UN Number: 2699  
Hazard Class: 8  
Packing Group: I

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### Section 15 - Regulatory Information

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#### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: C  
Indication of Danger: Corrosive.  
R: 20 35 52/53  
Risk Statements: Harmful by inhalation. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
S: 26 36/37/39 45  
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Corrosive.

Risk Statements: Harmful by inhalation. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US Statements: Target organ(s): Liver.

#### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

#### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

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#### Section 16 - Other Information

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#### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

#### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.