



Safety Data Sheet

Section 1 - Identification.....2

Section 2: Hazard Identification.....2

Section 3: Composition/information on ingredients..... 5

Section 4: First aid measures..... 5

Section 5: Firefighting measurers..... 6

Section 6: Accidental release measurers..... 7

Section 7: Handling and storage..... 7

Section 8: Exposure controls – Personal protection.....8

Section 9: Physical and chemical properties..... 10

Section 10: Stability and reactivity..... 11

Section 11: Toxicological information.....12

Section 12: Ecological information..... 15

Section 13: Disposal considerations..... 18

Section 14: Transportation information..... 18

Section 15: Regulatory information..... 20

Section 16: Other information.....21

Section 1 - Identification

1.1 Product Identifier

Product Name : Trifluoroacetic Acid

CAS-No : 76-05-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : 9920 Pacific Heights Blvd
Suit 150
San Diego
California -92121

1.4 Emergency Telephone number

Emergency phone : +1 (858) 245-0283

Section 2: Hazard Identification

2.1 Classification of the substance or the mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity	Category 4	H332:Harmful if inhaled.
Skin corrosion	Category 1A	H314:Causes severe skin burns and eye damage.
Serious eye damage	Category 1	H318:Causes serious eye damage.
Reproductive toxicity	Category 2	H361d:Suspected of damaging the unborn child.
Long-term (chronic) aquatic hazard	Category 3	H412:Harmful to aquatic life with long lasting effects.

2.2 Label elements

Label according Regulation (EC) 1272/2008

Hazard Pictogram



Signal Word:
DANGER

Hazard statements

- | | |
|-------|--|
| H314 | Causes severe skin burns and eye damage. |
| H332 | Harmful if inhaled. |
| H361d | Suspected of damaging the unborn child. |
| H412 | Harmful to aquatic life with long lasting effects. |

Supplemental Hazard Statements

- | | |
|--------|-------------------------------------|
| EUH071 | Corrosive to the respiratory tract. |
|--------|-------------------------------------|

Precautionary statements

Prevention

- | | |
|------|--|
| P202 | Do not handle until all safety precautions have been read and understood. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/eye protection/ face protection. |

Response:

- | | |
|----------------|--|
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing.Rinse skin with water. |
| P304+P340+P310 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor. |

P335+P351+P338

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

Reduced Labelling (<= 125 ml)

Hazard Pictogram



Signal Word:
DANGER

Hazard statements

H314

Causes severe skin burns and eye damage.

H412

Harmful to aquatic life with long lasting effects.

H361d

Suspected of damaging the unborn child.

Precautionary Statements

P202

Do not handle until all safety precautions have been read and understood.

P303+P361+P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304+P340+P310

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.

P335+P351+P338

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

Supplemental Hazard information (EU)

EUH071

Corrosive to the respiratory tract.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at

levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Section 3: Composition/information on ingredients

3.1 Substance

Substance name : TFA
EC-No. : 200-929-3
Index-No. : 607-091-00-1

Section 4: First aid measures

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Remove contact lenses.

If swallowed

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Indications of any immediate medical attention and special treatment needed

No data available

Section 5: Firefighting measures

5.1 Extinguishing Media

Suitable extinguishing media	: Water Foam Carbon dioxide (CO ₂) Dry powder
Unsuitable extinguishing media	: For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazard arising from the substance or mixture

Specific hazards during fire fighting	: Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.
Hazardous combustion products	: Carbon oxides

5.3 Advice for firefighters

- Special protective equipment for fire-fighters : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
- Further information : Suppress (knock down) gases/vapours/mists with a water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environment precautions

Environmental precautions : Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).

Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal considerations see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions

Tightly closed.

Storage class (TRGS 510)

8A, Combustible, corrosive hazardous materials

Further information on storage stability

hygroscopic

Store under inert gas.

Recommended storage temperature

Recommended storage temperature see product label.

Packaging material

Suitable material: Amber Glass Bottle/Jar

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls – Personal protection

8.1 Control parameters

Occupational Exposure Limits

8.2 Exposure Controls

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection	: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles
Hand protection	
Material	: butyl-rubber
Break through time	: 480 min
Glove thickness	: 0,7 mm
Protective index	: Full contact
Manufacturer	: Butoject® (KCL 898)
Material	: Latex gloves
Break through time	: 120 min
Glove thickness	: 0,6 mm
Protective index	: Splash contact
Manufacturer	: Lapren® (KCL 706 / Aldrich Z677558, Size M)
Remarks	: This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Skin and body protection	: Acid-resistant protective clothing
Respiratory protection	: required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type:	: Filter B-(P2)
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.	

Environmental exposure controls

Advice

Do not let product enter drains.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid
Color	: colourless
Odor	: pungent
Melting point/range	: -15,4 °C Method: lit.
Boiling point/boiling range	: 72,4 °C Method: lit.
Flammability	: Not data available
Upper explosion limit / Upper flammability limit	: Not data available
Lower explosion limit / Lower flammability limit	: Not data available
Flash point	: Not data available
Autoignition temperature	: Not data available
Decomposition temperature	: Not data available
pH	: 1 Concentration: 10 g/l
Viscosity, dynamic	: 1,8 mPa.s (20 °C) Method: OECD Test Guideline 114 GLP: yes 1,6 mPa.s (40 °C) Method: OECD Test Guideline 114 GLP: yes

Viscosity, kinematic	: No data available
Flow time	: No data available
Solubility(ies) Water solubility	: 10.000 g/l Method: US-EPA GLP: yes soluble
Partition coefficient: n- octanol/water	: log Pow: -2,10 Bioaccumulation is not expected.
Vapor pressure	: 158 hPa (25 °C) Method: Regulation (EC) No. 440/2008, Annex, A.4
Relative density	: No data available
Density	: 1,489 g/cm ³ (20 °C)
Relative vapour density	: No data available

9.2 Other information

Explosives	: Not classified as explosive.
Oxidizing properties	: none
Burning rate	: No data available
Evaporation rate	: No data available
Surface tension	: 72,5 mN/m, 1 g/l, 20 °C, OECD Test Guideline 115, GLP: yes
Molecular weight	: 114,02 g/mol

Section 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Hazardous reactions : Risk of explosion with:

lithium aluminium hydride
hydrides
Exothermic reaction with:

alkalines
Ammonia
Generates dangerous gases or fumes in contact with:

acids

10.4 Conditions to avoid

Conditions to avoid
no information available

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Symptoms: Nausea, Vomiting, strong pain (risk of perforation!), If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

LC50 Inhalation - Rat - 4 h - 10,01 mg/l - vapour

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract, Inhalation may lead to the formation of oedemas in the respiratory tract.

Acute toxicity estimate Inhalation - 10,01 mg/l - vapour

(ATE value derived from LD50/LC50 value)

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Causes severe burns.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Remarks: Necrosis

Causes poorly healing wounds.

Serious eye damage/eye irritation

Remarks: Causes serious eye damage.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Carcinogenicity

No data available

Reproductive toxicity

Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

RTECS: AJ9625000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Damage to:

Kidney

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Liver - Irregularities - Based on Human Evidence

Section 12: Ecological information

12.1 Toxicity

Components:

Trifluoroacetic acid:

Toxicity to fish	: LC50 (Danio rerio (zebra fish)): > 999 mg/l End point: mortality Exposure time: 96 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 999 mg/l End point: Immobilization Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata): 237,07 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes
Toxicity to microorganisms	: EC50 (activated sludge): > 832 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: > 25 mg/l
End point: reproduction rate
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 211
GLP: yes

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

Components:

Trifluoroacetic acid:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge, non-adapted
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
GLP: yes

Test Type: aerobic
Inoculum: activated sludge, non-adapted
Concentration: 17,6 mg/l
Result: Not inherently biodegradable.
Biodegradation: 58 %
Exposure time: 55 d
Method: OECD Test Guideline 302A
GLP: yes

12.3 Bioaccumulated potential

Components:

Trifluoroacetic acid:

Bioaccumulation	: Remarks: No bioaccumulation is to be expected (log Pow <= 4).
Partition coefficient: n-octanol/water	: log Pow: -2,10 Remarks: Bioaccumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment:-This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment:-The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Components:

Trifluoroacetic acid:

Additional ecological information	: Harmful effect due to pH shift.Caustic even in diluted form. Hazard for drinking water supplies.
-----------------------------------	---

Discharge into the environment must be avoided.

Section 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Section 14: Transportation information

14.1 UN Number or ID number

ADR	UN 2699
IMDG	UN 2699
IATA	UN 2699

14.2 UN proper shipping name

ADR	TRIFLUOROACETIC ACID
IMDG	TRIFLUOROACETIC ACID
IATA	TRIFLUOROACETIC ACID

14.3 Transport hazard class(es)

Class

ADR	8
IMDG	8
IATA	8

Subsidiary risks

ADR	-
IMDG	-
IATA	-

14.4 Packaging group

ADR

Packing group	I
Classification Code	C3
Hazard Identification Number	88
Labels	8
Tunnel restriction code	(E)

IMDG

Packing group	I
Labels	8
EmS Code	F-A, S-B

IATA (Cargo)

Packing instruction (cargo aircraft)	854
Packing group	I
Labels	Class 8 - Corrosive substances

IATA_P (Passenger)

Packing instruction (passenger aircraft)	850
Packing group	I
Labels	Class 8 - Corrosive substances

14.5 Environmental hazards

ADR

Environmentally hazardous	no
---------------------------	----

IMDG

Marine pollutant	no
------------------	----

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:

Number on list 3

Number on list 75

If you intend to use this product as tattoo ink, please contact your vendor.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

Regulation (EU) No 2024/590 on substances that deplete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

Section 16: Other information

Full text of H-Statements

EUH071

Corrosive to the respiratory tract.

Further information

The information and recommendations in this SDS are to the best of our knowledge, information and belief accurate at the time of publication. Although utmost care is been taken in composition of this text, Highpuris LLC cannot be held responsible for any damage resulting from any possible error in this publication.