

## Trifluoromethanesulfonic Acid

### Section 1 Product Identification

**Chemical name:** Trifluoromethanesulfonic acid

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**Recommended and restriction for:** Mainly used for organic synthesis catalyst, synthetic lithiumtrifluoromethanesulfonate and so on.

### Section 2 Hazards Identification

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Acute toxicity, Oral (Category 4)

Acute toxicity, Dermal (Category 4)

Skin corrosion (Category 1A)

**Classification according to EU Directives 67/548/EEC or 1999/45/EC**

Harmful in contact with skin and if swallowed. Causes severe burns.

**Pictogram:**



**Warning word:** Dangerous

**The risk categories:** Acidic and corrosive liquid in NO.8, acidity

**Hazard statement(s):**

H302 Harmful if swallowed.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

**Route of entry:** Ingestion, inhalation, eye or skin contact.

**Health hazards:**

**Eyes:** It can cause seriously eyes burning and May lead to blindness.

**Skin:** It can cause seriously skin burning and destroy histiocyte.

**Ingestion:** Ingestion may lead to dead and cause gastrointestinal tract burns.

**Inhalation:** It may cause irritation of the respiratory tract and the pain in the nose and throat, coughing, wheezing, hypoxia and pulmonary edema. Then, it can cause chemical burns of the respiratory tract. Inhalation may lead to dead as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

**Most important symptoms and effects, both acute and delayed**

Burning sensation, cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

**The environment effect:** No data.

**Explosion Hazard:** No data.

**Additional Information**

**RTECS:** Not available

## Section 3 Composition, Information on Ingredients

**Composition:** single substance

**Chemical Name:** Trifluoromethanesulfonic acid

**Chemical formula:** CF<sub>3</sub>SO<sub>3</sub>H

**Concentration:** more than 99%

**CAS No:** 1493-13-6

**EINECS/ELINCS:** 216-087-5

## Section 4 First Aid Measures

**Inhalation:** Remove victims to fresh air immediately and keep respiratory tract free. If breathing difficult, give oxygen. If not breathing, give artificial respiration. Mouth to mouth resuscitation is not recommended. Then, Go to see a doctor.

**Skin Contact:** Put off polluted clothing and shoes immediately and flush with plenty water at least 15 min, then go to see a doctor.

**Eye contact:** immediately hold eyelids open, flush eyes with plenty water at least 15 minutes. Go to see a doctor.

**Ingestion:** Do not induce vomiting. If victims have consciousness, give 2-4 cupfuls of milk or water. While, do not let victims eat anything. Then, go to see doctor immediately.

**Special inductions for doctors:** Noting.

## Section 5 Fire Fighting Measures

**Extinguishing methods and agents:** Cut off the power and put away the container from the scene of fire. Water and carbon dioxide, dry power, foam extinguishing agent can be used for extinguishing the fire.

**Hazardous features:** The product is a strong acidic corrosive substance with a strong absorption, which can results the burning of eyes and skin. It can form to CF<sub>3</sub>SOH H<sub>2</sub>O with white smoke when was contacted with water vapor.

**Hazardous combustion products:** Fluoride, carbon dioxide and sulfur dioxide.

**Notes:** Cooling containers by water can limit the formation of thermal decomposition products but not to reveal the spray bottle directly. Wear positive-pressure breathing apparatus and protective devices for fire fighting.

## Section 6 Accidental Release Measures

**Emergency measures:** Escape people from contaminated area to upwind or secure area immediately. Isolate hazard area until well after gas scatters away. Suggest that the emergency treatment personnel use positive pressure self-contained breathing apparatus and chemical protective clothing.

**Cleaning up methods:** Cut off power supply and block the leakage point. Absorb the leakage with inert things (such as vermiculite, sand or clay). Then, place in the suitable container.

## Section 7 Operation Handling and Storage

**Operation attention:** If operation in the closeness environment, please remember to keep ventilation and wash thoroughly after operation. Operators must be trained professionally and obey operational regulations strictly. Do not breathe dust, vapor, mist, or noxious gas, and don't contact with eyes, skin and clothing.

**Storage:** Store in a well, secure, cool and dry place. Keep far away from incompatible materials and humidity. Store in a tightly closed container, and protect under nitrogen.

## Section 8 Contact Control and Personal Protection

**The maximum allowable concentration:** No data

**Detection:** No data

**Engineering controls:** Strictly confined. Provide adequate ventilation to prevent exposure. Please prepare apparatus to wash eye.

**Personal Protective equipment:**

**Respiratory protection:** please enhance ventilation. Put on self-contained breathing apparatus when rescue and evacuee .

**Hands protection:** Operator should wear rubber gloves.

**Eyes protection:** Operator should wear suitable safety glasses.

**Body and skin protection:** Operator should wear appropriate protective clothing to prevent skin exposure.

**Ambulance staff protection:** Wear SCBA and coveralls.

**Other protection:** Don't smoking in the operation area and keep clean.

## Section 9 Physical and Chemical Properties

**Physical State:**

**State:** Liquid.

**Appearance:** Colorless or very light yellow.

**Odor:** Strong pungent odor.

**Appearance and behavior:** Clean, very light yellow liquid .Strong pungent odor.

**Value of pH:** No date

**Boiling point( °C):** 162 (760.00mm Hg)

**Freezing / Melting point ( °C):**-40

**Critical temperature ( °C):** No date

**Critical pressure (MPa):** No date

**Decomposition Temperature:** No data

**Flash point( °C):** No date

**Autoignition Temperature:** No data

**Combustion heat:** (KJ/mol): No data

**Combustion high and low limit or explosive limit:** No data

**Saturation vapor pressure (KPa):**10(55 °)

**Relative density(water=1):** 1.696

**Relative vapor density (air=1):** 5.2

Refractive index: 1.327

**Solubility:** soluble

**n-octanol/water partition coefficient:** No data

## Section 10 Stability and Reactivity

**Stability:** Stable under normal temperatures and pressures.

**Conditions to avoided:** Incompatible materials, hyperthermia, humidity and water.

**Incompatible particularity:** Strong alkali.

**Hazardous polymerization:** No date.

**Decomposition products:** Carbon monoxide, sulfur oxide, carbon dioxide, hydrogen fluoride.

**Others:** Be corrosive.

## Section 11 Toxicological Information

**Acute toxicity:**

LD50 Oral - rat - 1.605 mg/kg

LD50 Dermal - rat - 400 - 2.000 mg/kg

**Subacute and chronic toxicity:** Not available

**Irritation or corrosion for skin and eyes:** Not available

**Breathe or skin allergy:** Not available.

**Germ cell mutability:** Chemical substance with mutability newly recognized by law of labour safety and sanitary

**Carcinogenicity:** Not available.

**Reproductive toxicity:** No carcinogenicity, IRAC has not list in the carcinogen.

**Specific target organ systemic toxicity – single exposure:** Not available

**Specific target organ systemic toxicity - repeated exposure:** Not available

## Section 12 Ecological Information

**Ecotoxicity:**

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - > 2.000 mg/l - 96 h

**Biodegradation:** Result: - Not readily biodegradable

**Non-biodegradation:** Not available.

**Biological concentration:** BCF: not available.

**Others:** Not available.

## Section 13 Disposal Considerations

Please turn back the cylinder and unemployed cylinder. Do not deal with authorization. Make sure the valve closed before transport. The valve cap should be fixed and Output valve should be hermetic.

**Disposal method:** Disposal is in accordance with national and local regulatory requirements, or neutralize with alkali.

Notes: Not available

## Section 14 Transport Information

### UN number

ADR/RID: 3265 IMDG: 3265 IATA: 3265

### UN proper shipping name

ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Trifluoromethanesulphonic acid)

IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Trifluoromethanesulphonic acid)

IATA: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Trifluoromethanesulphonic acid)

### Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA: 8

### Packaging group

ADR/RID: II IMDG: II IATA: II

### Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

**Packaging symbol:** corrosive liquids, Trifluoromethanesulfonic acid

**Packaging Manner:** stainless steel cylinders

**Transport Notice:** Carry with Light pack and light disposal to prevent the damaged of drums and accessories

**Special precautions for user:** no data available

## Section 15 Regulatory Information

Item	Regurations NO.	Regurations Name	Effective Date
<b>1.Regulational in China</b>	GB 6944-2012	Classification and code of dangerous goods	2012-12-01
	GB 12268-2012	List of dangerous goods	2012-12-01
	GB 13690-2009	General rule for classification and hazard communication of chemicals	2010-05-01
	GB 20593-2006	Safety rules for classification, precautionary labeling and precautionary statements of chemicals—Skin corrosion/ irritation	2008-01-01
	GB 20594-2006	Safety rules for classification, precautionary labeling and precautionary statements of chemicals—Serious eye damage/eye irritation	2008-01-01

	GB 20602-2006	Safety rules for classification, precautionary labeling and precautionary statements of chemicals—Hazardous to the aquatic environment	2008-01-01
	GB/T 15098-2008	The principle of classification of transport packaging groups of dangerous goods	2009-04-01
	GB/T 22234-2008	Labelling of chemicals based on GHS	2009-02-01
	SNT 2294.5-2011	Inspection and quarantine laboratory management—Part 5: Guidelines for safety management of dangerous chemicals	2009-04-01
	SNT 3216-2012	Inspection rules for import and export dangerous chemical products—Acidic corrosive substance-General requirements	2012-08-01
	GB 15258-2009	General rules for preparation of precautionary label for chemicals	2010-05-01
	GB/T 15098-2008	The principle of classification of transport packaging groups of dangerous goods	2009-04-01
	GB/T 16483-2008	Safety data sheet for chemical products—Content and order of sections	2009-02-01
	Decree NO.591 of the State Council	Regulation on the safety administration of dangerous chemicals	2011-12-01
	Decree NO.53 of the State Administration of work safety	Measures for the administration of the registration of hazardous chemicals	2012-08-01
	The environment protection department Order No.7th	Measures for environmental management of new chemical substance	2010-10-15
	Order of Ministry of communications in 2013 second	Regulations on the transporting hazardous substance management	2013-07-01
<b>2.International regulations</b>	International Convention No. 170th	Convention on the safe use of chemicals in workplace	1990-06-25
	ST/SG/AC.10/1/Rev.15	Recommendtions on the transport of dangerous goods (15th Amendment ) (Abbreviation: UNRTDG)	2007Y



## Section 16 Other Information

### Other Information:

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