

## Chemical Safety Data Sheet MSDS / SDS

## 1,1,2-trichlorotrifluoroethane SDS

Revision Date:2024-04-25 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name: 1,1,2-trichlorotrifluoroethane

CAS: 76-13-1

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

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

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**SECTION 2: Hazards identification****Classification of the substance or mixture**Hazardous to the ozone layer, Category 1  
Eye irritation, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

**GHS label elements, including precautionary statements**

Pictogram(s)



Signal word

Warning

**Hazard statement(s)**

H319 Causes serious eye irritation

H411 Toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

**Prevention**

P264 Wash ... thoroughly after handling.

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

P273 Avoid release to the environment.

**Response**

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

P391 Collect spillage.

**Storage**

none

**Disposal**

P502 Refer to manufacturer or supplier for information on recovery or recycling

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in classification**

no data available

### SECTION 3: Composition/information on ingredients

#### Substance

Chemical name:	1,1,2-trichlorotrifluoroethane
Common names and synonyms:	1,1,2-trichlorotrifluoroethane
CAS number:	76-13-1
EC number:	200-936-1
Concentration:	100%

### SECTION 4: First aid measures

#### Description of necessary first-aid measures

##### If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

##### Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

##### Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

##### Following ingestion

Rinse mouth. Refer for medical attention .

#### Most important symptoms/effects, acute and delayed

Inhalation causes irritation of the nose, throat, and lungs. High concentrations may cause death by respiratory failure or asphyxiation. May produce superficial skin burns or defatting type dermatitis and may irritate the eyes. (USCG, 1999)

#### Indication of immediate medical attention and special treatment needed, if necessary

Victims of freon inhalation require management for hypoxic, CNS anesthetic, & cardiac symptoms. Patients must be removed from the exposure environment, & high flow supplemental oxygen should be utilized. The respiratory system should be evaluated for injury, aspiration, or pulmonary edema & treated appropriately. CNS findings should be treated supportively. A calm environment

with no physical exertion is imperative to avoid increasing endogenous adrenergic levels. Exogenous adrenergic drugs must not be used to avoid inducing sensitized myocardial dysrhythmias. Atropine is ineffective in treating bradyarrhythmias. For ventricular dysrhythmias, diphenylhydantoin & countershock may be effective. Cryogenic dermal injuries should be treated by water bath rewarming at 40-42 deg C until vasodilatory flush has returned. Elevation of the limb & standard frostbite management with late surgical debridement should be utilized. Ocular exposure requires irrigation & slit lamp evaluation for injury. Freons

## **SECTION 5: Firefighting measures**

### **Suitable extinguishing media**

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

### **Specific hazards arising from the chemical**

Special Hazards of Combustion Products: Toxic gases including hydrogen chloride, hydrogen fluoride, and very small amounts of phosgene, fluorine and chlorine are produced. Behavior in Fire: While no flash point is reported, the material may burn if ignited by a high intensity heat source. (USCG, 1999)

### **Special protective actions for fire-fighters**

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

## **SECTION 6: Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Personal protection: self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **Environmental precautions**

Personal protection: self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **Methods and materials for containment and cleaning up**

Always wear recommended personal protective equipment. Immediately evacuate the area and provide maximum ventilation. Try to eliminate all ignition sources. Unprotected personnel should move upwind from spill. Only personnel equipped with proper respiratory and eye/skin protection should be permitted in the area. Dike area to contain the spill. Take precautions as necessary to prevent contamination of ground and surface waters. For large spills, pump material into appropriate containers. For small spills, recover or absorb spilled material using an absorbent designed for chemical spills such as Hazsorb pillows. Place used absorbents into closed DOT approved containers for disposal. After all visible traces have been removed, thoroughly wet vacuum the area. DO NOT flush into sewer. If the area of the spill is porous, removal of contaminated earth/surface may be required.

## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

NO open flames. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### **Conditions for safe storage, including any incompatibilities**

Separated from metals and alloys. See Chemical Dangers. Cool. Ventilation along the floor. Keep container closed when not in use. DO NOT store in open, unlabeled or mislabeled containers. Store in a cool, well-ventilated area of low fire risk. Protect container and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty. If container temperature exceeds boiling point, cool the container before opening.

## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

### **Occupational Exposure limit values**

TLV: 1000 ppm as TWA; 1250 ppm as STEL; A4 (not classifiable as a human carcinogen). MAK: 3900 mg/m<sup>3</sup>, 500 ppm; peak limitation category: II(2); pregnancy risk group: D

### **Biological limit values**

no data available

### **Appropriate engineering controls**

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and

the risk-elimination area.

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

**Eye/face protection**

Wear safety goggles.

**Skin protection**

Protective gloves.

**Respiratory protection**

Use ventilation, local exhaust or breathing protection.

**Thermal hazards**

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	1,1,2-trichloro-1,2,2-trifluoroethane is a colorless liquid with a sweet, ether-like odor. Sinks in water. (USCG, 1999)
Colour:	Liquid
Odour:	Nearly odorless
Melting point/freezing point:	-36.4°C
Boiling point or initial boiling point and boiling range:	47.6°C
Flammability:	Noncombustible Liquid at ordinary temperatures, but the gas will ignite and burn weakly at 1256°F.
Lower and upper explosion limit/flammability limit:	no data available

Flash point:	195°C
Auto-ignition temperature:	1256° F (NTP, 1992)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.497 mPa.s at 48.9 deg C (liquid); 0.0108 mPa.s at 49 deg C (gas)
Solubility:	Insoluble (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 3.16
Vapour pressure:	5.5 psi ( 20 °C)
Density and/or relative density:	1.575
Relative vapour density:	6.5 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on contact with hot surfaces or flames. This produces toxic and corrosive gases of hydrogen chloride (see ICSC 0163), phosgene (see ICSC 0007), hydrogen fluoride (see ICSC 0283) and carbonyl fluoride (see ICSC 0633). Reacts violently with powdered metals. This generates fire and explosion hazard. Attacks magnesium and its alloys.

### Chemical stability

no data available

### Possibility of hazardous reactions

Not combustible. The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. 1,1,2-

TRICHLORO-1,2,2-TRIFLUOROETHANE yields violent reactions with Al, Ba, Li, Sm, Na/K alloy and Ti (NTP, 1992). May react exothermically with aluminum.

#### **Conditions to avoid**

no data available

#### **Incompatible materials**

Mixtures /of aluminum/ with fluorotrichloroethane and with trichlorotrifluoroethane will flash or spark on heavy impact.

#### **Hazardous decomposition products**

Decomposes on contact with hot surfaces or flames. This produces toxic and corrosive gases of hydrogen chloride, phosgene, hydrogen fluoride and carbonyl fluoride. Reacts violently with powdered metals. This generates fire and explosion hazard. Attacks magnesium and its alloys.

### **SECTION 11: Toxicological information**

#### **Acute toxicity**

Oral: LD50 Rat oral 43 g/kg

Inhalation: no data available

Dermal: no data available

#### **Skin corrosion/irritation**

no data available

#### **Serious eye damage/irritation**

no data available

#### **Respiratory or skin sensitization**

no data available

#### **Germ cell mutagenicity**



no data available

### **Carcinogenicity**

A4: Not classifiable as a human carcinogen.

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

The substance is irritating to the eyes. The substance may cause effects on the cardiovascular system and central nervous system. This may result in cardiac disorders and central nervous system depression. Exposure could cause lowering of consciousness. See Notes.

### **STOT-repeated exposure**

Repeated or prolonged contact with skin may cause dermatitis.

### **Aspiration hazard**

On loss of containment this substance can cause suffocation by lowering the oxygen content of the air in confined areas.

## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

AEROBIC: 1,1,2-Trichloro-1,2,2-trifluoroethane, present at 100 mg/L, reached 0-5% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test(1).

### **Bioaccumulative potential**

BCFs of 11-33 and 14-86 were measured for 1,1,2-trichloro-1,2,2-trifluoroethane at concentrations of 0.198 and 0.0198 mg/L, respectively(1). According to a classification scheme(2), these BCF values suggest bioconcentration in aquatic organisms is low to moderate.

### **Mobility in soil**

The Koc of 1,1,2-trichloro-1,2,2-trifluoroethane is estimated as 552(SRC), using a log Kow of 3.16(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that 1,1,2-trichloro-1,2,2-trifluoroethane is expected to have low mobility in soil.

### **Other adverse effects**

no data available

## **SECTION 13: Disposal considerations**

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

## **SECTION 14: Transport information**

### **UN Number**

ADR/RID: UN1078 (For reference only, please check.)

IMDG: UN1078 (For reference only, please check.)

IATA: UN1078 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: REFRIGERANT GAS, N.O.S. (For reference only, please check.)  
IMDG: REFRIGERANT GAS, N.O.S. (For reference only, please check.)  
IATA: REFRIGERANT GAS, N.O.S. (For reference only, please check.)

#### **Transport hazard class(es)**

ADR/RID: 2.2 (For reference only, please check.)  
IMDG: 2.2 (For reference only, please check.)  
IATA: 2.2 (For reference only, please check.)

#### **Packing group, if applicable**

ADR/RID: (For reference only, please check.)  
IMDG: (For reference only, please check.)  
IATA: (For reference only, please check.)

#### **Environmental hazards**

ADR/RID: Yes  
IMDG: Yes  
IATA: Yes

#### **Special precautions for user**

no data available

#### **Transport in bulk according to IMO instruments**

no data available

### **SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

**EC Inventory**

Listed.

**United States Toxic Substances Control Act (TSCA) Inventory**

Listed.

**China Catalog of Hazardous chemicals 2015**

Listed.

**New Zealand Inventory of Chemicals (NZIoC)**

Listed.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Not Listed.

**IECSC)**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

## **SECTION 16: Other information**

### **Abbreviations and acronyms**

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:  
[http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:  
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

### Other Information

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering the area. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding.

Disclaimer: 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. We as supplier shall not be held liable for any