

## Chemical Safety Data Sheet MSDS / SDS

## 1,1,1,2-tetrachloro-2,2-difluoroethane 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: 1,1,1,2-tetrachloro-2,2-difluoroethane

CAS: 76-11-9

**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

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Skin irritation, Category 2

Eye irritation, Category 2

Specific target organ toxicity - single exposure, Category 3

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

### Hazard statement(s)

H315 Causes skin irritation

H319 Causes serious eye irritation

H335 May cause respiratory irritation

### Precautionary statement(s)

### Prevention

P264 Wash ... thoroughly after handling.

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

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

### Response

P302+P352 IF ON SKIN: Wash with plenty of water/...

P321 Specific treatment (see ... on this label).

P332+P317 If skin irritation occurs: Get medical help.

P362+P364 Take off contaminated clothing and wash it before reuse.

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

Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P319 Get medical help if you feel unwell.

### Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

### Disposal

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:	1,1,1,2-tetrachloro-2,2-difluoroethane
Common names and synonyms:	1,1,1,2-tetrachloro-2,2-difluoroethane
CAS number:	76-11-9
EC number:	200-934-0
Concentration:	100%

### SECTION 4: First aid measures

#### Description of necessary first-aid measures

##### If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention. See Notes.

##### Following skin contact

Rinse and then wash skin with water and soap.

##### 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.

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

Exposure Routes: inhalation, ingestion, skin and/or eye contact Symptoms: Irritation eyes, skin; central nervous system depression; pulmonary edema; drowsiness; dyspnea (breathing difficulty) Target Organs: Eyes, skin, respiratory system, central nervous system

(NIOSH, 2016)

**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**

In case of fire in the surroundings, use appropriate extinguishing media.

**Specific hazards arising from the chemical**

Excerpt from ERG Guide 126 [Gases - Compressed or Liquefied (Including Refrigerant Gases)]: Some may burn but none ignite readily. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)

**Special protective actions for fire-fighters**

In case of fire in the surroundings, use appropriate extinguishing media.

**SECTION 6: Accidental release measures**

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

Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

**Environmental precautions**

Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

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

Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do not let this chemical enter the environment.

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

### **Precautions for safe handling**

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**

See Chemical Dangers. Well closed. Well closed.

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

### **Control parameters**

#### **Occupational Exposure limit values**

TLV: 100 ppm as TWA. MAK: 1700 mg/m<sup>3</sup>, 200 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 spectacles.

#### **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:	1,1,1,2-tetrachloro-2,2-difluoroethane is a colorless solid with a slight, ether-like odor. mp: 40.6°C; bp: 91.5°C.
Colour:	Colorless liquid or solid
Odour:	Slight ether odor
Melting point/freezing point:	39-44°C
Boiling point or initial boiling point and boiling range:	93.3°C at 760 mmHg
Flammability:	Noncombustible Solid
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	11.8°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	2.1583X10 <sup>-3</sup> Pa.s at 313.75 K

Solubility:	0.01 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 3.41 (est)
Vapour pressure:	40 mm Hg (NIOSH, 2016)
Density and/or relative density:	1.726 g/cm <sup>3</sup>
Relative vapour density:	7.0 (Air = 1)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on contact with hot surfaces or flames. This produces toxic fumes including hydrogen chloride, hydrogen fluoride and phosgene. Reacts with alkali metals, powdered aluminium, magnesium and zinc. Attacks plastics, rubber and coatings.

### Chemical stability

no data available

### Possibility of hazardous reactions

1,1,1,2-tetrachloro-2,2-Difluoroethane is non-flammable. Incompatible with active metals such as potassium, sodium, beryllium, powdered aluminum, zinc, magnesium, and calcium. Reacts with acids.

### Conditions to avoid

no data available

### Incompatible materials

Chemically-active metals such as potassium, beryllium, powdered aluminum, zinc, magnesium, calcium and sodium; acids.

### Hazardous decomposition products

Decomposes on contact with hot surfaces or flames. This produces toxic fumes including hydrogen chloride, hydrogen fluoride and phosgene.

## **SECTION 11: Toxicological information**

### **Acute toxicity**

Oral: LD50 Rat oral >8 g/kg

Inhalation: LC50 Mice inhalation 15,000 ppm/2 hr

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**

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

Inhalation of high levels may cause lung oedema. See Notes. 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.

#### **STOT-repeated exposure**

no data available

#### **Aspiration hazard**

A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

## **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**

ANAEROBIC: Structurally similar compounds such as Freon 12 and Freon 114 have been shown to biodegrade under anaerobic conditions(1), suggesting that 1,1,1,2-tetrachloro-2,2-difluoroethane may also biodegrade under anaerobic conditions(SRC).

### **Bioaccumulative potential**

An estimated BCF of 82 was calculated in fish for 1,1,1,2-tetrachloro-2,2-difluoroethane(SRC), using an estimated log Kow of 3.41(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is moderate(SRC), provided the compound is not metabolized by the organism(SRC).

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for 1,1,1,2-tetrachloro-2,2-difluoroethane can be estimated to be 200(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1,1,1,2-tetrachloro-2,2-difluoroethane is expected to have moderate 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: no data available

IMDG: no data available

IATA: no data available

**UN Proper Shipping Name**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**Transport hazard class(es)**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**Packing group, if applicable**

ADR/RID: no data available  
IMDG: no data available  
IATA: no data available

#### **Environmental hazards**

ADR/RID: No  
IMDG: No  
IATA: No

#### **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**

Not Listed.

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

Listed.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Not Listed.

**IECSC)**

Not 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**

Do NOT use in the vicinity of a fire or a hot surface, or during welding. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential.

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