Chemical Safety Data Sheet MSDS / SDS

Dichlorofluoromethane 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: Dichlorofluoromethane

CAS: 75-43-4

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

Relevant identified uses: For R&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

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Not classified.

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H280 Contains gas under pressure; may explode if heated

Precautionary statement(s)

Prevention

none

Response

none

Storage

none

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Dichlorofluoromethane
Common names and synonyms:	Dichlorofluoromethane
CAS number:	75-43-4
EC number:	200-869-8

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

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. 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 with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

INHALATION: May cause giddiness, light-headedness, disorientation, nausea, vomiting, narcosis, cardiac dysrhythmias, hypotension, and death. SKIN: May cause frostbite or irritation. EYES: May cause irritation or cold injury. (USCG, 1999)

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

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Chlorinated fluorocarbons (CFCs) and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material involved in fire: Extinguish fire using agent suitable for type of surrounding fire. (Material itself does not burn or burns with difficulty.) Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic fumes of chlorine and fluorine may be produced in fire. (USCG, 1999)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep cylinder 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. Ventilation. NEVER direct water jet on liquid.

Environmental precautions

Personal protection: self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. NEVER direct water jet on liquid.

Methods and materials for containment and cleaning up

If Refrigerant 21 is spilled or leaked, the following steps should be taken: 1. Ventilate area of spill or leak. 2. If the gas is leaking, stop the flow. 3. If the liquid is spilled or leaked, allow to vaporize.

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

Fireproof if in building.... MATERIALS MUST BE STORED IN PLACES THAT ARE COOL ... PROVIDE ADEQUATE VENTILATION ... FURTHER PRECAUTION IS TO LOCATE ... AREA ... AWAY FROM AREAS OF FIRE HAZARD .

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 10 ppm as TWA.MAK: 43 mg/m3, 10 ppm; peak limitation category: II(2)

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 or eye protection in combination with breathing protection.

Skin protection

Cold-insulating gloves. Protective clothing.

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:	Dichlorofluoromethane is a colorless, odorless gas. It is shipped as a liquid under its own vapor pressure. Contact with the liquid may cause frostbite to unprotected skin. It can asphyxiate by displacement of air. Exposure of the container to prolonged heat or fire may cause it to rupture violently and rocket.

Colour:	Colorless heavy gas
Odour:	... Slight ether-like odor ...
Melting point/freezing point:	-135°C
Boiling point or initial boiling point and boiling range:	8.9°C
Flammability:	Nonflammable Gas
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	130-132°C/3mm
Auto-ignition temperature:	1022° F (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.313 cP at 25 deg C (liq); 0.0114 cP at 25 deg C, 101.3 kPa ... /gas/
Solubility:	0.7 % at 86° F (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 1.55
Vapour pressure:	2217.93 mm Hg (USCG, 1999)
Density and/or relative density:	1.35
Relative vapour density:	3.82 (Air = 1)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces corrosive and highly toxic fumes (hydrogen chloride - see ICSC 0163, hydrogen fluoride - see ICSC 0283 and phosgene - see ICSC 0007). Reacts with powdered aluminium, zinc and magnesium. Reacts with acids and acid fumes. This produces highly toxic fumes of chlorides and fluorides. Attacks some forms of plastic, rubber and coatings.

Chemical stability

Condition/ contributing to instability: heat.

Possibility of hazardous reactions

WEAKLY FLAMMABLE. The gas is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. DICHLOROFLUOROMETHANE is incompatible with the following: Chemically-active metals such as sodium, potassium, calcium, powdered aluminum, zinc & magnesium; acid; acid fumes (NIOSH, 2016).

Conditions to avoid

no data available

Incompatible materials

Incompatibilities: Reacts violently with chemically active metals: sodium, potassium, calcium, powdered aluminum, zinc, magnesium, alkali, alkaline earth. Reacts with acids or acid fumes producing highly toxic chlorine and fluorine fumes. Attacks some forms of plastics, rubber, and coatings.

Hazardous decomposition products

When heated to decomposition it emits very toxic fumes of chloride and fluoride.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: LC50 Rat inhalation 49,900 ppm 4 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

The liquid may cause frostbite. The substance may cause effects on the central nervous system at high concentrations. Exposure far above the OEL could cause cardiac dysrhythmia.

STOT-repeated exposure

The substance may have effects on the liver.

Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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: Complete degradation of dichlorofluoromethane, initially present at approximately 95 ppm, by methanotrophic bacteria occurred within approximately 19 days in soil samples collected from an agricultural field(1) when methane was added to the soil(1). In soil samples collected from a forest, complete degradation of dichlorofluoromethane, initially present at approximately 26 ppm, by methanotrophic bacteria occurred within approximately 5 days when methane was added to the soil(1). In batch experiments using soil pre-exposed to landfill gas incubated with methane and air, dichlorofluoromethane degraded with an oxidation rate 0.509 ug/g soil-hour(2). Dichlorofluoromethane, present at 11.6 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at a reported concentration of sludge of 1 drop/L in the Japanese MITI test(3).[(1) Oremland RS et al; Appl Environ Microbiol 62: 1818-21 (1996) (2) Scheutz C et al; J Environ Qual 33: 61-71 (2004) (3) NITE; Chemical Risk Information Platform (CHRIP). Biodegradation and Bioconcentration. Tokyo, Japan: Natl Inst Tech Eval. Available from, as of Dec 10, 2014: http://www.safe.nite.go.jp/english/db.html] Full text: PMC167957

Bioaccumulative potential

An estimated BCF of 5 was calculated for dichlorofluoromethane in fish(SRC), using a log Kow of 1.55(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low. The BCF of dichlorofluoromethane is reported as low using carp (Cyprinus carpio) which were exposed over an 8-week period (actual BCF value not reported)(4).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for dichlorofluoromethane can be estimated to be 32(SRC). According to a classification scheme(2), this estimated Koc value suggests that dichlorofluoromethane is expected to have very high 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: UN1029 (For reference only, please check.)
IMDG: UN1029 (For reference only, please check.)
IATA: UN1029 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: DICHLOROFLUOROMETHANE (REFRIGERANT GAS R 21) (For reference only, please check.)
IMDG: DICHLOROFLUOROMETHANE (REFRIGERANT GAS R 21) (For reference only, please check.)
IATA: DICHLOROFLUOROMETHANE (REFRIGERANT GAS R 21) (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: 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

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

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. There is no odour warning even when toxic concentrations are present. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.