

## Chemical Safety Data Sheet MSDS / SDS

## Difluoroethane

Revision Date:2024-03-23 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : Difluoroethane  
CBnumber : CB3854228  
CAS : 75-37-6  
EINECS Number : 200-866-1  
Synonyms : R152a,1,1-Difluoroethane

## 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  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

## SECTION 2: Hazards identification

## Classification of the substance or mixture

Flammable gases, Category 1A, Flammable gas  
Gases under pressure: Liquefied gas

## Label elements

## Pictogram(s)

☐

Signal word : Danger

## Hazard statement(s)

H220 Extremely flammable gas  
H280 Contains gas under pressure; may explode if heated

## Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 Eliminate all ignition sources if safe to do so.  
P410+P403 Protect from sunlight. Store in a well-ventilated place.

**Prevention**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

**Response**

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 In case of leakage, eliminate all ignition sources.

**Storage**

P403 Store in a well-ventilated place.

P410+P403 Protect from sunlight. Store in a well-ventilated place.

**Disposal**

none

**Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

**Substance**

Product name	: Difluoroethane
Synonyms	: R152a, 1,1-Difluoroethane
CAS	: 75-37-6
EC number	: 200-866-1
MF	: C <sub>2</sub> H <sub>4</sub> F <sub>2</sub>
MW	: 66.05

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## SECTION 4: First aid measures

**Description of first aid measures****If inhaled**

Fresh air, rest.

**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 and effects, both acute and delayed**

Inhalation of concentrated gas will cause suffocation. Contact with liquid can damage eyes because of low temperature. Frostbite may result from contact with liquid. (USCG, 1999)

**Indication of any immediate medical attention and special treatment needed**

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 if 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

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## SECTION 5: Firefighting measures

### Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

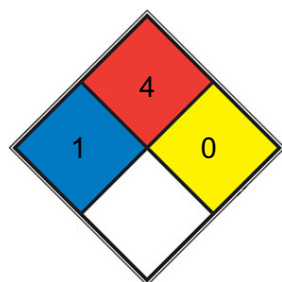
### Specific Hazards Arising from the Chemical

Special Hazards of Combustion Products: Irritating hydrogen fluoride fumes may form in fire. Behavior in Fire: Containers may explode. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back. (USCG, 1999)

### Advice for firefighters

Use carbon dioxide, powder, water spray. In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

### NFPA 704



■ HEALTH 1 Exposure would cause irritation with only minor residual injury (e.g. [acetone](#), sodium bromate, potassium chloride)

Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will

■ FIRE 4 burn readily. Includes pyrophoric substances. Flash point below room temperature at 22.8 °C (73 °F). (e.g. acetylene, propane, [hydrogen gas](#))

■ REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N<sub>2</sub>](#))

□ SPEC.  
HAZ.

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Remove vapour with fine water spray. NEVER direct water jet on liquid.

### Environmental precautions

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Remove vapour with fine water spray. NEVER direct water jet on liquid.

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

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas; Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains; Methods and materials for containment and cleaning up: Clean up promptly by sweeping or vacuum.

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## SECTION 7: Handling and storage

### **Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Use non-sparking handtools. 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. Separated from incompatible materials. Keep in a well-ventilated room. Keep container tightly closed in a dry and well-ventilated place.

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## SECTION 8: Exposure controls/personal protection

### **Control parameters**

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

no data available

#### **Biological limit values**

no data available

### **Exposure 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**

#### **Eye/face protection**

Wear safety goggles or eye protection in combination with breathing protection.

#### **Skin protection**

Cold-insulating gloves.

#### **Respiratory protection**

Use ventilation.

#### **Thermal hazards**

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Gaseous. Gas.
Colour	Colourless.
Odour	Odorless
Melting point/freezing point	-117 °C. Atm. press.:Ca. 1 013 hPa.
Boiling point or initial boiling point and boiling range	-24.7 °C. Atm. press.:Ca. 1 013 hPa.
Flammability	Extremely flammable. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	Flammable limits in air 3.7-18%.
Flash point	< -50 deg C (open cup)
Auto-ignition temperature	440 °C. Atm. press.:100.9 - 101.7 kPa.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	0.263 cP at 50 deg F
Solubility	Soluble 1 in 357 parts of water at 25°C.
Partition coefficient n-octanol/water	log Pow = 1.13. Temperature:25 °C.
Vapour pressure	514 624 Pa. Temperature:25 °C. Remarks:3860 mm Hg.
Density and/or relative density	Ca. 0.896. Temperature:25 °C.
Relative vapour density	2.28 (vs air)
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

### Reactivity

Decomposes rapidly on heating and on burning. This produces toxic and irritating fumes including hydrogen fluoride and carbon monoxide.

Reacts with amines, reducing agents, strong oxidants and epoxides.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat or flame; can react vigorously with oxidizing materials. The gas mixes well with air, explosive mixtures are easily formed. As a result of flow, agitation, etc., electrostatic charges can be generated. Halogenated aliphatic compounds, such as 1,1-DIFLUOROETHANE, are moderately or very reactive. Halogenated organics generally become less reactive as more of their hydrogen atoms are replaced with halogen atoms. Low molecular weight haloalkanes are highly flammable and can react with some metals to form dangerous products. Materials in this group are incompatible with strong oxidizing and reducing agents. Also, they are incompatible with many amines, nitrides, azo/diazo compounds, alkali metals, and epoxides. The reaction of aluminum with various halogenated hydrocarbons produces a self-sustaining reaction with sufficient heat to melt aluminum pieces, examples of other halogenated

hydrocarbons are fluorotrichloromethane, dichlorodifluoromethane, chlorodifluoromethane, tetrafluoromethane. The vigor of the reaction appears to be dependent on the combined degree of fluorination and the vapor pressure [Chem. Eng. News 39(27):44(1961)].

### **Conditions to avoid**

no data available

### **Incompatible materials**

Incompatible materials: Alkali metals, Alkaline earth metals, Powdered metals, Powdered metal salts

### **Hazardous decomposition products**

Special hazards arising from the substance or mixture: Carbon oxides, Hydrogen fluoride

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## **SECTION 11: Toxicological information**

### **Acute toxicity**

- Oral: Approximate Lethal Dose (ALD) - rat (male) - > 1 500 mg/kg bw. Remarks: Due to technical limitations, this was the maximum feasible dose tested.
- Inhalation: LC50 - rat (male) - > 43.75 % (437500 ppm).
- 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**

Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the cardiovascular system. This may result in cardiac disorders. Exposure at high levels could cause unconsciousness.

### **STOT-repeated exposure**

no data available

## Aspiration hazard

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

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## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: LC50 - Fish - 295.783 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnid - 146.695 mg/L - 48 h.

Toxicity to algae: EC50 - 168.276 mg/L - 96 h.

Toxicity to microorganisms: EC50 - Pseudomonas putida - > 730 mg/L - 6 h.

### Persistence and degradability

no data available

### Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for 1,1-difluoroethane(SRC), using a log Kow of 0.75(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(SRC).

### Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of 1,1-difluoroethane can be estimated to be 32(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1,1-difluoroethane is expected to have very high mobility in soil.

### Other adverse effects

no data available

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## 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.

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## SECTION 14: Transport information

### UN Number

ADR/RID: UN1030 (For reference only, please check.)

IMDG: UN1030 (For reference only, please check.)

IATA: UN1030 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: 1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a) (For reference only, please check.)

IMDG: 1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a) (For reference only, please check.)

IATA: 1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a) (For reference only, please check.)

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

ADR/RID: 2.1 (For reference only, please check.)

IMDG: 2.1 (For reference only, please check.)

IATA: 2.1 (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

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## 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

Listed.

## IECSC

Listed.

## Korea Existing Chemicals List (KECL)

Listed.

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## 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

Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Check oxygen content before entering the area.

#### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.