

## Chemical Safety Data Sheet MSDS / SDS

## Dimethyl dicarbonate

Revision Date:2024-12-21 Revision Number:1

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

**Product identifier**

Product name : Dimethyl dicarbonate  
CBnumber : CB9496174  
CAS : 4525-33-1  
EINECS Number : 224-859-8  
Synonyms : Dimethyl dicarbonate, Velcorin

**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**

Acute toxicity - Category 4, Oral  
Acute toxicity - Category 4, Dermal  
Skin corrosion, Sub-category 1B  
Acute toxicity - Category 2, Inhalation

**Label elements****Pictogram(s)**

☐

Signal word : Danger

**Hazard statement(s)**

H314 Causes severe skin burns and eye damage  
H330 Fatal if inhaled

**Precautionary statement(s)**

P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

P284 Wear respiratory protection.

P310 Immediately call a POISON CENTER or doctor/physician.

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

#### **Prevention**

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

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

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P284 [In case of inadequate ventilation] wear respiratory protection.

#### **Response**

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

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

P317 Get medical help.

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

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

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P363 Wash contaminated clothing before reuse.

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

P316 Get emergency medical help immediately.

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

P320 Specific treatment is urgent (see ... on this label).

#### **Storage**

P405 Store locked up.

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

#### **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**

no data available

---

## SECTION 3: Composition/information on ingredients

### **Substance**

Product name : Dimethyl dicarbonate  
Synonyms : Dimethyl dicarbonate, Velcorin  
CAS : 4525-33-1  
EC number : 224-859-8

MF : C4H6O5

MW : 134.09

---

## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately.

Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### 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

no data available

### 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 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. Esters and related compounds

---

## SECTION 5: Firefighting measures

### Extinguishing media

Suitable Extinguishing Media: All extinguishing media are suitable. Special Fire Fighting Procedures: Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Use cold water spray to cool fire-exposed containers to minimize risk of rupture.

### Specific Hazards Arising from the Chemical

no data available

### Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

---

## SECTION 6: Accidental release measures

## Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

## Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

## Methods and materials for containment and cleaning up

Spill and Leak Procedures: Cleanup personnel must use appropriate personal protective equipment. Do not allow spilled material or wash water to enter sewers, surface waters, or groundwater systems. Remove all sources of ignition, including flames, heat, and sparks. Ventilate area to remove vapors or dust. Evacuate and keep unnecessary people out of spill area. Cover spill with damp, fluid-binding material (for example, sand, sawdust, chemical binder based on calcium silicate hydrate). Transfer to an open waste container after approximately one hour, cover loosely and remove to an isolated area. Do not seal the container as carbon dioxide given off by the slow reaction between Velcorin and water may cause a tightly sealed container to burst. Flush the spill with cold water but avoid flushing into open drains. Hot water should never be used for this purpose since it would cause considerable vaporization of the spilled material. Use the paper Velcorin indicator strips to insure that there is no residual Dimethyl Dicarbonate in the air.

---

## 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

Storage Temperature: minimum: 20 deg C (68 deg F); maximum: 30 deg C (86 deg F). Storage Period: 12 Months: Keep in a dry place. Expiration date on label is day/month/year. Handling/Storage Precautions: Do not breathe vapors or spray mist. Do not get on skin or clothing. Do not get in eyes. Do not taste or swallow. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Keep container closed when not in use. Store in a dry place away from excessive heat in original or similar containers. Protect from freezing. Further Info on Storage Conditions: Avoid extreme heat. Product can react with water. Avoid contact with moisture/water. Light sensitive. If the material does crystallize, it must be reliquified before being used. The recommended method to reliquify is to simply place the container in an appropriate storage area and allow it to gradually reach ambient temperatures. An alternative is to reliquify by gently heating it in a water bath. Do NOT apply heat/flame directly to container.

---

## 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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

### Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

### Thermal hazards

no data available

---

## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Colourless liquid, decomposes in aqueous solution. It is corrosive to skin and eyes and toxic by inhalation and ingestion
Colour	Clear, colorless liquid
Odour	no data available
Melting point/freezing point	15-17°C
Boiling point or initial boiling point and boiling range	45-46°C/5mmHg(lit.)
Flammability	no data available
Lower and upper explosion limit/flammability limit	3-29.9%(V)
Flash point	80°C
Auto-ignition temperature	Approximately 465 deg C (869 deg F)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	35g/l (decomposition)
Partition coefficient n-octanol/water	log Kow = -0.86 (est)
Vapour pressure	0.7 hPa (20 °C)
Density and/or relative density	1.25g/mL at 25°C(lit.)
Relative vapour density	no data available
Particle characteristics	no data available

---

## SECTION 10: Stability and reactivity

**Reactivity**

no data available

**Chemical stability**

no data available

**Possibility of hazardous reactions**

Combustible

**Conditions to avoid**

no data available

**Incompatible materials**

no data available

**Hazardous decomposition products**

Hazardous decomposition products: By Fire and Thermal Decomposition: Methanol; Carbon oxides, nitrogen oxides (NO<sub>x</sub>), other potentially toxic fumes.

---

**SECTION 11: Toxicological information****Acute toxicity**

- Oral: LD50 Mouse (female) oral 752.7 mg/kg
- Inhalation: LC50 Mouse (female) inhalation >1477 mg/cu m/ 4 hours
- 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**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

---

## 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: While biodegradation data for dimethyl dicarbonate were not available(SRC, 2013), dimethyl carbonate, a structural analog, was >90% biodegraded in 28 days using an activated sludge inoculum in the OECD 301C test (Modified MITI)(1).

### **Bioaccumulative potential**

An estimated BCF of 3.2 was calculated in fish for dimethyl dicarbonate(SRC), using an estimated log Kow of -0.86(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 dimethyl dicarbonate can be estimated to be 1(SRC). According to a classification scheme(2), this estimated Koc value suggests that dimethyl dicarbonate 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: UN2927 (For reference only, please check.)

IMDG: UN2927 (For reference only, please check.)

IATA: UN2927 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (For reference only, please check.)

IMDG: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (For reference only, please check.)

IATA: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

### Packing group, if applicable

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

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

IATA: I (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**

Not 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?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=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/>

#### **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.