Material Safety Data Sheet
Dimethyl carbonate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Dimethyl carbonate
Catalog Codes: SLD1420
CAS#: 616-38-6
RTECS: FG0450000
TSCA: TSCA 8(b) inventory: Dimethyl carbonate
CI#: Not available.
Synonym: Methyl carbonate
Chemical Name: Carbonic acid, dimethyl ester
Chemical Formula: C3-H6-O3
Contact Information:
Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396
US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**
Order Online: ScienceLab.com
CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300
International CHEMTREC, call: 1-703-527-3887
For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:
Name CAS # % by Weight
Dimethyl carbonate 616-38-6 100
Toxicological Data on Ingredients: Dimethyl carbonate: ORAL (LD50): Acute: 6000 mg/kg [Mouse]. 13000 mg/kg [Rat].
DERMAL (LD50): Acute: >5000 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), of
ingestion, of inhalation.
Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or
prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
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Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15
minutes. Get medical attention.
Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated
clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: Not available.

Flash Points: CLOSED CUP: 18°C (64.4°F). OPEN CUP: 21.667°C (71°F).

Flammable Limits: LOWER: 4.22% UPPER: 12.87%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Flammable in presence of oxidizing materials.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:

Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire.

Special Remarks on Fire Hazards:

Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:

Flammable liquid, insoluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk.

Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not
breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the
container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing
agents, acids, alkalis.
Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and
sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective
threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection: Splash goggles. Lab coat. Gloves.
Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE
handling this product.
Exposure Limits:
TWA: 200 STEL: 400 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.
Odor: Pleasant.
Taste: Not available.
Molecular Weight: 90.08 g/mole
Color: Colorless. Clear
pH (1% soln/water): Not applicable.
Boiling Point: 90°C (194°F) - 91 C.
Melting Point: 2°C (35.6°F) - 4 C.
Critical Temperature: 274.85°C (526.7°F)
Specific Gravity:
1.069 @ 20 C.(Water = 1) 1.0636 @ 25 C.
Vapor Pressure: 5.6 kPa (@ 20°C)
Vapor Density: 3.1 (Air = 1)
Volatility: Not available.
Odor Threshold: Not available.
Water/Oil Dist. Coeff.: Not available.
Ionicity (in Water): Not available.
Dispersion Properties: Not available.
Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.
Instability Temperature: Not available.
Conditions of Instability: Heat, ignition sources, incompatible materials
Incompatibility with various substances:
Highly reactive with oxidizing agents. Reactive with reducing agents, acids, alkalis.
Corrosivity: Not available.
Special Remarks on Reactivity: Violent reaction or ignition on contact with potassium tert-butoxide.

Special Remarks on Corrosivity: Not available.
Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.
Toxicity to Animals:
Acute oral toxicity (LD50): 6000 mg/kg [Mouse]. Acute dermal toxicity (LD50): >5000 mg/kg [Rabbit].
Chronic Effects on Humans: May cause damage to the following organs: central nervous system (CNS).
Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation.
Special Remarks on Toxicity to Animals: Not available.
Special Remarks on Chronic Effects on Humans: Not available.
Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through the skin. Eyes: Causes eye irritation.
Inhalation: May cause respiratory tract irritation. May cause drowsiness, unconsciousness, and central nervous system
depression. Vapors may cause dizziness or suffocation. Ingestion: May cause irritation of the digestive tract. The toxicological
properties of this substance have not been fully investigated.

Section 12: Ecological Information

Ecotoxicity: Not available.
BOD5 and COD: Not available.
Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

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DOT Classification: CLASS 3: Combustible liquid
Identification: : Dimethyl Carbonate UNNA: 1161 PG: II
Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

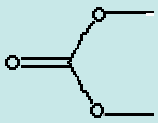
Federal and State Regulations:
Connecticut hazardous material survey.: Dimethyl carbonate Pennsylvania RTK: Dimethyl carbonate Florida: Dimethyl
carbonate Massachusetts RTK: Dimethyl carbonate New Jersey: Dimethyl carbonate TSCA 8(b) inventory: Dimethyl
carbonate
Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the
European Inventory of Existing Commercial Chemical Substances.
Other Classifications:
WHMIS (Canada): CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
DSCL (EEC):

R11- Highly flammable. S9- Keep container in a well-ventilated place. S16- Keep away from sources of ignition - No smoking.
S29- Do not empty into drains. S33- Take precautionary measures against static discharges.
HMIS (U.S.A.):
Health Hazard: 2
Fire Hazard: 3
Reactivity: 0
Personal Protection: j
National Fire Protection Association (U.S.A.):
Health: 1
Flammability: 3
Reactivity: 0
Specific hazard:
Protective Equipment:
Gloves. Lab coat. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.
Other Special Considerations: Not available.
Created: 10/09/2005 05:11 PM
Last Updated: 11/01/2010 12:00 PM

DIMETHYL CARBONATE



PRODUCT IDENTIFICATION	
CAS NO.	616-38-6
EINECS NO.	210-478-4
FORMULA	$(CH_3)_2CO_3$
MOL WT.	90.08
H.S. CODE	
TOXICITY	
SYNONYMS	DMC; Methyl carbonate; Carbonic acid dimethyl ester;
DERIVATION	
CLASSIFICATION	

PHYSICAL AND CHEMICAL PROPERTIES	
PHYSICAL STATE	clear liquid
MELTING POINT	2 - 4 C
BOILING POINT	90 C
SPECIFIC GRAVITY	1.069 - 1.073
SOLUBILITY IN WATER	Insoluble
pH	
VAPOR DENSITY	3.1
AUTOIGNITION	
NFPA RATINGS	Health: 3; Flammability: 3; Reactivity: 0
REFRACTIVE INDEX	
FLASH POINT	18 C
STABILITY	Stable under ordinary conditions

APPLICATIONS

Dimethyl Carbonate is a solvent of both extraction and reaction used in many industries; pharmaceuticals; agrochemicals; hydrocarbon refinery; paint and coatings and fragrances; It is used as a methylation and carbonylation agent in organic synthesis. It can be used as fuel and lube additive.

SALES SPECIFICATION	
APPEARANCE	clear liquid
CONTENT	99.0% min
WATER	0.1% max
FREE ACID	0.2% max
NON-VOLATILES	0.2% max

TRANSPORTATION	
PACKING	200kgs in drum
HAZARD CLASS	3 (Packing Group: II)
UN NO.	1161

OTHER INFORMATION

Hazard Symbols: F, Risk Phrases: 11, Safety Phrases: 9-16-29-33

GENERAL DESCRIPTION OF CARBONIC ACID

Carbonic acid (H_2CO_3) is a carbon-containing dibasic acid which has two acidic hydrogen atoms in the same molecule. The other common example of dibasic acid is sulfuric acid (H_2SO_4). Carbonic acid is formed in solution when its anhydride (carbon dioxide) is dissolved in water, existing only in equilibrium. The equilibrium is important for organisms to perform certain vital functions. The body fluids must maintain a constant pH. For example, blood must maintain a pH of close to 7.4 in order to carry oxygen from the lungs to cells. Carbonic acid has two acidic hydrogens and can lose one or two protons. The presence of

pure carbonic acid is not possible as even a single molecule of water causes the carbonic acid to revert to carbon dioxide and water fairly quickly. Pure carbonic acid can be found if there is no water absolutely. Carbonic acid itself is a stronger acid than acetic acid or formic acid due to the influence of the electronegative oxygen substituent. Considering the equilibrium constant, however, the majority of the carbon dioxide is not converted into carbonic acid and so such solutions are fairly weak. Carbonic acid forms two series of salts when combined with positive or basic atoms or radicals; the hydrogencarbonate which contain the hydrogencarbonate ion HCO_3^- formed when the first proton is removed and the carbonate which contain the carbonate ion, CO_3^{2-} formed when the second proton is removed. Hydrogencarbonates are also called bicarbonate or acid carbonate. Bicarbonates are formed under the presence of excess acid, while carbonates are formed when equivalent amounts of acid and base react. Most carbonic acid salts which are formed by reacting an inorganic base are the most basic industrial chemicals.