

Material Safety Data Sheet

Product name	Dimethyl carbonate
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1. Identification of the substance/mixture and of the company/undertaking

1.1. Product name	Dimethyl carbonate
1.2. CAS-No.	616-38-6
1.3. Relevant identified uses of the substance or mixture and uses advised against	
Identified uses	Laboratory chemicals, Synthesis of substances
1.4. Details of the supplier of the safety data sheet	
Company	Glory Global CO.,LTD
Address	C-208, 10, Nowon-ro 15-gil, Nowon-gu, Seoul, Korea
Emergency Phone	+82 2 6223 0862

2. Hazards identification

2.1. Classification of the substance or mixture GHS
Classification in accordance with 29 CFR 1910 (OSHA HCS)

– Flammable liquids (Category 2), H225
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2. GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

H225

Highly flammable liquid and vapour.

2.3. Precautionary statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P280	Wear protective gloves/ eye protection/ face protection.
P303 + P361 + P533	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.4. Hazards not otherwise classified (HNOC) or not covered by GHS

None

3. Composition/information on ingredients

3.1. Substances

Synonyms	DMC
Formula	C ₃ H ₆ O ₃
Molecular weight	90.08 g/mol
CAS No	616-38-6
EC-No.	210-478-4

Component	Classification	Concentration
Dimethyl carbonate		
	Flam. Liq. 2: H225	≤ 100

Additional Information

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

General advice	<ul style="list-style-type: none"> - Consult a physician. Show this safety data sheet to the doctor in attendance. - Move out of dangerous area.
If inhaled	<ul style="list-style-type: none"> - If breathed in, move person into fresh air. If not breathing, give artificial respiration. - Consult a physician.
In case of skin contact	<ul style="list-style-type: none"> - Wash off with soap and plenty of water. Consult a physician.
In case of eye contact	<ul style="list-style-type: none"> - Flush eyes with water as a precaution.
If swallowed	<ul style="list-style-type: none"> - Do NOT induce vomiting. Never give anything by mouth to an unconscious person. - Rinse mouth with water. Consult a physician.
4.2. Most important symptoms and effects, both acute and delayed	<ul style="list-style-type: none"> - The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
4.3. Indication of any immediate medical attention and special treatment needed	<ul style="list-style-type: none"> - No data available
5. Firefighting measures	
5.1. Extinguishing media	
Suitable extinguishing media	<ul style="list-style-type: none"> - Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
5.2. Special hazards arising from the substance or mixture	<ul style="list-style-type: none"> - Carbon oxides
5.3. Special protective equipment and precautions for fire fighters	<ul style="list-style-type: none"> - Wear self-contained breathing apparatus for firefighting if necessary.
5.4. Further information	<ul style="list-style-type: none"> - Use water spray to cool unopened containers.
6. Accidental release measures	
6.1. Personal precautions, protective equipment and emergency procedures	<ul style="list-style-type: none"> - Avoid breathing vapours, mist or gas. Ensure adequate ventilation. - Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. - For personal protection see section 8.
6.2. Environmental precautions	<ul style="list-style-type: none"> - Prevent further leakage or spillage if safe to do so. - Do not let product enter drains.
6.3. Methods and materials for containment and cleaning up	<ul style="list-style-type: none"> - Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations (see section 13).
6.4. Reference to other sections	<ul style="list-style-type: none"> - For disposal see section 13.
7. Handling and storage	
7.1. Precautions for safe handling	<ul style="list-style-type: none"> - Avoid inhalation of vapour or mist. - Use explosion-proof equipment. Keep away from sources of ignition – No smoking. - Take measures to prevent the build up of electrostatic charge. - For precautions see section 2.2.
7.2. Conditions for safe storage, including any incompatibilities	<ul style="list-style-type: none"> - Keep container tightly closed in a dry and well-ventilated place. - Containers which are opened must be carefully resealed and kept upright to prevent leakage. <p>Air sensitive.</p> <ul style="list-style-type: none"> - Storage class (TRGS 510): 3: Flammable liquids
7.3. Specific end use(s)	<ul style="list-style-type: none"> - Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
8. Exposure controls/personal protection	
8.1. Control parameters	
Components with workplace control parameters	Contains no substances with occupational exposure limit values.
8.2. Exposure controls	
Appropriate engineering controls	<ul style="list-style-type: none"> - Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment	
a) Eye/face protection	<ul style="list-style-type: none"> - Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
b) Skin protection	<ul style="list-style-type: none"> - Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
c) Body Protection	<ul style="list-style-type: none"> - Impervious clothing, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

d) Respiratory protection

– Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

e) Control of environmental exposure

– Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Form: liquid Colour: colourless
Odour	No data available
Odour Threshold	No data available
pH	No data available
Melting / freezing point	Melting point/range: 2 – 4 °C (36 – 39 °F) – lit.
Initial Boiling Point and Boiling Range	90 °C 194 °F – lit.
Flash point	16 °C (61 °F) – closed cup
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 12.87 %(V) Lower explosion limit: 4.22 %(V)
Vapour pressure	24 hPa at 21.1 °C (70.0 °F)
Vapour density	3.11 – (Air = 1.0)
Relative Density	1.069 g/cm ³ at 25 °C (77 °F)
Water solubility	114.7 g/l at 20 °C (68 °F) – OECD Test Guideline 105 – completely soluble
Partition coefficient n-octanol/water	log Pow: 0.354 at 20 °C (68 °F)
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2. Other safety information

Surface tension	31.92 mN/m
Relative vapour density	3.11 – (Air = 1.0)

10. Stability and reactivity

10.1. Reactivity	– No data available
10.2. Chemical stability	– Stable under recommended storage conditions.
10.3. Possibility of hazardous reactions	– Vapours may form explosive mixture with air.
10.4. Conditions to avoid	– Heat, flames and sparks.
10.5. Incompatible materials	– Strong oxidizing agents, Strong reducing agents, Strong bases
10.6. Hazardous decomposition products	– Hazardous decomposition products formed under fire conditions.: Carbon oxides – Other decomposition products: No data available – In the event of fire: see section 5

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity	LD50 Oral – Rat – male and female – > 5,000 mg/kg (OECD Test Guideline 401) LC50 Inhalation – Rat – male and female – 4 h – > 5.36 mg/l (OECD Test Guideline 403) LD50 Dermal – Rabbit – male and female – > 2,000 mg/kg No data available
Skin corrosion/irritation	Skin – Rabbit Result: No skin irritation (OECD Test Guideline 404)
Serious eye damage/eye irritation	Eyes – Rabbit Result: No eye irritation
Respiratory or skin sensitisation	Freund's complete adjuvant test – Guinea pig Result: negative (OECD Test Guideline 406)
Germ cell mutagenicity	Chromosome aberration test in vitro lymphocyte Result: negative

11.2. Carcinogenicity

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
11.3. Reproductive toxicity	No toxicity to reproduction
11.4. Specific target organ toxicity – single exposure	No data available
11.5. Specific target organ toxicity – repeated exposure	No data available
11.6. Aspiration hazard	No data available
11.7. Additional Information	RTECS: FG0450000
12. Ecological information	
12.1. Toxicity	
Fish	flow-through test LC50 – Danio rerio (zebra fish) – > 100 mg/l – 96 h (OECD Test Guideline 203)
Daphnia and other aquatic invertebrates	static test EC50 – Daphnia magna (Water flea) – > 100 mg/l – 48 h (OECD Test Guideline 202)
Algae/aquatic plants	static test EC50 – Pseudokirchneriella subcapitata (green algae) – > 100 mg/l – 72 h (OECD Test Guideline 201)
12.2. Persistence and degradability	
Biodegradability	aerobic – Exposure time 28 d Result: 86 % – Readily biodegradable. (OECD Test Guideline 301C)
12.3. Bioaccumulative potential	– No data available
12.4. Mobility in soil	– No data available
12.5. Results of PBT and vPvB assessment	– PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
12.6 Other adverse effects	– No data available
13. Disposal considerations	
13.1 Waste treatment methods	
Product	– Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. – Offer surplus and non-recyclable solutions to a licensed disposal company. – Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging	– Dispose of as unused product.
14. Transport information	
14.1. DOT (US)	– UN number: 1161 – Class: 3 – Packing group: II – Proper shipping name: Dimethyl carbonate – Reportable Quantity (RQ):
14.2. IMDG	– Poison Inhalation Hazard: No – UN number: 1161 – Class: 3 – Packing group: II – EMS-No: F-E, S-D – Proper shipping name: DIMETHYL CARBONATE
14.3. IATA (Country variations may apply)	– UN number: 1161 – Class: 3 – Packing group: II – Proper shipping name: Dimethyl carbonate
15. Regulatory information	
15.1. SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
15.2. SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
15.3. SARA 311/312 Hazards	Fire Hazard

15.4. Massachusetts Right To Know Components

- Dimethyl carbonate
- CAS-No.: 616-38-6
- Revision Date: 2007-03-01

15.5. Pennsylvania Right To Know Components

- Dimethyl carbonate
- CAS-No.: 616-38-6
- Revision Date: 2007-03-01

15.6. New Jersey Right To Know Components

- Dimethyl carbonate
- CAS-No.: 616-38-6
- Revision Date: 2007-03-01

15.7. California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. Other information

16.1. Further information

- Always work safely around open hatches on bulk tanks. The low density makes flotation difficult for immersed person.

