



# Safety Data Sheet

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## DRY ICE (SOLID CARBON DIOXIDE)

### 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

**Product name** Dry Ice  
**Chemical name/formula** Carbon Dioxide (Solid) / CO<sub>2</sub>  
**Company identification** See header and footer  
**Emergency phone no.** See footer

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Substance/Preparation** Substance  
**Components/Impurities** Contains no other components or impurities, which will influence the classification of the product.  
**CAS No.** 124-38-9

### 3. HAZARDS IDENTIFICATION

**General**

- Refrigerated solidified gas.
- Contact with product may cause cold burns or frostbite.
- In high concentrations sublimed vapour may cause asphyxiation.

### 4. FIRST-AID MEASURES

**Inhalation**

- In high concentrations may cause asphyxiation. Symptoms may include loss of mobility or consciousness. Victim may not be aware of asphyxiation.
- Low concentrations of CO<sub>2</sub> may cause increased respiration and headache.
- Remove victim to uncontaminated area wearing self-contained breathing apparatus.
- Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**Skin/Eye contact**

- In case of contact, immediately flush eyes thoroughly with water for at least 15 minutes.
- In case of frostbite, spray with water for at least 15 minutes.
- Apply a sterile dressing.
- Obtain medical assistance.

**Ingestion**

- Ingestion is not considered a potential route of exposure.

### 5. FIRE-FIGHTING MEASURES

**Specific hazards**

- None.

**Hazardous combustion products**

- None.

**Suitable extinguishing media**

- All known extinguishants can be used.

**Specific methods**

- Water on dry ice increases sublimation and higher risk of asphyxiation.

**Special protective equipment (for fire fighters)**

- In confined space, use a self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**

- Evacuate area.
- Use protective clothing.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Ensure adequate air ventilation.

**Environmental precautions**

- Try to stop release.
- Prevent from entering sewers, basements and work pits or any place where its accumulation can be dangerous.

**Clean up methods**

- Ventilate area.

### 7. HANDLING & STORAGE

**General**

- Dry CO<sub>2</sub> can be handled in most common structural materials.
- Moist CO<sub>2</sub> is generally corrosive by its formation of carbonic acid. Use stainless steel material.
- At normal temperature, CO<sub>2</sub> is compatible with most plastics and elastomers.
- CO<sub>2</sub> solid should be stored in insulated containers equipped with loose fitting lids, which will allow escape of vapour caused by sublimation.
- Do not store in subsurface or enclosed area. Keep container in a well-ventilated place, away from heavily trafficked areas and emergency exits.
- Refer to SOXAL's leaflet on safe handling, transport and storage of dry ice or contact SOXAL if in doubt.

### 8. EXPOSURE CONTROLS & PERSONAL PROTECTION

**Exposure limit value**

- 5,000 ppm PEL Short Term
- 30,000 ppm PEL Long Term (Singapore Factories Order 1996)

**Personal protection**

- Ensure adequate ventilation.
- Protect eyes, face and skin from contact with product.

### 9. PHYSICAL & CHEMICAL PROPERTIES

**Molecular weight** 44  
**Melting point** - 56.6°C  
**Boiling point** - 78.5°C (sublimes)  
**Critical temperature** 30°C  
**Relative density, gas** 1.52 (air = 1)  
**Relative density, liquid** 1.03 (water = 1)  
**Relative density, solid** 1.87 (water = 1)  
**Vapour pressure @ 20°C** 57.3 Bar  
**Solubility mg/l water** 2000 mg/l

For product and/or safety enquiry, please send, call, fax or log on to:

**SINGAPORE OXYGEN AIR LIQUIDE PTE LTD**  
16, Jalan Buroh, Singapore 619475.

Tel: (65) 6265 3788 or 6265 4555 Fax: (65) 6265 1441 or 6268 8403 Website: [www.soxal.com](http://www.soxal.com) Business Registration No: 197001157D

## DRY ICE (SOLID CARBON DIOXIDE)

### 9. PHYSICAL & CHEMICAL PROPERTIES (continue)

Appearance/Colour	A translucent white solid substance.
Odour	No odour warning properties
Auto-ignition temperature	Not applicable
Flammability range	Not flammable
Others	Gas or vapour is heavier than air. May accumulate in confined space, particularly at or below ground level.

### 10. STABILITY & REACTIVITY

General	<ul style="list-style-type: none"><li>Stable under normal conditions.</li><li>Contact with dry ice can cause embrittlement of structural materials.</li></ul>
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### 11. TOXICOLOGICAL INFORMATION

General	<ul style="list-style-type: none"><li>In high concentrations, may cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.</li></ul>
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### 12. ECOLOGICAL INFORMATION

General	<ul style="list-style-type: none"><li>When discharge in large quantities, may contribute to greenhouse effect (global warming factor = 1).</li><li>Can cause frost damage to vegetation.</li></ul>
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### 13. DISPOSAL CONSIDERATIONS

General	<ul style="list-style-type: none"><li>Do not discharge into any place where its accumulation could be dangerous.</li><li>Discharge to atmosphere in large quantities should be avoided.</li><li>Contact SOXAL if guidance is required.</li></ul>
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### 14. TRANSPORT INFORMATION

UN No.	1845
Class/Division	9 (Miscellaneous Dangerous Cargo)
Subsidiary risk	None
UN proper shipping name	Carbon Dioxide, Solid
IMO/IATA shipping label	



#### Disclaimer:

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#### Other transport information

- Avoid transport on vehicles where the load space is not separated from the driver's compartment.
- Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
- Before transporting product containers, ensure that they are firmly secured and:
  - compliance with applicable regulations; and
  - there is adequate ventilation.

### 15. REGULATORY INFORMATION

General	<ul style="list-style-type: none"><li>Singapore's WSH (General Provisions) Regulations 2006, Sections 42 &amp; 43.</li><li>Singapore Standards:<ul style="list-style-type: none"><li>CP 12:2000 Part 1</li><li>CP 98:2003</li><li>SS 152:2003</li><li>SS 286:1984 Part 1 to Part 5</li></ul></li></ul>
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Risk and safety phrases	<ul style="list-style-type: none"><li>R134 – Cause burns (to eyes and skin).</li><li>S24/25 – Avoid contact with skin/eyes.</li><li>S37/39 – Wear suitable gloves and eye/face protection.</li></ul>
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### 16. OTHER INFORMATION

General	<ul style="list-style-type: none"><li>Ensure all local regulations or legislations are observed.</li><li>Asphyxiant in high concentrations. Keep container in a well-ventilated place. Do not breathe gas.</li><li>The hazard of asphyxiation is often overlooked and must be stressed before use.</li><li>Contact with solid may cause cold burns or frost bite.</li><li>Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.</li></ul>
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