# International Chemical Safety Cards

## CARBON DIOXIDE

**CAS #** 124-38-9  
**RTECS #** FF6400000  
**ICSC #** 0021  
**UN #** 1013

<table>
<thead>
<tr>
<th>TYPES OF HAZARD/EXPOSURE</th>
<th>ACUTE HAZARDS/SYMPTOMS</th>
<th>PREVENTION</th>
<th>FIRST AID/FIRE FIGHTING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRE</strong></td>
<td>Not combustible.</td>
<td></td>
<td>In case of fire in the surroundings: all extinguishing agents allowed.</td>
</tr>
<tr>
<td><strong>EXPLOSION</strong></td>
<td>Containers may burst in the heat of a fire!</td>
<td></td>
<td>In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.</td>
</tr>
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### EXPOSURE

<table>
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<tr>
<th>INHALATION</th>
<th>SKIN</th>
<th>EYES</th>
<th>INGESTION</th>
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* **INHALATION**
  - Ventilation. 
  - Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.

* **SKIN**
  - ON CONTACT WITH LIQUID: FROSTBITE.
  - Cold-insulating gloves. Protective clothing.
  - ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention.

* **EYES**
  - On contact with liquid: frostbite.
  - Safety goggles, or face shield.
  - First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

### SPILLAGE DISPOSAL

- Ventilation. NEVER direct water jet on liquid (extra personal protection: self-contained breathing apparatus).

### STORAGE

- Fireproof if in building. Cool.

### PACKAGING & LABELLING

- UN Hazard Class: 2.2

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*Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities © IPCS CEC 1993*
**PHYSICAL STATE: APPEARANCE:**
ODOURLESS, COLOURLESS, COMPRESSED LIQUEFIED GAS.

**PHYSICAL DANGERS:**
The gas is heavier than air and may accumulate in low ceiling spaces causing deficiency of oxygen. Build up of static electricity can occur at fast flow rates and may ignite any explosive mixtures present. Free-flowing liquid condenses to form extremely cold dry ice.

**CHEMICAL DANGERS:**
The substance decomposes on heating above 2000°C producing toxic carbon monoxide. Reacts violently with strong bases and alkali metals. Various metal dusts such as magnesium, zirconium, titanium, aluminium, chromium and manganese are ignitible and explosive when suspended and heated in carbon dioxide.

**OCcupational exposure limits (OELs):**
- TLV: 5000 ppm; 9000 mg/m³ (as TWA);
- 30,000 ppm; 54,000 mg/m³ (as STEL) (ACGIH 1994-1995).
- MAK: 5000 ppm; 9000 mg/m³ (1993).

**Physical properties**
- Sublimation point: -79°C
- Vapour pressure, kPa at 20°C: 5720
- Solubility in water, ml/100 ml at 20°C: 88
- Relative vapour density (air = 1): 1.5

**Environmental data**

**Notes**
Carbon dioxide is given off by many fermentation processes (wine, beer, etc.) and is a major component of flue gas. High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area. No odour warning if toxic concentrations are present. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Other UN classification numbers for transport are: UN 1845 carbon dioxide, dry ice; UN 2187 carbon dioxide refrigerated liquid.

Transport Emergency Card: TEC (R)-11-1 (in cylinders); 11-2 (refrigerated gas).

**ICSC: 0021**

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