



MATERIAL SAFETY DATA SHEET



ISO 9001 : 2000 Cert.No. : 622578

CARBON DIOXIDE

1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

| | |
|------------------------|----------------------------------|
| Product name | Carbon Dioxide |
| Chemical name/formula | Carbon dioxide / CO ₂ |
| Company identification | See header and footer |
| Emergency phone no. | See footer |

2 COMPOSITION OR 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 | <ul style="list-style-type: none">▶ Liquefied gas▶ In high concentrations may cause asphyxiation. |
|---------|--|

4 FIRST-AID MEASURES

| | |
|------------------|---|
| Inhalation | <ul style="list-style-type: none">▶ In high concentration may cause asphyxiation. Symptoms may include loss of mobility or consciousness. Victim may not be aware of asphyxiation.▶ Low concentrations of CO₂ 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 | <ul style="list-style-type: none">▶ Contact with liquid may cause cold burns or frost bite.▶ 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 | <ul style="list-style-type: none">▶ Ingestion is not considered a potential route of exposure. |

5 FIRE-FIGHTING MEASURES

| | |
|--|--|
| Specific hazards | <ul style="list-style-type: none">▶ Exposure to fire may cause containers to rupture or explode. |
| Hazardous combustion products | <ul style="list-style-type: none">▶ None. |
| Suitable extinguishing media | <ul style="list-style-type: none">▶ All known extinguishants can be used. |
| Specific methods | <ul style="list-style-type: none">▶ If possible, stop flow of product.▶ Move container away or cool with water from a protected position. |
| Special protective equipment (for fire fighters) | <ul style="list-style-type: none">▶ In confined space, use a self-contained breathing apparatus. |

6 ACCIDENTAL RELEASE MEASURES

| | |
|---------------------------|---|
| Personal precautions | <ul style="list-style-type: none">▶ 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 | <ul style="list-style-type: none">▶ Try to stop release.▶ Prevent from entering sewers basements and work pits or any place where its accumulation can be dangerous. |
| Clean up methods | <ul style="list-style-type: none">▶ Ventilate area. |

7 HANDLING & STORAGE

| | |
|---------|--|
| General | <ul style="list-style-type: none">▶ Suck back of water into the container must be prevented. Do not allow back-feed into container.▶ Use only properly specified equipment, which is suitable for this product, its supply pressure and temperature.▶ Keep container below 50°C in a well-ventilated place.▶ Refer to "safe handling, transport and storage of compressed gas cylinder" or contact AIG if in doubt. |
|---------|--|

8 EXPOSURE CONTROLS & PERSONAL PROTECTION

| | |
|----------------------|--|
| Exposure limit value | <ul style="list-style-type: none">▶ 5,000 ppm PEL Short Term▶ 30,000 ppm PEL Long Term (Singapore Factories Order 1996) |
| Personal protection | <ul style="list-style-type: none">▶ Ensure adequate ventilation. |

9 PHYSICAL & CHEMICAL PROPERTIES

| | |
|---------------------------|--|
| Molecular weight | 44 |
| Melting point | -56.6°C |
| Boiling point | -78.5°C |
| Critical temperature | 30°C |
| Relative density, gas | 1.52 (air = 1) |
| Relative density, liquid | 1.03 (water = 1) |
| Vapour pressure @20°C | 57.3 bar |
| Solubility mg/l water | 2000 mg/l |
| Appearance/Colour | Colourless gas |
| Odour | No odour warning properties |
| Auto-ignition temperature | Not applicable |
| Flammability range | Not flammable |
| Others | Gas/vapour is heavier than air. May accumulate in confined space, particularly at or below ground level. |

10 STABILITY & REACTIVITY

General ▶ Stable under normal conditions

11 TOXICOLOGICAL INFORMATION

General ▶ In high concentrations, may cause rapid circulatory insufficiency. symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

12 ECOLOGICAL INFORMATION

General ▶ When discharge in large quantities, may contribute to greenhouse effect (global warming factor = 1).

13 DISPOSAL CONSIDERATIONS

General ▶ Do not discharge into any place where its accumulation could be dangerous.
▶ Discharge to atmosphere in large quantities should be avoided.
▶ Contact AIG if guidance is required.

14 TRANSPORT INFORMATION

UN No. 1013
Class/Division 2.2 (Non-Flammable Gas)
Subsidiary risk None
UN proper shipping name Carbon Dioxide
IMO/IATA shipping label



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.

Other transport information ▶ Before transporting product containers, ensure that they are firmly secured and:
▪ compliance with applicable regulations;
▪ cylinder valve is closed and not leaking;
▪ valve outlet cap nut or plug (where provided) is correctly fitted;
▪ valve protection device (where provided) is correctly fitted and
▪ there is adequate ventilation.

15 REGULATORY INFORMATION

General ▶ Singapore's Factories Act 2000, Sections 14, 34, 44 & 60A.
▶ Singapore Standards:
▪ CP 12:2000 Part 1
▪ CP 98:2003
▪ SS 152:2003
▪ SS 286:1984 Part 1 to Part 5

Risk and safety phrases ▶ S51 – Use only in well ventilated area.

16 OTHER INFORMATION

General ▶ Ensure all local regulations or legislations are observed.
▶ Asphyxiant in high concentrations. Keep container in a well-ventilated place. Do not breathe gas.
▶ The hazard of asphyxiation is often overlooked and must be stressed before use.
▶ Contact with liquid may cause cold burns/frost bite.
▶ Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
▶ Details given in this document are believed to be correct at the time of revising.
▶ Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.
▶ This safety data sheet is for information purposes only and is subjected to change without notice.

~~~~~ End of Document ~~~~~



ASIA INDUSTRIAL GASES PTE LTD  
8, Gul Road, Jurong, Singapore 629341  
Tel: 68614000 Fax: 68617549  
CO. REG. NO.: 197201287D