



MATERIAL SAFETY DATA SHEET

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Revised edition no : 4

Date : 29 / 9 / 2010

Supersedes : 6 / 10 / 2009

CARBON DIOXIDE, Solid (CO₂), Dry Ice

AL066

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Trade name : CARBON DIOXIDE, Solid (CO₂), Dry Ice
Dry ice.

MSDS Nr : AL066

Use : Freezing applications. Medical applications. Scientific applications. Special effects.

Chemical formula : CO₂

Company identification : Air Liquide Australia Limited
Level 9 / 380 St. Kilda Road
Melbourne VIC 3004 Australia
Tel: + 61 3 9697 9888
Fax: + 61 3 9690 7107
ALAEquiries@AirLiquide.com

Emergency phone nr : 1800 812 588

2 HAZARDS IDENTIFICATION

Hazard classification : Classified as a dangerous good by the criteria of the ADG code.
Not classified as hazardous according to NOHSC criteria.

Hazards identification : Refrigerated solidified gas. Contact with product may cause cold burns or frostbite.
In high concentrations may cause asphyxiation.
Closed containers may generate internal gas pressure, causing containers to rupture/explode.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Preparation : Substance.

Substance name	Contents	CAS No	EC No	Annex No	Classification
Carbon dioxide (solid)	100 %	124-38-9	204-696-9	----	

Contains no other components or impurities which will influence the classification of the product.

4 FIRST AID MEASURES

First aid measures

- **Inhalation** : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
Low concentrations of CO₂ 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 frostbite spray with water for at least 15 minutes. Apply a sterile dressing.
Obtain medical assistance.

- **Ingestion** : Potential choking hazard exists for dry ice pellets to lodge in the airway if swallowed. Seek urgent medical advice.

5 FIRE-FIGHTING MEASURES

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : None.

Extinguishing media

- **Suitable extinguishing media** : All known extinguishants can be used.

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.



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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 workpits, or any place where its accumulation can be dangerous.
- Clean up methods** : Ventilate area.

7 HANDLING AND STORAGE

- Storage** : Minimize exposure to water contacting this material.
Ventilate to prevent pressure buildup.
Closed containers may generate internal gas pressure. Ensure lids on containers are loose-fitting to avoid buildup of gas pressure.
Keep container below 50°C in a well ventilated place.
- Handling** : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Use insulating gloves.
Refer to supplier's container handling instructions.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

- Personal protection** : Ensure adequate ventilation.
Protect eyes, face and skin from contact with product.
- Occupational Exposure Limits** : Carbon dioxide (solid) : ILV (EU) - 8 H - [mg/m³] : 9000
Carbon dioxide (solid) : ILV (EU) - 8 H - [ppm] : 5000
Carbon dioxide (solid) : TLV© -TWA [ppm] : 5000
Carbon dioxide (solid) : TLV© -STEL [ppm] : 30000

9 PHYSICAL AND CHEMICAL PROPERTIES

- Physical state at 20 °C** : Gas.
- Physical state** : Refrigerated solidified gas.
- Colour** : Colourless.
- Odour** : No odour warning properties.
- Molecular weight** : 44
- Melting point [°C]** : -56.6
- Boiling point [°C]** : -78.5 (s)
- Critical temperature [°C]** : 30
- Vapour pressure [20°C]** : 57.3 bar
- Relative density, gas (air=1)** : 1.52
- Solubility in water [mg/l]** : 2000
- Flammability range [vol% in air]** : Non flammable.
- Other data** : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10 STABILITY AND REACTIVITY

- Stability and reactivity** : Stable under normal conditions.
Water on solid carbon dioxide increases sublimation and greatens the risk of asphyxiation.



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11 TOXICOLOGICAL INFORMATION

Toxicity information : In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

12 ECOLOGICAL INFORMATION

Ecological effects information : When discharged in large quantities may contribute to the greenhouse effect. Can cause frost damage to vegetation.

Global warming potential [CO₂=1] : 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 supplier if guidance is required.

14 TRANSPORT INFORMATION

General information

UN No. : 1845

Land transport

H.I. nr : --

Proper shipping name : UN1845 CARBON DIOXIDE, SOLID, , III

HAZCHEM - Emergency Action Code : HAZCHEM
: HAZCHEM_C

- ADG Class : 9

- ADG Classification code : M11 III

- ADR Packing group : III

Sea transport

- IMO-IMDG code : Class 9

- IMO Packing group : III

- IMDG-Marine pollution : -

- Emergency Schedule (EmS) - Fire : F-C S-V

Air transport

- ICAO/IATA : Packaging instructions cargo : 904
Packaging instructions passenger: 904

- Proper shipping name : CARBON DIOXIDE, SOLID

• Class : 9

- IATA Packing group : III

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 containers are firmly secured.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

15 REGULATORY INFORMATION

EC Classification : Not included in Annex I.
Not classified as dangerous preparation/substance.

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CARBON DIOXIDE, Solid (CO₂), Dry Ice**AL066****15 REGULATORY INFORMATION (continued)**

EC Labelling : No EC labelling required.
Symbol(s) : None.
R Phrase(s) : None.
S Phrase(s) : None.

16 OTHER INFORMATION

Asphyxiant in high concentrations.

May cause frostbite.

Keep container in a well-ventilated place.

Do not breathe the gas.

Ensure all national/local regulations are observed.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

DISCLAIMER OF LIABILITY : 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 going to press. 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.

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