CARBON DIOXIDE, Compressed & Liquefied Gas (CO2)

AL062

Warning

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name : CARBON DIOXIDE, Compressed & Liquefied Gas (CO2) , Aligal 2

SDS Nr : AL062

Chemical formula : CO2

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas / Calibration gas. Laboratory use Contact supplier for more uses information

Use : Beverage product dispensing. Freezing applications. Refrigerant. Shielding gas.

1.3. Details of the supplier of the safety data sheet

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
ALAEnquiries@AirLiquide.com

1.4. Emergency telephone number

Emergency telephone number : 1800 812 588

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

• Physical hazards : Gases under pressure - Refrigerated liquefied gas - Warning - (CLP : Press. Gas) - H281

Classification EC 67/548 or EC 1999/45

: Not classified as dangerous substance/mixture.

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms

• Hazard pictograms code : GHS04

• Signal word : Warning

• Hazard statements : H281 - Contains refrigerated gas; may cause cryogenic burns or injury.

• Precautionary statements

- Prevention : P282 - Wear cold insulating gloves, face shield, eye protection.

- Response : P336+P315 - Thaw frosted parts with lukewarm water. Do no rub affected area. Get immediate medical advice / attention.

- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

SECTION 2. Hazards identification (continued)

: None.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Substance.

Substance name		Contents	CAS No	EC No	Annex No		Classification
Carbon dioxide	:	100 %	124-38-9	204-696-9	-----	* 1	Not classified (DSD/DPD) ---------- Liq. Gas (H280)

Contains no other components or impurities which will influence the classification of the product.
* 1: Listed in Annex IV / V REACH, exempted from registration.
* 2: Registration deadline not expired.
* 3: Registration not required: Substance manufactured or imported < 1t/y
Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures

4.1. Description of 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 : 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.

- Skin contact : Adverse effects not expected from this product.

- Eye contact : Adverse effects not expected from this product.

- Ingestion : Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

4.2. Most important symptoms and effects, both acute and delayed

: Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed

: None.

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

Hazardous combustion products : None.

5.3. Advice for fire-fighters

Specific methods : Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains.
If possible, stop flow of product.
Move away from the container and cool with water from a protected position.
If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire.

SECTION 5. Fire-fighting measures (continued)

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

Flammable class : Non flammable.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.

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.

6.2. Environmental precautions

: None.

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

6.3. Methods and material for containment and cleaning up

: None.

Clean up methods : Ventilate area.

6.4. Reference to other sections

: See also sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Only experienced and properly instructed persons should handle gases under pressure.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Do not smoke while handling product.
Ensure the complete gas system was (or is regularily) checked for leaks before use.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminates particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

General : Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide. Potential production of solid CO2 particles must be ruled out. In order to rule out potential electrostatic discharge production, the system must be adequately grounded.

SECTION 7. Handling and storage (continued)

Handling : Suck back of water into the container must be prevented.
Do not allow backfeed into the container.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Refer to supplier's container handling instructions.

7.2. Conditions for safe storage, including any incompatibilities

: Keep away from combustible materials.
Keep container below 50°C in a well ventilated place.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Containers should be stored in the vertical position and properly secured to prevent toppling.
Stored containers should be periodically checked for general condition and leakage.
Container valve guards or caps should be in place.
Store containers in location free from fire risk and away from sources of heat and ignition.

Storage : Keep container below 50°C in a well ventilated place.

7.3. Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Carbon dioxide

: Value 8h (CZ) [mg/m3] : 9000
: ILV (EU) - 8 H - [mg/m³] : 9000
: ILV (EU) - 8 H - [ppm] : 5000
: TLV© -TWA [ppm] : 5000
: TLV© -STEL [ppm] : 30000
: AGW (8h) - Germany [mg/m³] TRGS 900 : 9100
: AGW (8h) - Germany [ppm] TRGS 900 : 5000
: MAK (AU) Tagesmittelwert (ml/m³) : 5000
: MAK (AU) Tagesmittelwert (mg/m³) : 9000
: MAK (AU) Kurzzeitwerte (ml/m³) : 10000
: MAK (AU) Kurzzeitwerte (mg/m³) : 18000
: VLA-ED - Spain [ppm] : 5000
: VLA-ED - Spain [mg/m3] : 9150
: VLA-EC - Spain [ppm] : 15000
: VLA-EC - Spain [mg/m3] : 27400
: NGV - [ppm] : 5000
: NGV - [mg/m³] : 9000
: KTV - [ppm] : 10
: KTV - [mg/m³] : 10
: HTP-värden (FI) - 8 H - [ppm] : 5000
: HTP-värden (FI) - 8 H - [mg/m³] : 9100
: Grænserværdier (DK) (ppm) : 5000
: Grænserværdier (DK) (ppm) : 9000
: Grænserværdier (DK) : 9000
: GV Value Limit (Norway) [ppm] : 5000
: GV Value Limit (Norway) [mg/m³] : 9000
: 8-Hour TWA (PL) (NDS) (mg/m³) : 9000
: 15-Minute STEL (PL)(NDSCh) (mg/m³) : 27000
: Valori Limite di Soglia (IT) 8 ore [ppm] : 5000

SECTION 8. Exposure controls/personal protection (continued)

: Valori Limite di Soglia (IT) 8 ore [mg/m3] : 9000
: TLV-TWA (Belgium) (ppm) : 5000
: TLV-STEL (Belgium) (ppm) : 30000
: Value 15min. (CZ) [mg/m3] : 45000

DNEL: Derived no effect level : None available.

PNEC: Predicted no effect concentration : None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls : Systems under pressure shoud be regularily checked for leakages.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered.
Wear safety glasses with side shields
Wear leather safety gloves and safety shoes when handling cylinders.

Personal protection : Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.

8.2.3. Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Liquefied gas.

- Colour : Colourless.

Odour : No odour warning properties.

Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.

pH value : Not applicable for gas-mixtures.

Molar mass [g/mol] : Not applicable for gases and gas-mixtures.

Melting point [°C] : -56.6

Boiling point [°C] : -78.5 (s)

Critical temperature [°C] : 30

Flash point [°C] : Not applicable for gas-mixtures.

Evaporation rate (ether=1) : Not applicable for gas-mixtures.

Flammability range [vol% in air] : Non flammable.

Vapour pressure [20°C] : 57.3 bar
Not applicable.

Relative density, gas (air=1) : 1.52

Relative density, liquid (water=1) : 1.03

Solubility in water [mg/l] : 2000

Partition coefficient n-octanol/water : Not applicable for gas-mixtures.

Viscosity at 20°C [mPa.s] : Not applicable.

Explosive Properties : Not applicable.

9.2. Other information

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

Molecular weight : 44

SECTION 10. Stability and reactivity

10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

Stability and reactivity : Stable under normal conditions.
Liquid spillages can cause embrittlement of structural materials.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: None.

10.4. Conditions to avoid

: None.

10.5. Incompatible materials

: None.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Toxicity information : In high concentrations cause rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death

Acute toxicity : No known toxicological effects from this product.

Rat inhalation LC50 [ppm/4h] : No data available.

Skin corrosion/irritation : No known effects from this product.

Serious eye damage/irritation : No known effects from this product.

Respiratory or skin sensitisation : No known effects from this product.

STOT-single exposure : No known effects from this product.

STOT-repeated exposure : No known effects from this product.

Aspiration hazard : Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information

12.1. Toxicity

: No data available.

12.2. Persistence - degradability

: No data available.

12.3. Bioaccumulative potential

: No data available.

12.4. Mobility in soil

: No data available.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

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

SECTION 12. Ecological information (continued)

Effect on the global warming : Contains greenhouse gas(es) not covered by 842/2006/EC

Global warming potential [CO2=1] : 1

SECTION 13. Disposal considerations

13.1. Waste treatment methods

: May be vented to atmosphere in a well ventilated place.
Do not discharge into any place where its accumulation could be dangerous.
Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at http://www.eiga.org) for more guidance on suitable disposal methods
Contact supplier if guidance is required.

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.

13.2. Additional information

: None.

SECTION 14. Transport information

UN number : 1013

Labelling ADR, IMDG, IATA

: 2.2 : Non flammable, non toxic gas.

Land transport (ADR/RID)

H.I. nr : 20

UN proper shipping name : CARBON DIOXIDE

Transport hazard class(es) : 2

Classification code : 2 A

Packing Instruction(s) : P200

Tunnel Restriction : C/E Tank carriage: Passage forbidden through tunnels of category C, D and E; Other carriage: Passage forbidden through tunnels of category E

HAZCHEM - Emergency Action Code : 2T
2 = Fine water spray.
T = Recommended personal protective equipment : Full fire kit and breathing apparatus.
Appropriate measures : dilute.

Sea transport (IMDG)

Proper shipping name : CARBON DIOXIDE

Class : 2.2

Emergency Schedule (EmS) - Fire : F-C

Emergency Schedule (EmS) - Spillage : S-V

Packing instruction : P200

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : CARBON DIOXIDE

Class : 2.2

Passenger and Cargo Aircraft : Allowed.

Packing instruction - Passenger and Cargo Aircraft : 200

SECTION 14. Transport information (continued)

Packing instruction - Cargo Aircraft only : 200

Special precautions for user

: 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 there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

Labelling ADR : 2.2 : Non flammable, non toxic gas.

In case of spillage and/or leakage : Clean up even minor leaks or spills if possible without unecessary risk.

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.

Personal precautions : The driver shall not attempt to deal with any fire of the load.

Emergency action in case of accident : Stop the engine.
No naked lights. No smoking.
Mark roads and warns other road users.
Keep public away from danger area.
NOTIFY POLICE AND FIRE BRIGADE IMMEDIATELY.

Additional information : None.

SECTION 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation

Seveso directive 96/82/EC : Not covered.

National legislation

: Ensure all national/local regulations are observed.

15.2. Chemical Safety Assessment

: A CSA does not need to be carried out for this product.

SECTION 16. Other information

Indication of changes : Revised safety data sheet in accordance with commisssion regulation (EU) No 453/2010

Training advice : Asphyxiant in high concentrations.
Receptacle under pressure.
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.

List of full text of H-statements in section 3. : H280 - Contains gas under pressure; may explode if heated.

Further information : Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.
This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

SECTION 16. Other information (continued)

Note : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
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