



SAFETY DATA SHEET

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Revised edition no : 1

Date : 15/7/2005

Supersedes : 0/0/0

Carbon dioxide**AL018A**

Label 2.2 : Non flammable, non toxic gas.

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

Trade name : Carbon dioxide
MSDS No : AL018A
Chemical formula : CO₂
Company identification : AIR LIQUIDE SA
France
See paragraph 16 "OTHER INFORMATION"
Emergency phone nr : See paragraph 16 "OTHER INFORMATION"

2 COMPOSITION / INFORMATION ON INGREDIENTS

Substance / Preparation : Substance.

Substance name	Contents	CAS No	EC No	Index No	Classification
Carbon dioxide	100 %	124-38-9	204-696-9	----	

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

3 HAZARDS IDENTIFICATION

Hazards identification : Liquefied gas.
In high concentrations may cause asphyxiation.

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** : 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

- Flammable class** : Non flammable.
- 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.
- Specific methods** : If possible, stop flow of product.
Move away from the container and cool with water from a protected position.



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5 FIRE-FIGHTING MEASURES (continued)

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

6 ACCIDENTAL RELEASE MEASURES

Personal precautions : Evacuate area.
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 : Keep container below 50°C in a well ventilated place.

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.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protection : Ensure adequate ventilation.

Occupational Exposure Limits : Carbon dioxide : TLV[®] -TWA [ppm] : 5000
Carbon dioxide : TLV[®] -STEL [ppm] : 30000
Carbon dioxide : OEL (UK)-LTEL [ppm] : 5000
Carbon dioxide : OEL (UK)-STEL [ppm] : 15000
Carbon dioxide : MAK - Germany [ppm] : 5000

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state at 20 °C : Liquefied gas.

Colour : Colourless.

Odo(u)r : 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

Relative density, liquid (water=1) : 0.82

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.



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10 STABILITY AND REACTIVITY

Stability and reactivity : Stable under normal conditions.

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.
Global warming factor [CO₂=1] : 1

13 DISPOSAL CONSIDERATIONS


General : Do not discharge into any place where its accumulation could be dangerous. To atmosphere in a well ventilated place. Discharge to atmosphere in large quantities should be avoided. Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

UN No. : 1013
H.I. nr : 20
ADR/RID
- Proper shipping name : CARBON DIOXIDE
- ADR Class : 2
- ADR/RID Classification code : 2 A
- Labelling ADR : Label 2.2 : Non flammable, non toxic gas.
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 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.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

15 REGULATORY INFORMATION

EC Classification : Not classified as dangerous preparation/substance. Not included in Annex I.
EC Labelling : No EC labelling required.
- Symbol(s) : None.
- R Phrase(s) : None.
- S Phrase(s) : None.

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16 OTHER INFORMATION

Asphyxiant in high concentrations.

Keep container in a well-ventilated place.

Do not breathe the gas.

Contact with liquid may cause cold burns/frostbite.

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.

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.

Recommended uses and restrictions : This SDS is for information purposes only and is subject to change without notice. [Prior to purchase of products, please contact your local AIR LIQUIDE office for a complete SDS (with Manufacturer's name and emergency phone number).]

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