

SECTION 1: Identification

1.1. Product identifier

Product form	: Substance
Trade name	: Aligal 2 , Lasal 2
Chemical name	: Carbon Dioxide
Substance type	: Mono-constituent
CAS-No.	: 124-38-9
Product code	: A0464519
Formula	: CO2
Synonyms	: Carbon dioxide in coal mines / Carbon dioxide
Product group	: Pure substance

1.2. Recommended use and restrictions on use

Recommended uses and restrictions	: Protective Atmosphere for Food and Beverages; Semiconductor Purposes; Manufacture of Substances
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1.3. Supplier

Manufacturer

Air Liquide Canada Inc.
1250, René Lévesque West Blvd. Suite 1700
Montreal, QC, H3B 5E6
Canada
T 1-800-817-7697
www.airliquide.ca

1.4. Emergency telephone number

Emergency number	: 514-878-1667
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SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification (GHS CA)

Not classified

2.2. GHS Label elements, including precautionary statements

GHS CA labeling

No labeling applicable

2.3. Other hazards

Other hazards which do not result in classification : None.

2.4. Unknown acute toxicity (GHS CA)

No data available

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : Carbon Dioxide
CAS-No. : 124-38-9

Name	Chemical name/Synonyms	Product identifier	% V/V	Classification (GHS CA)
Carbon Dioxide	Carbon Dioxide Carbon dioxide in coal mines / Carbon dioxide	CAS-No.: 124-38-9	>99,9%	Press. Gas (Comp.), H280

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Adverse effects not expected from this product.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : Adverse effects not expected from this product.
First-aid measures after ingestion : Get immediate medical attention.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : May cause drowsiness or dizziness.
Most important symptoms and effects, both acute and delayed : Low concentrations of CO₂ cause increased respiration and headache. Refer to section 11.

4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : None.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Water spray or fog.

5.2. Unsuitable extinguishing media

Unsuitable extinguishing media : Do not use water jet to extinguish.

5.3. Specific hazards arising from the hazardous product

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.
Hazardous combustion products : None.

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5.4. Special protective equipment and precautions for fire-fighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Act in accordance with local emergency plan. Stay upwind.

6.2. Methods and materials for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

6.3. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection"

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product : The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid suck back of water, acid and alkalis. Do not breathe gas. Avoid release of product into work area.

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 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 contaminants 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. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.

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7.2. Conditions for safe storage, including any incompatibilities

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon Dioxide (124-38-9)	
Canada (Alberta) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA	9000 mg/m ³
OEL TWA [ppm]	5000 ppm
OEL STEL	54000 mg/m ³
OEL STEL [ppm]	30000 ppm
Regulatory reference	Alberta Regulation 191/2021
Canada (Quebec) - Occupational Exposure Limits	
Local name	Carbon dioxide
VECD (OEL STEL)	54000 mg/m ³
VECD (OEL STEL) [ppm]	30000 ppm
VEMP (OEL TWA)	9000 mg/m ³
VEMP (OEL TWA) [ppm]	5000 ppm
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
Canada (British Columbia) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	15000 ppm
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
Canada (Manitoba) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Notations and remarks	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022

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Carbon Dioxide (124-38-9)	
Canada (Newfoundland and Labrador) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Notations and remarks	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022
Canada (Nova Scotia) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Notations and remarks	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022
Canada (Nunavut) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
Canada (Northwest Territories) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-013-2020)
Canada (Ontario) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Regulatory reference	Ontario Occupational Exposure Limits under Regulation 833
Canada (Prince Edward Island) - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Notations and remarks	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022
Canada (Saskatchewan) - Occupational Exposure Limits	
Local name	Carbon dioxide

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Carbon Dioxide (124-38-9)	
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10
USA - ACGIH - Occupational Exposure Limits	
Local name	Carbon dioxide
ACGIH OEL TWA [ppm]	5000 ppm
ACGIH OEL STEL [ppm]	30000 ppm
Remark (ACGIH)	TLV® Basis: Asphyxia
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
Local name	Carbon dioxide
OSHA PEL (TWA) [1]	9000 mg/m ³
OSHA PEL (TWA) [2]	5000 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

8.2. Appropriate engineering controls

- Appropriate engineering controls : CO2 detectors should be used when CO2 may be released. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Consider the use of a work permit system e.g. for maintenance activities.
- Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

8.3. Individual protection measures/Personal protective equipment

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: PPE compliant to the recommended EN/ISO standards should be selected.

Hand protection:

Wear leather safety gloves. Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.

Eye protection:

Wear safety glasses with side shields. Standard EN 166 - Personal eye-protection - specifications

Respiratory protection:

Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known. Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Gas filters do not protect against oxygen deficiency. Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .

Thermal hazard protection:

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None in addition to the above sections.

Other information:

Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: No data available
Color	: White.
Odor	: No odour warning properties.
Odor threshold	: < Odor threshold is subjective and inadequate to warn for overexposure
pH	: Not applicable for gases and gas mixtures.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable
Molecular mass	: 44.01 g/mol
Melting point	: -56,6 °C
Freezing point	: -56.6 °C
Initial Boiling point and boiling range	: -78,5 °C-No Data available for the boiling range
Flash point	: Not applicable for gases and gas mixtures.
Critical temperature	: 30 °C
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: Not applicable.
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: 5730 kPa
Vapor pressure at 50 °C	: Not applicable.
Critical pressure	: 7381.8 kPa
Relative vapor density at 20 °C	: Not applicable.
Relative density	: 0.82
Relative gas density	: Heavier than air
Solubility	: Water: No reliable data available.
Partition coefficient n-octanol/water (Log Pow)	: Not applicable for gas-mixtures. Not applicable for gas-mixtures.
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosive properties	: Not applicable.
Oxidizing properties	: Not applicable.
Explosion limits	: Non flammable.
Lower explosive limit (LEL)	: No data available
Upper explosive limit (UEL)	: No data available
Physical state	: Refrigerated solidified gas

9.2. Other information

Sublimation point	: -78.5 °C
Gas group	: Compressed gas

SECTION 10: Stability and reactivity

Reactivity	: No reactivity hazard other than the effects described in sub-sections below.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: None.
Conditions to avoid	: Avoid moisture in installation systems.
Incompatible materials	: None. For additional information on compatibility refer to ISO 11114.

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

Hardening time: : No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Carbon Dioxide (124-38-9)

LC50 Inhalation - Rat [ppm]	820000 ppm/4h
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ATE CA (Gases (except aerosol dispensers and lighters))	820000 ppmV/4h
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Carbon Dioxide (124-38-9)

LC50 Inhalation - Rat [ppm]	820000 ppm/4h
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ATE CA (Gases (except aerosol dispensers and lighters))	820000 ppmV/4h
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Additional information	:
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Skin corrosion/irritation : Not classified
pH: Not applicable for gases and gas mixtures.

Serious eye damage/irritation : Not classified
pH: Not applicable for gases and gas mixtures.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Carbon Dioxide (124-38-9)

Viscosity, kinematic	Not applicable
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Likely routes of exposure : Inhalation.

Symptoms/effects : May cause drowsiness or dizziness.

Most important symptoms and effects, both acute and delayed : Low concentrations of CO₂ cause increased respiration and headache.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No data available.

Hazardous to the aquatic environment, short-term (acute) : Not classified

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Hazardous to the aquatic environment, long-term (chronic) : Not classified

Carbon Dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas-mixtures.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas-mixtures.

12.2. Persistence and degradability

Carbon Dioxide (124-38-9)	
Persistence and degradability	No data available.

Carbon Dioxide (124-38-9)	
Persistence and degradability	No data available.

12.3. Bioaccumulative potential

Carbon Dioxide (124-38-9)	
Bioaccumulative potential	No ecological damage caused by this product.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas-mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas-mixtures.

Carbon Dioxide (124-38-9)	
Bioaccumulative potential	No data available.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas-mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas-mixtures.

12.4. Mobility in soil

Carbon Dioxide (124-38-9)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas-mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas-mixtures.

Carbon Dioxide (124-38-9)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas-mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas-mixtures.

12.5. Other adverse effects

Ozone : Not classified
Effect on ozone layer : None.
Other adverse effects : No known effects from this product.

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SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods	: Discharge to atmosphere in large quantities should be avoided. Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods. Return unused product in original container to supplier.
Additional information	: External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

In accordance with TDG / DOT / IMDG / IATA

14.1. UN number

UN-No. (TDG)	: Not applicable
DOT NA No	: UN1013
UN-No. (IMDG)	: 1013
UN-No. (IATA)	: 1013

14.2. UN proper shipping name

Proper Shipping Name	: Not applicable
Proper Shipping Name (DOT)	: Compressed gas, n.o.s.
Proper Shipping Name (IMDG)	: Compressed gas, n.o.s.
Proper Shipping Name (IATA)	: Compressed gas, n.o.s.

14.3. Transport hazard class(es)

TDG
Transport hazard class(es) (TDG) : Not applicable

DOT
Transport hazard class(es) (DOT) : Not applicable

IMDG
Transport hazard class(es) (IMDG) : 2.2

IATA
Transport hazard class(es) (IATA) : Not applicable

14.4. Packing group

Packing group (TDG)	: Not applicable
Packing group (DOT)	: Not applicable
Packing group (IMDG)	: Not applicable
Packing group (IATA)	: Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

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14.6. Special precautions for user

Special transport precautions : 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.

TDG

Emergency Response Guide (ERG) Number : 120

DOT

UN-No.(DOT) : UN1013
DOT Packaging Exceptions (49 CFR 173.xxx) : 306;307
DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305
DOT Packaging Bulk (49 CFR 173.xxx) : 314;315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg

IMDG

Flash point (IMDG) :
Properties and observations (IMDG) : Liquefied, non-flammable gas.Heavier than air (1.5). Cannot remain in the liquid state above 31°C.

IATA

Special provision (IATA) : A202

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. National regulations

No additional information available

15.2. International regulations

No additional information available

SECTION 16: Other information

Revision date : 06-27-2022

Training advice : None.

Full text of H-phrases:

H280	Contains gas under pressure; may explode if heated
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Abbreviations and acronyms:	
	ATE - Acute Toxicity Estimate
	CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
	REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
	EINECS - European Inventory of Existing Commercial Chemical Substances
	CAS# - Chemical Abstract Service number
	PPE - Personal Protection Equipment
	LC50 - Lethal Concentration to 50 % of a test population
	RMM - Risk Management Measures
	PBT - Persistent, Bioaccumulative and Toxic
	vPvB - Very Persistent and Very Bioaccumulative
	STOT- SE : Specific Target Organ Toxicity - Single Exposure
	CSA - Chemical Safety Assessment
	EN - European Standard
	UN - United Nations
	ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
	IATA - International Air Transport Association
	IMDG code - International Maritime Dangerous Goods
	RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
	WGK - Water Hazard Class
	STOT - RE : Specific Target Organ Toxicity - Repeated Exposure

Safety Data Sheet (SDS), Canada (CUSTOM LEL/UEL)

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