

Dry ice

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SDS reference: EIGA018C

SECTION 1: Identification of the Substance/Mixture and the Company/Undertaking

1.1. Product identifier

Trade name	CARBON DIOXIDE OR DRY Ice
MSDS No.	EIGA018C
Chemical description	
	CAS number : 124-38-9
	EC number: 204-696-9
Registration number	Listed in Annex IV/V of REACH, exempt from registration
Chemical formula	CO ₂

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

Relevant uses identified	Industrial and professional. Carry out a risk analysis before use
	Contact the supplier for more information on use
Uses advised against	In drinks to create a fog effect, due to risk of ingestion.

1.3. Information regarding the supplier of the safety data sheet

Company identification	SARL RAYANOX ZA Bethioua Wilaya of Oran, Algeria Tel: 041-79-35-22 Fax: 041-79-32-23 Contact@rayanox.co sarlrayanox@gmail.com
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1.4. Emergency call number

Emergency call number	Tel: +21365550342
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SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Not regulated.

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP)



Signal word (CLP)
Hazard statements (CLP)

: Attention
: MAY CAUSE CRYOGENIC BURNS OR OTHER INJURY. MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.
STEAM CAN DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION CAN ACCELERATE RESPIRATORY AND HEART RATE.
MAY CAUSE FROSTBITE
Do not handle until you have read and understood all safety precautions. Use only outdoors or in a well-ventilated area.
Do not handle with bare hands
Contact with skin may cause frostbite; flesh may stick to material.
Sublime carbon dioxide vapor dry ice at -109°F (-78°C). PX DRY ICE _VAPOR could cause suffocation.
Do not enter confined areas where used or stored until areas are adequately ventilated

Precautionary statements (CLP)

2.3. Other dangers

Asphyxiant in high concentration.
Refrigerated solidified gas. Contact with product may cause cold burns or frostbite.
At high concentrations, CO₂ quickly causes circulatory failure, even at normal oxygen concentrations. Symptoms include headache, nausea and vomiting, which can lead to loss of consciousness and death.

SECTION 3: Composition/information on ingredients

NAME	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Solid Carbon Dioxide, or Dry Ice (Main constituent)	<u>(CAS No.) 124-38-9</u> <u>EC number: 204-696-9</u> <u>Index No.: ---</u>	>99,999	Unclassified

	REACH registration number:		
	<u>*1</u>		

3.1. Substances

3.2. Mixtures:

Not applicable

SECTION 4: First Aid

4.1. Description of first aid

- Inhalation

Transport the victim to an uncontaminated area, wearing a self-contained breathing apparatus (SCBA). Keep the victim warm and at rest. Call a doctor.
Give artificial respiration if the victim is no longer breathing. Remove the victim to fresh air and keep them at rest in a position where they can breathe comfortably. If breathing stops, give artificial respiration. If breathing is difficult, trained personnel can administer oxygen. Call a doctor

- Skin contact

Evacuate the victim to a non-contaminated area.
The liquid can cause frostbite. If exposure to liquid causes frostbite, immediately warm frostbitten areas with hot water not exceeding 41°C (105°F). The water temperature should be tolerable for normal skin. Maintain warming of the skin for at least 15 minutes or until color and sensation return to the affected area. In case of massive exposure, remove clothing by showering with lukewarm water. Obtain medical evaluation and treatment as soon as possible, No adverse effects expected with this product.

- Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open and away from eyes to ensure all surfaces are rinsed thoroughly. Consult an ophthalmologist immediately. . Seek medical attention immediately.

- Ingestion

Ingestion is not considered a possible mode of exposure

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

Low concentrations of carbon dioxide cause an acceleration of breathing and headaches.

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

: None).

SECTION 5: Fire Fighting Measures

5.1. Extinguishing media

- Suitable extinguishing agents Not applicable
- Unsuitable extinguishing agents Not applicable

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products None).

5.3. Advice for firefighters

Specific methods

Evacuate all personnel from the danger zone. Do not discharge sprays on solid carbon dioxide. Solid carbon dioxide quickly freezes water. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP. Move them

Packs from the fire zone so safe to do so. Self-contained breathing apparatus may be required by first responders. Firefighters on site must comply with provincial and local fire code regulations.

Evacuate all personnel from the danger zone. Use self-contained breathing apparatus and protective clothing. Immediately cool containers with water at maximum distance. Stop the flow of gas if it can be done safely, while continuing to spray water. Eliminate sources of ignition if it can be done safely. Remove containers from fire area if it can be done safely. Firefighters on scene must comply with provincial and local fire code regulations.

Protection in case of fire

Insulating self-contained breathing apparatus

Special protective equipment for firefighters

Protective clothing and self-contained breathing equipment intended for firefighters.

SECTION 6: Measures To Be Taken In Case Of Accidental Release

6.1. Personal precautions, protective equipment and emergency procedures

General measures

Use protective clothing. Wear cold-insulating gloves/face shield/eye protection. Chemical asphyxiant. Exposure to low concentrations for prolonged periods may cause dizziness and loss of consciousness, and may lead to death. Wear a self-contained breathing

Personal precautions, protective equipment and emergency procedures

apparatus (SCBA) when entering the area unless you have verified that it is safe. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP.

General measures: Ensure adequate ventilation. Personal precautions, protective equipment and emergency procedures: EVACUATE ALL PERSONNEL FROM THE AFFECTED AREA. Use appropriate protective equipment. If a leak occurs on user equipment, be sure to purge the piping before attempting any repairs. If a container or container valve leaks, contact the nearest Linde Canada site.

6.2. Precautions for environmental protection

Solid spills can cause construction materials to become brittle

6.3. Methods and material for containment and cleaning up

Try to stop the leak without taking any risks.

6.4. Reference to other SECTIONS

Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for special requirements.
See also sections 8 and 13

SECTION 7: Handling And Storage

7.1. Precautions for safe handling

Safety when using the product

Avoid the use of materials incompatible with cryogenic use; some metals such as carbon steel can fracture easily at low temperatures. Vapors can cause rapid suffocation due to lack of oxygen. Never allow any unprotected part of your body to touch solid carbon dioxide or touch uninsulated pipes or containers containing solid carbon dioxide, liquid carbon dioxide or cold carbon dioxide gas. Not only can you suffer from frostbite, your skin can stick quickly to cold surfaces. Use tongs or insulated gloves when handling solid carbon dioxide or objects in contact with cold carbon dioxide in any form. Wear protective clothing and equipment provided for in Article

8. For other precautions in the use of carbon dioxide, see section 16.

Wear protective leather gloves when handling bottles. Protect bottles from damage. Do not drag, roll, slide or drop bottles. Always keep the faucet cap in place when moving a bottle. Never lift a bottle by its cap; the cap is designed only to protect the faucet. Use a bottle cart to move bottles, even a short distance. Never insert an object (e.g., wrench, screwdriver, pry bar) into the openings of the cap; This could damage the faucet and cause a leak. Use a strap wrench to remove tight or rusted caps. Slowly open the tap. If the tap is difficult to open, stop use and contact your supplier.

Close the container tap after each use; keep the tap closed even when this container is empty. Never apply flame or localized heat directly to any part of the container.

High temperatures can damage the container and cause premature failure of the container pressure regulator and

Empty the contents. For other precautions when using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Store and use with adequate ventilation. Do not store in tight containers or confined spaces. Storage areas must be clean and dry. Solid carbon dioxide is typically delivered to customers in 50 lb (22.7 kg), 1/2 cubic foot (0.0142 cubic meter, approximate dimensions) blocks, wrapped in kraft paper. Small pellets or nuggets are also produced. The product should be stored in insulated containers that open from the top. Lids must fit loosely, so that the carbon dioxide vapor emitted as the sublime solids can escape into the atmosphere. Carbon dioxide gas is approximately 1 1/2 times heavier than air and accumulates in low areas, so ventilation must be adequate at or below ground level.

OTHER PRECAUTIONS FOR HANDLING, STORAGE AND USE:When handling product under pressure, use piping and equipment designed to withstand the pressures encountered. Never work on a system under pressure. Use a non-return device in the piping. Gases can cause rapid suffocation due to lack of oxygen; store and use them with adequate ventilation. If a leak occurs, close the tank valve and purge the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial and local laws; then repair the leak. Never place a container where it can form part of an electrical circuit.

7.3. Specific end use(s)

: None).

SECTION 8: Exposure Controls/Personal Protection

8.1. Control Settings

OEL (Occupational Exposure Limits) : Not available.
DNEL (Derived No Effect Dose) : Not available.
PNEC (Predicted No Effect Concentration(s)) : Not available.

8.2. Exposure controls

8.2.1. Appropriate technical controls

Oxygen detectors should be used when asphyxiating gases may be released. Pressure equipment should be checked regularly for leaks. Think about work permits, e.g. for maintenance. Provide adequate local and general extraction. Ensure that exposure limits are not exceeded.

8.2.2. Personal protective equipment

Insulating gloves. Gloves. Face shield. Safety glasses.

- Eye/face protection
- Skin protection
 - Hand protection
- Respiratory protection
- Miscellaneous
- Thermal risks

Wear safety glasses with side shields. Choose them in accordance with the current CSA Z94.3 standard, "Eye and face protectors for industry", and all provincial regulations. Wearing safety glasses conforming to an approved standard is mandatory when a risk assessment recommends it to avoid exposure to liquid splashes, aerosols or dust. Choose in accordance with the current CSA Z94.3 standard, "Eye and face protectors for industry", and all provincial regulations.

Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

Standard EN 388 - Protective gloves against mechanical risks
Standard EN 511 - Insulating gloves against the cold.

Respiratory protection: Wear an air-supplied respirator when working in enclosed spaces or in areas where the ventilation system or ventilation is not sufficient to keep the exposure rate below the permissible exposure threshold (if applicable). Choose it in accordance with provincial regulations, municipal regulations or guidelines in this area. Respirators must be NIOSH and MSHA approved. In case of emergency or unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Wear safety shoes when handling cylinders.

Standard EN ISO 20345: Personal Protective Equipment - safety shoes.

Wear insulated gloves to protect against the cold. Wear cold-insulating gloves when transferring or disconnecting pipes and fittings.

8.2.3. Ambient exposure controls

None are necessary.

SECTION 9: Physical and Chemical Properties

Information on essential physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gaseous
- Color : White).

Smell

Olfactory threshold : Not detectable by odor

pH : 3.7 (carbonic acid)

Melting point / Freezing point : 1.03

Boiling point : -56.6°C

Flash point : Not applicable.

Evaporation rate : No data available

Flammability (solid, gas) : Non-flammable.

Explosive limits : Non-flammable.

Vapor pressure [20°C] : 57.3 bar(a).

Vapor pressure [50°C] : Not applicable.

Vapor density : Not applicable.

Relative density, liquid (water=1) : 0.8

Relative density, gas (air=1) : 1.52

Water solubility : 20 mg/l

Partition coefficient n-octanol/water (Log Kow) : 1.52

Auto-ignition temperature : Non-flammable.

Decomposition temperature : Not applicable.

Viscosity	: No reliable data available.
Explosive properties	: Not applicable.
Oxidizing properties	: Not applicable.
Other information	
Molar mass	:44 g/mol
Critical temperature [°C]	:30°C
Other data	: -78.5 °C Expansion ratio for solid to gas at sublimation point is 1 to 554 Gas or vapor heavier than air. May accumulate in confined areas, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in the sections below

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

Alkali metals, Alkaline earth metals, Acetylide-forming metals, Chromium, Titanium > 1022°F (550°C), Uranium (U) > 1382°F (750°C), Magnesium > 1427°F (775°C) .

Consult supplier for specific recommendations

10.6. Hazardous decomposition products

: Electrical discharges and high temperatures decompose carbon dioxide into carbon monoxide and oxygen.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

acute toxicity	: This product has no known toxicological effects.
Skin corrosion/irritation	: No known effects with this product.
	pH: 3.7 (carbonic acid)
Serious eye damage/eye irritation	: No known effects with this product.
	pH: 3.7 (carbonic acid)
Respiratory or skin sensitization	: No known effects with this product.
Cell mutagenicity	: No known effects with this product.
Carcinogenicity	: No known effects with this product.
Toxic for reproduction: fertility	: No known effects with this product.
Toxic for reproduction: fetus	: No known effects with this product.
Specific target organ toxicity — single exposure	: No known effects with this product.
Specific target organ toxicity – repeated exposure	: No known effects with this product.
Inhalation hazard	: Not applicable to gases and gas mixtures

SECTION 12: Ecological information

12.1. Toxicity

Assessment	This product is ecologically safe.
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 Hours - fish [mg/l]	No data available.

12.2. Persistence and degradability

Assessment	This product is ecologically safe.
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12.3. Bioaccumulation potential

Assessment	This product is ecologically safe.
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12.4. Mobility in the ground

Assessment	This product is ecologically safe
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12.5. Results of PBT and VPVB assessments

Assessment	Not classified as PBT or vPvB
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12.6. Other adverse effects

Other adverse effects	May cause frost damage to vegetation.
Effect on the ozone layer	: No effect on the ozone layer.

Effect on global warming : None).

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Avoid releasing large quantities into the atmosphere.
Do not discharge into any location where its accumulation could be hazardous.
None).

List of hazardous waste

13.2. Further information

None).

SECTION 14: Transport Information

14.1. UN number

UN number : UN1845

14.2. UN proper shipping name

Transport by road/rail (ADR/RID)

Not subject to ADR except section 5.5.3.

Air transport (ICAO-TI / IATA-DGR)

Carbon dioxide, solid

Transport by sea (IMDG)

CARBON DIOXIDE, SOLID (DRY ICE)

14.3. Transport hazard class(es)

Labeling



: Class 9 - Miscellaneous products, materials or organisms

Transport by road/rail (ADR/RID)

Class :9

Transport by sea (IMDG)

Class or division / Subsidiary risk(s) :9

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable

Air transport (ICAO-TI / IATA-DGR) : Not applicable

Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None).

Air transport (ICAO-TI / IATA-DGR) : None).

Transport by sea (IMDG) : None).

14.6. Special precautions to be taken by the user

Packaging instruction(s)

Transport by road/rail (ADR/RID) : P203

Air transport (ICAO-TI / IATA-DGR)

Passenger and cargo aircraft : 954.

Cargo plane only : 954.

Transport by sea (IMDG) : P003

Precautionary measures for transport

Avoid transport in vehicles whose load compartment is not separated from the driving cabin.
Ensure that the vehicle driver is aware of the potential hazards of the load and the steps to take in the event of an accident or other emergency situation.

14.7. Transport in bulk in accordance with Annex II of the Marpol Convention and the IBC Code

: Not applicable.

SECTION 15: Regulatory Information

Safety, health and environmental regulations/legislation specific to the substance or mixture

EU regulations

Employment restrictions : None).

Seveso Directive 2012/18/EU (Seveso III) : Not covered

National guidelines

National regulations: : Ensure that all national or local regulations are followed.

Chemical Safety Assessment

:A Chemical Risk Assessment (CSA) does not need to be carried out for this product.

SECTION 16: Other Information

Indications of change
Abbreviations and acronyms

: None).

ETA-Estimate of Acute Toxicity

CLP- Classification Labeling Packaging - Regulation (EC) No 1272/2008 relating to classification, labeling and packaging.

REACH - Registration, Evaluation, Authorization and Restriction of Chemicals - Regulation (EC) No 1907/2006 concerning the registration, evaluation and authorization of chemical substances, as well as the restrictions applicable to these substances.

EINECS - European Inventory of Existing Commercial Chemical Substances

CAS number - numerical identifier assigned by the Chemical Abstract Service (USA) PPE - Personal protective equipment

LC50 - Lethal Concentration - Lethal concentration for 50% of the tested population

RMM-Risk Management Measures - Risk management measures

PBT - Persistent, Bioaccumulative and Toxic.

vPvB - very (very) Persistent and very (very) Bioaccumulative.

STOT - SE: Specific Target Organ Toxicity - Single Exposure; Specific target organ toxicity - Single exposure.

CSA - Chemical Safety Assessment - EN - European Norm -Norme Européenne

UN - United Nations - United Nations

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road

IATA - International Air Transport Association - International Air Transport Association

IMDG Code - International Maritime Dangerous Goods Code - Code for the international maritime transport of dangerous goods

RID - Regulation concerning the international transport of dangerous goods by rail

: The risks of asphyxiation are often underestimated and must be emphasized during operator training.

For more information, consult document EIGA SL 013 "Dangers of Asphyxiation", downloadable from <http://www.eiga.eu>.

Before using this product for a new application or for testing, study

Thorough material compatibility and risk analysis should be done. The information given in this document is believed to be accurate at the time of printing.

Despite the care taken in drafting this document, no liability can be accepted in the event of damage or accident resulting from its use.

Training Tips

DISCLAIMER OF LIABILITY