



## Safety Data Sheet

### Carbon dioxide, solid (Dry ice)

Issue date: 12/04/2018  
Revision date: 03/04/2023

Version: 2.0

SDS reference: MY000377  
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#### SECTION 1: Identification of the hazardous chemical and of the supplier

- 1.1. Product identifier
- |              |                 |
|--------------|-----------------|
| Product form | Substance       |
| Trade name   | Dry Ice         |
| CAS-No.      | 124-38-9        |
| Formula      | CO <sub>2</sub> |
- 1.2. Relevant identified uses of the substance or mixture and uses advised against
- No additional information available
- 1.3. Supplier's details
- Manufacturer**  
Linde Gas Products Malaysia Sdn Bhd (453560-K)  
No.3, Fasa MPI(B) 1, Lot 8349,  
Nilai Utama Enterprise Park,  
Mukim Setul, 71800 Nilai, Negeri Sembilan.  
T Toll Free: 1800 883 888  
[csc.lg.my@linde.com](mailto:csc.lg.my@linde.com)
- 1.4. Emergency telephone number
- Emergency phone number (24h): 1800 883 888  
Poison center : Unit HAZMAT Malaysia, tel: 999

#### SECTION 2: Hazards identification

- 2.1. Classification of the hazardous chemical
- Classification according to Industry Code of Practice on chemicals classification and hazard communication (2014)  
Not classified
- 2.2. Label elements
- Labelling according to Industry Code of Practice on chemicals classification and hazard communication (2014)  
Precautionary statements (GHS MY)
- 2.3. Other hazards not contributing to the classification
- Other hazards which do not result in classification: None.

#### SECTION 3: Composition and information of the ingredients of the hazardous chemical

- 3.1. Substances

Name	Product identifier	%
Carbon dioxide, solid (Dry ice) (Main constituent)	(CAS-No.) 124-38-9	100

- 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.                |

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

Most important symptoms and effects, both acute and delayed : Low concentrations of CO<sub>2</sub> cause increased respiration and headache. See section 11.

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

Other medical advice or treatment : None.

**SECTION 5: Fire-fighting measures**

**5.1. Extinguishing media**

Suitable extinguishing media : Water spray or fog.

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

**5.2. Special hazards arising from the substance or mixture**

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

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

Hazardous combustion products : None.

**5.3. 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.

EAC code : 2T

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

General measures : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan. Stay upwind.

**6.1.1. For non-emergency personnel**

**6.1.2. For emergency responders**

**6.2. Environmental precautions**

No additional information available

**6.3. Methods and material for containment and cleaning up**

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

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Safe handling of the gas receptacle** : Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect containers 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 content of the container. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.
- Safe use of the product** : Do not breathe gas. Avoid release of product into work area. 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.

### 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

Dry Ice (124-38-9)		
Malaysia	Local name	Karbon dioksida # Carbon dioxide
Malaysia	PEL (OEL TWA) [1]	9000 mg/m <sup>3</sup>
Malaysia	PEL (OEL TWA) [2]	5000 ppm
Germany	AGW (OEL TWA) [1]	9100 mg/m <sup>3</sup>
Germany	AGW (OEL TWA) [2]	5000 ppm
Germany	Remark	DFG,EU
New Zealand	Local name	Carbon dioxide
New Zealand	WES-STEL (OEL STEL)	54000 mg/m <sup>3</sup>
New Zealand	WES-STEL (OEL STEL) [ppm]	30000 ppm
New Zealand	WES-TWA (OEL TWA) [1]	9000 mg/m <sup>3</sup>
New Zealand	WES-TWA (OEL TWA) [2]	5000 ppm
United Kingdom	WEL TWA (OEL TWA) [1]	9150 mg/m <sup>3</sup>
United Kingdom	WEL TWA (OEL TWA) [2]	5000 ppm
United Kingdom	WEL STEL (OEL STEL)	27400 mg/m <sup>3</sup>
United Kingdom	WEL STEL (OEL STEL) [ppm]	15000 ppm
USA - ACGIH	ACGIH OEL TWA [ppm]	5000 ppm
USA - ACGIH	ACGIH OEL STEL [ppm]	30000 ppm
USA - ACGIH	Remark (ACGIH)	Asphyxia
China	OEL PC-TWA	9000 mg/m <sup>3</sup>

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Dry Ice (124-38-9)		
China	OEL PC-STEL	18000 mg/m <sup>3</sup>

#### Exposure limit values for the other components

No additional information available

#### 8.2. Monitoring

#### 8.3. Appropriate engineering controls

Appropriate engineering controls : 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.

#### 8.4. Personal protective equipment

Wear safety shoes while handling containers.

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

##### Hand protection:

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

##### 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

: None in addition to the above sections.

##### 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

Physical state	: Gas
Appearance	: No data available
Colour	: White.
Odour	: No odour warning properties.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
pH	: Not applicable for gases and gas mixtures.
Melting point, Freezing point	: Melting point: 78.5 °C At atmospheric pressure dry ice sublimates into gaseous carbon dioxide.
Boiling point	: 56.6 °C
Flash point	: Not applicable for gases and gas mixtures.
Critical temperature	: 30 °C
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: Not applicable.
Flammability	: Non flammable.

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Vapour pressure	: Vapour pressure: 57.3 bar(a) Vapour pressure at 50°C: Not applicable.
Evaporation rate	: Relative evaporation rate (ether=1): Not applicable for gases and gas mixtures.
Explosive limits	: Non flammable.
Lower explosion limit	: No data available
Upper explosion limit	: No data available
Explosive properties	: Not applicable.
Minimum ignition energy	: No data available
Solubility	: Water: 2000 mg/l Completely soluble.
Density	: Relative density: 1.03
Relative density	: Relative vapour density at 20°C: Not applicable. Relative gas density: 1.52
Viscosity	: Viscosity, dynamic: Not applicable. Viscosity, kinematic: 1.52 Not applicable.
Critical pressure	: 7375 kPa
Partition coefficient n-octanol/water (Log Pow)	: 0.83
Molecular mass	: 44 g/mol
Oxidising properties	: Not applicable.
Physical state	: Refrigerated solidified gas
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

**SECTION 10: Stability and reactivity**

Chemical stability	: Stable under normal conditions.
Conditions to avoid	: Avoid moisture in installation systems.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Incompatible materials	: None. For additional information on compatibility refer to ISO 11114.
Possibility of hazardous reactions	: None.
Reactivity	: No reactivity hazard other than the effects described in sub-sections below.

**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
Skin corrosion or irritation	: Not classified pH: Not applicable for gases and gas mixtures.
Serious eye damage or eye irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (STOT) – single exposure	: Not classified

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Specific target organ toxicity (STOT) – repeated exposure : Not classified

Aspiration hazard : Not classified

Dry Ice (124-38-9)	
Viscosity, kinematic (calculated value) (40 °C)	Not applicable.

**SECTION 12: Ecological information**

## 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

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

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

Dry Ice (124-38-9)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Pow)	0.83

## 12.2. Persistence and degradability

Dry Ice (124-38-9)	
Persistence and degradability	No ecological damage caused by this product.

## 12.3. Bioaccumulative potential

Dry Ice (124-38-9)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4).

## 12.4. Mobility in soil

Dry Ice (124-38-9)	
Mobility in soil	No additional information available
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

## 12.5. Other adverse effects

Ozone : Not classified

Effect on global warming : Contains greenhouse gas(es), When discharged in large quantities may contribute to the greenhouse effect.

GWP 100 years : 1

Effect on the ozone layer : None.

Other adverse effects : No known effects from this product.

**SECTION 13: Disposal information**

## 13.1. Disposal methods

Waste treatment methods : 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.eu> for more guidance on suitable disposal methods. Discharge to atmosphere in large quantities should be avoided. Return unused product in original container to supplier.

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#### Additional information

: External treatment and disposal of waste should comply with applicable local and/or national regulations.

{ 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. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

## SECTION 14: Transportation information

### 14.1. UN number

UN-No.(UN RTDG) : 1845

UN-No. (IMDG) : 1845

UN-No. (IATA) : 1845

### 14.2. Proper Shipping Name

Proper Shipping Name (UN RTDG) : CARBON DIOXIDE, SOLID (DRY ICE)

Proper Shipping Name (IMDG) : CARBON DIOXIDE, SOLID (DRY ICE)

Proper Shipping Name (IATA) : Carbon dioxide, solid

### 14.3. Transport hazard class(es)

UN RTDG

Transport hazard class(es) (UN RTDG) : 9

Danger labels (UN RTDG) : 9



IMDG

Transport hazard class(es) (IMDG) : 9

Danger labels (IMDG) : 9



IATA

Transport hazard class(es) (IATA) : 9

Danger labels (IATA) : 9



### 14.4. Packing group

Packing group (UN RTDG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

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#### 14.5. Environmental hazards

Dangerous for the environment : No  
Marine pollutant : No  
Other information : No supplementary information available

#### 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 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.

##### - UN RTDG

Limited quantities (UN RTDG) : 0

Excepted quantities (UN RTDG) : E0

Packing instruction (UN RTDG) : P003

Special packing provisions (UN RTDG) : PP18

##### - IMDG

Limited quantities (IMDG) : 0

Excepted quantities (IMDG) : E0

Packing instructions (IMDG) : P003

Special packing provisions (IMDG) : PP18

EmS-No. (Fire) : F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES

EmS-No. (Spillage) : S-V - SPILLAGE SCHEDULE Victor - GASES (NON-FLAMMABLE, NON-TOXIC)

Stowage category (IMDG) : C

Properties and observations (IMDG) : Non-flammable gas in a white solid form. Slowly evolves vapours which are heavier than air (1.5). Inhalation of vapours may lead to unconsciousness. Can cause severe burns when in contact with the skin.

MFAG-No : 120

##### - IATA

PCA Excepted quantities (IATA) : E0

PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA) : Forbidden

PCA packing instructions (IATA) : 954

PCA max net quantity (IATA) : 200kg

CAO packing instructions (IATA) : 954

CAO max net quantity (IATA) : 200kg

ERG code (IATA) : 9L

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

#### 14.8. Hazchem or Emergency Action Code

EAC code : 2T.





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#### SECTION 15: Regulatory information

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

Occupational Safety and Health Act 1994 and relevant regulations:

Occupational Safety and Health (Classification, Labeling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.  
Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

Environment Quality Act 1974 & regulations:

Environment Quality (Clean Air) Regulations 2014.  
Environmental Quality (Scheduled Wastes) Regulations 2005.

##### 15.2. Chemical safety assessment

#### SECTION 16: Other information

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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

Training advice : None.

*This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.*