



SAFETY DATA SHEET

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Carbon dioxide (solid)

SDS_DRY ICE

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

1.1. Product identifier

Trade name : Carbon dioxide (solid)
SDS Nr : SDS_DRY ICE
Chemical description : Carbon dioxide (solid)
CAS No :124-38-9
EC No :204-696-9
Index No :---
Registration-No. : Listed in Annex IV / V REACH, exempted from registration.
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.
Cooling (Food additive E290).
Blast cleaning.
Metal cooling.
Contact supplier for more information on uses.

1.3. Details of the supplier of the safety data sheet

Company identification : BUZWAIR INDUSTRIAL GASES FACTORIES
PO Box 319
Doha Qatar

1.4. Emergency telephone number

Emergency telephone number : +974 4451 6976

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

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

: Not regulated.

Classification EC 67/548 or EC 1999/45

: Not classified as dangerous substance / mixture.
Not included in Annex VI.
No EC labelling required.

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

: None.

2.3. Other hazards

: Refrigerated solidified gas. Contact with product may cause cold burns or frostbite.
Asphyxiant in high concentrations.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Substance.

Substance name	Contents	CAS No EC No Index No Registration no	Classification(DSD)	Classification(CLP)
Carbon dioxide (solid)	: 100 %	124-38-9 204-696-9 ----- * 1	Not classified (DSD)	Not classified (GHS)



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SECTION 3. Composition/information on ingredients (continued)

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.

SECTION 4. First aid measures

4.1. Description of first aid measures

- Inhalation : 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 contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Adverse effects not expected from this product.
- Ingestion : Get immediate medical attention.

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

- : 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.

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

- : None.

SECTION 5. Firefighting 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

- Specific hazards : None.
- Hazardous combustion products : None.

5.3. Advice 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 Use water spray or fog to knock down fire fumes if possible.
- Special protective equipment for fire fighters : Use self-contained breathing apparatus.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.



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SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- : Use protective clothing.
- Evacuate area.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Ensure adequate air ventilation.

6.2. Environmental precautions

- : 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

- : 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

- : Refer to supplier's container handling instructions.
- The substance must be handled in accordance with good industrial hygiene and safety procedures.
- Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
- Do not smoke while handling product.

7.2. Conditions for safe storage, including any incompatibilities

- : Keep container below 50°C in a well ventilated place.
- Observe all regulations and local requirements regarding storage of containers.

7.3. Specific end use(s)

- : None.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Carbon dioxide (solid)

- : Value 8h (CZ) [mg/m³] : 9000
- : LTEL - UK [mg/m³] : 9150
- : LTEL - UK [ppm] : 5000
- : STEL - UK [mg/m³] : 27400
- : STEL - UK [ppm] : 15000
- : VME - France [mg/m³] : 9000
- : VME - France [ppm] : 5000
- : MAK (AU) Tagesmittelwert (ml/m³) : 5000
- : TLV© -TWA [ppm] : 5000
- : MAK (AU) Tagesmittelwert (mg/m³) : 9000
- : MAK (AU) Kurzzeitwerte (ml/m³) : 10000
- : MAK (AU) Kurzzeitwerte (mg/m³) : 18000
- : TLV© -STEL [ppm] : 30000
- : VLA-ED - Spain [ppm] : 5000
- : VLA-ED - Spain [mg/m³] : 9150
- : NGV - [ppm] : 5000



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SECTION 8. Exposure controls/personal protection (continued)

: NGV - [mg/m³] : 9000
 : KTV - [ppm] : 10000
 : KTV - [mg/m³] : 18000
 : Grænserværdier (DK) (ppm) : 5000
 : HTP-värden (FI) - 8 H - [ppm] : 5000
 : HTP-värden (FI) - 8 H - [mg/m³] : 9100
 : Grænserværdier (DK) mg/m³ : 9000
 : Grenseverdi (NO) 8 timers [ppm] : 5000
 : Grenseverdi (NO) 8 timers [mg/m³] : 9000
 : TGG 8 uur (NL) (mg/m³) : 9000
 : VME-CH [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
 : Valori Limite di Soglia (IT) 8 ore [mg/m³] : 9000
 : TLV-TWA (Belgium) (ppm) : 5000
 : TWA BE 8h [mg/m³] : 9131
 : TLV-STEL (Belgium) (ppm) : 30000
 : STEL BE 15min [mg/m³] : 54784
 : Valoare limita maxima (RO) 8 ore [mg/m³] : 9000
 : Valoare limita maxima (RO) 8 ore [ppm] : 5000
 : TWA LT 8h [ppm] : 5000
 : TWA LT 8h [mg/m³] : 9000
 : TWA BG 8h [mg/m³] : 9000
 : TWA EE 8h [ppm] : 5000
 : TWA EE 8h [mg/m³] : 9000
 : TWA LV 8h [ppm] : 5000
 : Value 15min. (CZ) [mg/m³] : 45000
 : TWA LV 8h [mg/m³] : 9000
 : TWA MT 8h [ppm] : 5000
 : TWA MT 8h [mg/m³] : 9000
 : TWA CY 8h [ppm] : 5000
 : TWA CY 8h [mg/m³] : 9000

DNEL: Derived no effect level (Workers)

: No data available.

PNEC: Predicted no effect concentration

: No data available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

: Oxygen detectors should be used when asphyxiating gases may be released. Ensure exposure is below occupational exposure limits (where available). 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:
PPE compliant to the recommended EN/ISO standards should be selected.

• **Eye/face protection**

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

• **Skin protection**



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SECTION 8. Exposure controls/personal protection (continued)

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.
 - Other : Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
 - Respiratory protection : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
 - Thermal hazards : Wear cold insulating gloves.
Standard EN 511 - Cold insulating gloves.
- 8.2.3. Environmental exposure controls : None necessary.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Appearance
- Physical state at 20°C / 101.3kPa : Gas.
- Physical state : Refrigerated solidified gas.
- Colour : White.
- Odour : No odour warning properties.
- Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.
- pH value : Not applicable.
- Molar mass [g/mol] : 44
- Melting point [°C] : -78.5
- Boiling point [°C] : -56.6 (s)
- Critical temperature [°C] : 30
- Flash point [°C] : Not applicable for gases and gas-mixtures.
- Evaporation rate (ether=1) : Not applicable for gases and gas-mixtures.
- Flammability range [vol% in air] : Non flammable.
- Vapour pressure [20°C] : 57.3 bar
- Relative density, gas (air=1) : 1.52
- Relative density, liquid (water=1) : 1.03
- Solubility in water [mg/l] : 2000 Completely soluble.
- Partition coefficient n-octanol/water [log Kow] : 0.83
- Auto-ignition temperature [°C] : Not applicable.
- Viscosity at 20°C [mPa.s] : Not applicable.
- Explosive Properties : Not applicable.
- Oxidising Properties : None.

9.2. Other information

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



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SECTION 10. Stability and reactivity

10.1. Reactivity

: None.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: None.

10.4. Conditions to avoid

: None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

: For additional information on compatibility refer to ISO 11114.

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

Acute toxicity	: In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.
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.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Reproductive toxicity	: 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 ecological damage caused by this product.

12.2. Persistence and degradability

: No ecological damage caused by this product.

12.3. Bioaccumulative potential

: No ecological damage caused by this product.

12.4. Mobility in soil

: No ecological damage caused by this product.

12.5. Results of PBT and vPvB assessment

: Not classified as PBT or vPvB.

12.6. Other adverse effects

: Can cause frost damage to vegetation.

Effect on ozone layer : None.

Global warming potential [CO₂=1] : 1



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SECTION 12. Ecological information (continued)

Effect on the global warming : When discharged in large quantities may contribute to the greenhouse effect.

SECTION 13. Disposal considerations

13.1. Waste treatment methods

: Do not discharge into any place where its accumulation could be dangerous.
Discharge to atmosphere in large quantities should be avoided.
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.
Consult supplier for specific recommendations.

List of hazardous wastes : 16 05 05: Gases in pressure containers other than those mentioned in 16 05 04.

13.2. Additional information

: None.

SECTION 14. Transport information

UN number : 1845

Land transport (ADR/RID)

H.I. nr : --

UN proper shipping name : UN1845 CARBON DIOXIDE, SOLID, , III

Transport hazard class(es) : 9

Classification code : M11 III

Packing group : III

Environmental hazards : None.

Sea transport (IMDG)

Proper shipping name : CARBON DIOXIDE, SOLID

Emergency Schedule (EmS) - Fire : F-C S-V

Emergency Schedule (EmS) - Spillage : S-V

Packing instruction : P003

IMDG-Marine pollutant : No

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : CARBON DIOXIDE, SOLID

Class : 9

Passenger and Cargo Aircraft : Allowed.

Packing instruction - Passenger and Cargo Aircraft : 954

Packing instruction - Cargo Aircraft only : 954

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 that containers are firmly secured.
- Ensure there is adequate ventilation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.



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Carbon dioxide (solid)**SDS_DRY ICE****SECTION 15. Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU legislation**

Restrictions on use : None.

Seveso directive 96/82/EC : Not covered.

National legislation

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 commission regulation (EU) No 453/2010.**Training advice** : The hazard of asphyxiation is often overlooked and must be stressed during operator training.**Further information** : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.**DISCLAIMER OF LIABILITY** : 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.
Details given in this document are believed to be correct at the time of going to press. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.**End of document**