

"Dioxide" - Solid Carbon Dioxide

MATERIAL SAFETY DATA SHEET

Document Ref: Dioxide MSDA.pdf

Revision date : 27.02.2009

Revision: 01

Approved by: Michael P. Bennett
Prepared by: Nigel Chapman

1. Company

Clean Surface Limited
14 Highmeres Road
Leicester
LE4 9LZ

Telephone: 0116 224 0072 Fax: 0116 224 0074

3. Composition

Chemical Name (IUPAC)

Carbon Dioxide, CO₂

CAS No

124-38-9

Weight %

100

UN No. 1845

4. Hazards Identification

Human

Solid carbon dioxide is very cold and can cause frost bite if in contact with the skin. Solid carbon dioxide sublimates to a gas that in high concentrations is an asphyxiant, which acts by excluding O₂ from the lungs.

Environment

Carbon dioxide is a natural component of air; it constitutes approximately 0.03% by volume of the earth's atmosphere.

5. First Aid Measures

General

Immediately remove the person from the source of exposure to fresh air; keep warm and at rest.

If unconscious, loosen tight clothing and place in a stable position, lying on one side.

If breathing has stopped, provide artificial respiration.

If breathing is difficult, provide oxygen if possible.

If the heart has stopped, provide cardiac compression.

Inhalation

See general, above

Skin

Do not rub frostbitten skin or break blisters.

Remove all clothing from around the affected area.

Immerse frostbitten toes, fingers, feet, hands or limbs in lukewarm water (about 40 deg C), NEVER HOT.

Do not use direct heat, hot water bottles, heat lamps, heating pads, etc. on the frostbitten area.

If possible, keep frost bitten fingers and toes separated with strips of gauze or clean cloth.

Seek medical assistance immediately if colour and feeling do not return to frostbitten areas within 20 minutes.

6. Fire Fighting Measures

Extinguishing Agents

None necessary; carbon dioxide is non flammable and is itself used as an extinguishing agent.

Hazards/Preventive Measures

Wear self-contained breathing apparatus in fires where large amounts of carbon dioxide are involved.

2. Product

SOLID CARBON DIOXIDE

Tradename:
DIOXICE

7. Accidental Release

Personal Precautions

Solid carbon dioxide is cold; wear protective clothing and footwear, eye/face protection and heavy gloves to avoid skin contact. If spillage occurs in an enclosed space with poor ventilation there is a danger of asphyxiation; wear self-contained breathing apparatus. The gas is heavier than air and will accumulate at floor level and in low-lying areas.

Environmental Precautions

None necessary.

Clean-Up Procedures

Solid carbon dioxide (Dioxide) will sublime (i.e. be transformed directly from the solid to the gaseous state) at room temperature. If spillage occurs indoors, provide adequate ventilation to minimise the danger of asphyxiation. No other special procedures are necessary.

8. Handling and Storage

Handling

Avoid skin contact.

Storage

Protect against direct sunlight and heat. Low temperatures can embrittle plastics, rubbers and some steels. Dry ice should not be stored in rooms or cellars without ventilation nor packed in gas tight atmospheres.

9. Exposure Control/Personal Protection

Engineering Measures

Provide adequate ventilation in areas where carbon dioxide is handled.

Control Parameters/Monitoring Procedures

Long term exposure limit (TWA 8 hours) 5000 ppm (=0.5%).

Personal Protection Equipment

Solid carbon dioxide is cold; wear protective clothing and footwear, eye/face protection and heavy gloves to avoid skin contact. Leakage of solid carbon dioxide to an enclosed space with poor ventilation may dilute the oxygen concentration of the air sufficiently to cause asphyxiation; wear self-contained breathing apparatus.

10. Physical and Chemical Properties

Appearance, Colour & Odour

Odourless solid, sublimates to gas

Melting Point/Range (°C)

Sublimes at -78.7 deg C (-56.6 deg C at 5.2 atm)

Specific Gravity (g/cm³)

1.56 (gas)

Relative Density (air=1)

1.52 (gas)

Water Solubility

0.88 CO₂/litre H₂O (20°C, 1 atm)

Nominal Sizes

Pellets: 16 mm dia x random length

Small Pellets: 3 mm dia x random length

11. Stability and Reactivity

General

Carbon dioxide gas is chemically inert under most conditions. The gas is soluble in water, however and forms a weak acid solution ("carbonic acid" H₂CO₃).

Conditions to Avoid

Cannot be used for extinguishing fires where metallic sodium, potassium or magnesium are involved.

12. Toxicological Information

Health Effects (General)

Solid carbon dioxide is very cold and can cause frostbite if in contact with the skin. Carbon dioxide gas in high concentrations is an asphyxiant, which acts by excluding O₂ from the lungs.

Inhalation

Concentrations of 4-5% by volume may cause headache and dizziness. Concentrations of 6-8% may cause unconsciousness and paralysis of the respiratory system.

Skin

See above.

13. Ecological Information

Ecological Effects (General)

Carbon dioxide is a component of air; it constitutes approximately 0.03% by volume of the earth's atmosphere.

Mobility

Solid carbon dioxide will sublime at room temperature.

14. Disposal Considerations

General

With adequate ventilation and otherwise under conditions where the low temperature will not present a hazard or problem, the solid may be allowed to sublime. A cold "fog", heavier than air, will be formed.

15. Transport Information

Proper Shipping Name

Carbon Dioxide, Solid

UN No.

1845

Class/Packing Group

not listed in Approved Carriage List

ADR/RID (road/rail)

Not subject to ADR

IMM/IMDG (sea)

Class 9

Page 9025

Emergency Procedures (IMDG)

EmS No. 8-08

Medical First Aid Guide (IMDG)

MFAG No. 615

Packaging

Insulated boxes

16. Regulatory Information

General

Not regulated.