SECTION-1: Identification of the substance / mixture and the company / undertaking

Catalogue Number	CS-BX-00762
Product Name	Carbon dioxide
CAS No.	124-38-9
Category	Fine Chemicals
Synonyms	CO2 Gas
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email **sales@clearsynth.com** for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Not available

2.2 Label Elements

Signal Word: Warning

Not available

Hazard Statement(s)

Code	Statement
H280	Not available
H281	Not available
H336	Not available

Precautionary Statement(s)

Code	Statement
P282	Not available

P336+P317	Not available
P403	Not available
P410+P403	Not available
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319	Get medical help if you feel unwell.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Carbon dioxide
CAS Number : 124-38-9
Molecular Formula : CO2
Molecular Weight : 44.01
Parent Chemical : Not available
Synonyms : CO2 Gas
Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures
Inhalation: Remove person to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, administer oxygen by trained personnel. If not breathing, give artificial respiration by trained personnel. Get medical attention.
Skin contact: Gas: Not expected to cause skin irritation. Cold gas or rapidly expanding gas may cause frostbite. If frostbite suspected, gently warm affected area with lukewarm water. Do not rub. Get medical attention.
Eye contact: Gas: Not expected to cause eye irritation. Cold gas or rapidly expanding gas may cause frostbite injury. Rinse cautiously with lukewarm water for several minutes. Remove contact lenses if present and easy to do. Get medical attention.
Ingestion: Not a likely route of exposure (gas). If swallowed as dry ice, seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed
May cause respiratory irritation and central nervous system effects due to oxygen displacement (asphyxiant). Symptoms may include headache, dizziness, drowsiness, confusion, rapid breathing, and loss of consciousness. Frostbite may occur from contact with cold gas/liquid or dry ice.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically. Ensure adequate oxygenation and ventilation. Monitor for hypoxia/asphyxia. Frostbite: treat as cold injury.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media
Suitable extinguishing media: Product is not flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture
Non-flammable gas. High concentrations may displace oxygen and create an asphyxiation hazard, especially in confined spaces. Containers may rupture when exposed to heat.

5.3 Advice for firefighters
Wear self-contained breathing apparatus (SCBA) and full protective gear. Cool exposed cylinders/containers with water spray from a safe distance. Do not direct water at leak source unless necessary to protect personnel. Evacuate area if cylinders are exposed to fire.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid breathing gas. Use SCBA in confined spaces or where oxygen deficiency may occur. Prevent entry into confined spaces without proper monitoring and ventilation.

6.2 Environmental precautions
Not available. Avoid uncontrolled release into confined or low-lying areas where gas may accumulate.

6.3 Methods and material for containment and cleaning up
Stop leak if safe to do so. Ventilate area. Allow gas to dissipate. For dry ice: allow to sublimate in a well-ventilated area; do not place in sealed containers.

6.4 Reference to other sections
See Section 8 for personal protective equipment and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Use only with adequate ventilation. Avoid breathing gas. Do not enter confined spaces where gas may accumulate without appropriate precautions. Protect cylinders from physical damage. Do not drag, roll, or drop cylinders. Use proper regulator and compatible equipment. Do not heat cylinder.

7.2 Conditions for safe storage, including any incompatibilities
Store cylinders upright, secured, in a cool, dry, well-ventilated area away from heat sources and direct sunlight. Keep valve protection cap in place when not in use. Store away from incompatible materials. Incompatibilities: Not available.

7.3 Specific end use(s)
Not available.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Occupational exposure limits: Not available.
Biological limit values: Not available.

8.2 Exposure controls
Engineering controls: Provide adequate general and local exhaust ventilation to maintain oxygen levels and prevent accumulation. Use oxygen monitoring in confined spaces or areas where CO2 may accumulate.
Personal protective equipment (PPE):
- Eye/face protection: Safety glasses with side shields as appropriate for operations.
- Skin protection: Wear protective gloves suitable for cold exposure when handling cold equipment, dry ice, or where rapid gas expansion may occur. Protective clothing as needed.
- Respiratory protection: If ventilation is inadequate or oxygen deficiency is possible, use SCBA or supplied-air respirator.
- Hygiene measures: Wash hands after handling. Do not eat, drink, or smoke when using this product.
Environmental exposure controls: Not available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available

Property	Value
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

SECTION 10: Stability and reactivity

10.1 Reactivity
Not available.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Not available.

10.4 Conditions to avoid
Heat, confined spaces/poor ventilation, and conditions leading to oxygen displacement. Avoid cylinder exposure to fire or excessive temperatures.

10.5 Incompatible materials
Not available.

10.6 Hazardous decomposition products
Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
- Acute toxicity: The gas is a weak CNS depressant at 30,000 ppm, giving rise to reduced acuity of hearing and increasing blood pressure and pulse. Exposure at 7%-10% produces unconsciousness within a few minutes. At low concentrations, gaseous carbon dioxide appears to have little toxicological effect. At higher concentrations it leads to

an increased respiratory rate, tachycardia, cardiac arrhythmias and impaired consciousness. Concentrations >10% may cause convulsions, coma and death. Solid carbon dioxide may cause burns following direct contact. Inhalation of air containing 68% carbon dioxide for 5 min caused death from asphyxia in pigs. Dogs were given 30% carbon dioxide for 2 hr, then 40% carbon dioxide, and then abruptly returned to normal air; eleven dogs died within 10 min with ventricular fibrillation; four survived with cardiac arrhythmias, and two had no cardiac symptoms. Rats exposed to an atmosphere containing 50% carbon dioxide died within 6 hr; rats exposed to 25% died within 36 hr; deaths were a result of pulmonary injury. Atmospheres as low as 20% carbon dioxide caused cerebral depression. All rats exposed to 10% carbon dioxide survived. LC50: 470 000 ppm (Inhalation, Rat) (L1146).
- Skin corrosion/irritation: No data available.
- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: No data available.
- Germ cell mutagenicity: No data available.
- Carcinogenicity: No data available.
- Reproductive toxicity: Toxicity to fertility (morphological changes of spermatozoa in mice at 1% and testicular changes in rats at 2.5%) and teratogenicity (cardiac and skeletal abnormalities in rats at 6%; skeletal abnormalities in rabbits at 10%) were observed.
- STOT-single exposure: No data available.
- STOT-repeated exposure: No data available.
- Aspiration hazard: No data available.

Likely routes of exposure
- Momentary skin contact with dry ice has caused serious frostbites and blisters.

Symptoms related to the physical, chemical and toxicological characteristics
- The gas is a weak CNS depressant at 30,000 ppm, giving rise to reduced acuity of hearing and increasing blood pressure and pulse. Exposure at 7%-10% produces unconsciousness within a few minutes. At higher concentrations it leads to an increased respiratory rate, tachycardia, cardiac arrhythmias and impaired consciousness. Concentrations >10% may cause convulsions, coma and death. Solid carbon dioxide may cause burns following direct contact. Carbon dioxide at high concentration in air causes stinging sensation in eyes, nose, and throat. Asphyxiation with CO_2 is said to have induced temporary proptosis and mydriasis and caused yellow vision, with transient blindness. Severe damage of CNS and retinal ganglion cells has been reported.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1 Toxicity
No data available.

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment
Not available.

12.6 Endocrine disrupting properties
Not available.

12.7 Other adverse effects
No data available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product/unused material: Dispose of in accordance with local/regional/national/international regulations. Do not discharge into confined spaces, sewers, or low-lying areas. Vent to atmosphere only in a well-ventilated area where it will not create an oxygen-deficient atmosphere.
Contaminated packaging: Return cylinders to supplier where applicable. Do not puncture or incinerate cylinders.

SECTION 14: Transport information

SECTION 14: Transport information

14.1 UN number
Not available.

14.2 UN proper shipping name
Not available.

14.3 Transport hazard class(es)
Not available.

14.4 Packing group
Not available.

14.5 Environmental hazards
Not available.

14.6 Special precautions for user
Transport cylinders secured upright with valve protection in place. Ensure adequate ventilation during transport. Do not transport in passenger compartments.

14.7 Maritime transport in bulk according to IMO instruments
Not available.

SECTION 15: Regulatory information

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Not available.

15.2 Chemical safety assessment
Not available.

SECTION 16: Other information

SECTION 16: Other information

Product name: Carbon dioxide
CAS No.: 124-38-9
Synonyms: CO2 Gas
Catalog No.: CS-BX-00762
Supplier: Clearsynth Labs Ltd., Mumbai, India
Emergency phone: +91-22-245045900

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