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

Product identifier

Trade name : Carbon dioxide in non-refillable gas cylinders

Safety data sheet no. : INA.SD.001.e.02

Chemical description of gas : Carbon dioxide
CAS-No.: 000124-38-9

Chemical formula : CO_2

UN number : UN 1013

Usage : For various industrial applications
Perform risk assessment prior to use.

Company name : iSi North America, Inc.
175 Route 46 West
Fairfield, NJ 07004
Website: www.isi.com/components
E-mail: info@isinorthamerica.com
Tel.: 1-973-227-2426

Emergency telephone number : Chemtrec
Tel.: 1-800-424-9300

2 Hazards identification

OSHA/HCS Status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910:1200)

Classification of the substance or mixture

Classification : Gases under pressure - Liquefied gas
Simple Asphyxiant

Label elements

- **Hazard pictograms**

- **Signal word** : Warning
- **Hazard statements** : Contains gas under pressure; may explode if heated.
  May displace oxygen and cause rapid suffocation.
  May increase respiration and heart rate.
  May cause nervous system damage.
  May cause frostbite.
- **Precautionary statements** : Store in a well ventilated place.
  Protect from direct sunlight.

Other hazards

Other hazards : May cause asphyxiation in high concentrations.
Contact with solid CO_2 (dry ice) or liquid CO_2 may cause cold burns, sever injury and/or frostbite.

3 Composition/information on ingredients

Substance/Preparation : **Substance**

Substance name	CAS no.	Concentration	.	Classification
Carbon dioxide	124-38-9	>99%		**Liq. gas (H280)**

Does not contain any other components or impurities which could affect the classification of this product.

Material does not meet the criteria of a mixture.

4 First-aid measures

Inhalation : Remove Victim to fresh air and keep at rest in a comfortable position for breathing. If breathing is irregular or difficult, provide artificial respiration or oxygen by trained personnel. If signs/symptoms continue, get medical attention.

Eye Contact : For exposure to cold vapor or solid carbon dioxide, immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold eyelids open and away from eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist immediately.

Skin Contact : Flush contaminated skin with warm water. If massive exposure / frostbite has occurred, contact a physician immediately.

Ingestion : Ingestion is not seen as a possible method of exposure.

Notes to Physician: All treatments should be based on the observed signs and symptoms of the patient.

5 Fire-fighting measures

Flammable Properties : Non-flammable.

Suitable Extinguishing media : Use extinguishing media appropriate for surrounding fire.

Specific Risk / Hazards : Contains gas / liquefied gas under pressure. Heat of fire can build pressure in the cylinder and cause it to rupture / explode.

Specific methods : Move away from cylinder and cool with water from a safe position.

Special protective equipment for fire fighters : Fire-fighters should wear the appropriate protective equipment and self contained breathing apparatus.

6 Accidental release measures

Warning : High pressure liquid and gas. Rapid release f gaseous carbon dioxide can result in the formation of dry ice which can cause frostbite.

Personnel precautions : Ensure adequate ventilation.

Environmental precautions : Attempt to stop gas release, if possible without risk.
Cleaning up methods : Ventilate area.

7 Handling and storage

Handling : Only use equipment suitable for this product and its pressure and temperature specified.
Never use direct flame or electrical heating devices to raise the pressure of a cylinder.
Do not attempt to alter or modify the cylinder.
Never attempt to refill an empty cylinder.
Emerging gas will cause the cylinder to freeze.
Do not touch a discharging or recently discharged cylinder with bare hands.
Never attempt to transfer gases from one cylinder to another.
Do not use cylinder as roller or support, or for any other purpose than to contain the gas as supplied.
Do not subject cylinder to mechanical shocks which may cause damage to their integrity.

Storage : Keep out of reach of children.
Store cylinder in a well ventilated place at less than 50°C.
Store cylinder in a location free from risk of fire and away from sources of heat and ignition.
Periodically check cylinder for general conditions and leakage.
Do not store cylinder in conditions likely to encourage corrosion.

8 Exposure controls/personal protection

Personal protection : Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.
Wearing of protective gloves is recommended.

Control Parameters:

Exposure Limits : Carbon dioxide:

ACIGH TLV (2012)	:	5,000 ppm TWA 30,000 ppm 15min STEL
NIOSH REL (2013)	:	5,000 ppm TWA 9,000 mg/m³ TWA 30,000 ppm STEL 54,000 mg/m³ STEL
OSHA PEL (2010)	:	5,000 ppm TWA 9,000 mg/m³ TWA

9 Physical and chemical characteristics

Physical state at 20°C	:	Gaseous
Color	:	Colorless
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	Not Available
Molecular weight	:	44
Melting point	:	Sublimation point -109.3°F (-78.5°C)
Boiling point	:	Sublimation point -109.3°F (-78.5°C)
Boiling Range	:	No Applicable
Critical temperature	:	87.5°F (31°C)
Vapour pressure	:	830 psig @ 68°F (57.3bar @ 20°C)
Relative density, gas (air=1)	:	1.52
Relative density, liquid (water=1)	:	0.82
Solubility in water [mg/l]	:	2000

Flash point [vol.% in air] : Non-flammable.

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

10 Stability and reactivity

Reactivity : Non Reactive

Chemical Stability : Stable

Possibility of Hazardous Reactions : Under normal conditions, hazardous reactions will not occur

Conditions to Avoid : High temperatures / excess heat.

Incompatible Materials : Material is mildly acidic and will react with alkaline materials to form carbonates and bicarbonates

Hazardous decomposition products : Under normal conditions, hazardous decomposition products should not be produced.

11 Toxicological information

Toxicological information

Acute Toxicity : Criteria not met
Aspiration Hazard : Criteria not met
Carcinogenicity : Criteria not met
Germ Cell Mutagenicity : Criteria not met
Skin Corrosion/Irritation : Criteria not met
Skin Sensitization : Criteria not met
STOT RE : Criteria not met
STOT SE : Criteria not met
Toxicity for Reproduction : Criteria not met
Respiratory Sensitization : Criteria not met
Serious Eye Damage/Irritation : Criteria not met

Routes of Entry/Exposure : Inhalation, Skin, Eye
Inhalation : Carbon Dioxide gas is an asphyxiant. It is also physiologically active, affecting circulation and breathing. Moderate concentrations may cause headache, drowsiness, dizziness, stinging of the nose and throat, excitation, rapid breathing and hear rate, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.
Skin Contact : No harm expected from vapor. Cold gas, liquid and solid carbon dioxide may cause severe frostbite
Eye Contact : No harm expected from vapor. Cold gas, liquid and solid carbon dioxide may cause severe frostbite
Swallowing : This product is a gas at normal temperatures. Unlikely route of exposure.

Effects of Chronic Exposure : Under normal conditions of use, no harm expected

Carcinogenic Effects : Carbon Dioxide is not listed by NTP, OSHA, or IARC

12 Ecological information

Ecotoxicity : No known effects
Persistance and Degradability : Not Applicable
Bioaccumulative Potential : Not Applicable

Mobility in Soil : Not applicable
Other Adverse Effects : Not Applicable

13 Disposable considerations

General : Do not discharge into any place where its accumulation could be dangerous.
Release into the atmosphere in a well-ventilated place.
Avoid releasing large quantities into the atmosphere.
Consult your supplier if you require advice.

Disposal methods : Dispose of emptied cylinders only.
Cylinders are made of recyclable steel and hence a valuable resource.
Emptied cylinders should therefore always be recycled.
Adhere to local waste regulations when disposing of emptied cylinders.

14 Transport information

UN Number (DOT, DTG, IMDG, IATA) : UN1013

Proper Shipping Name : Carbon Dioxide

Transport Hazard Class : 2.2

Packing Group : Not Applicable

Environmental Hazards : Not Applicable

Shipping Labels : Non-Flammable Gas

Placard (when required) : Non-Flammable Gas

Please refer to CFR 49 (or Authority having jurisdiction) to determine information required for shipment

15 Regulatory information

Inventories
TSCA : Complies
DSL : Complies

U.S. Federal Regulations
SARA 313 : Not subject to the reporting requirements of the Act and Title 40 of the code of Federal regulations, Part 372

SARA 311/312 Hazard Categories (>99%)

Acute Health Hazard	:	Yes
Chronic Health Hazard	:	No
Fire Hazard	:	No
Sudden Release of Pressure Hazard	:	Yes
Reactive Hazard	:	No

SARA 302/304 : Not Applicable
SARA 304 RQ : Not Applicable

Clean Water Act (40 CFR 122.21 and 122.42) : Not Listed

Clean Air Act Section 112 (40 CFR 61) : Not Listed

CERCLA : Not Listed

State Regulations
Right To Know : Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island

California (Proposition 65) : Not Listed as a substance known to cause cancer, birth defects or any other harm

Canada

WHIMS : Class A ï Compressed Gas

16 Other information

Hazardous Material Information (HMIS)
Health : 1
Flammability : 0
Physical Hazards : 3

National Fire Protection Association
Health : 2
Flammability : 0
Reactivity : 0
Special : Simple asphyxiant

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DISCLAIMER OF LIABILITY

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

----------End of document----------

Hazard pictogram:

Signal word:	Danger
Hazard statements:	H225: Highly flammable liquid and vapour.
	H315: Causes skin irritation
	H336: May cause drowsiness or dizziness.
	H411: Toxic to aquatic life with long lasting effects.
Precautionary statements:	
Prevention:	P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
	P233: Keep container tightly closed.
	P240: Ground/bond container and receiving equipment.
	P241: Use explosion-proof electrical/ventilating/lighting/ ... /equipment
	P242: Use only non-sparking tools.
	P243: Take precautionary measures against static discharge.
	P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
	P264: Wash thoroughly after handling.
	P271: Use only outdoors or in a well-ventilated area.
	P273: Avoid release to the environment.
	P280: Wear protective gloves/protective clothing/eye protection/face protection.
Response:	P302+P352: IF ON SKIN: Wash with plenty of soap and water
	P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+340: IF INHALE D: Remove victim to fresh air and keep at rest in a position comfortable for breathing
	P312: Call a POISON CENTER or doctor/physician if you feel unwell.
	P332+P313: If skin irritation occurs: Get medical advice/attention
	P362: Take off contaminated clothing and wash before re-use.
	P391: Collect spillage.
Storage:	P403+P233: Store in a well-ventilated place. Keep container tightly closed.
	P403+P235: Store in a well-ventilated place. Keep cool.
	P405: Store locked up.

Disposal: P501: Dispose of contents/container in accordance with local/regional/national/international regulation.

None

Not applicable.

1. CAS# 2. EC# 3. Index	Name	% w/w	Classification according to (EC) No 1272/2008 (CLP)
1. 108-87-2 2. 203-624-3 3. 601-018-00-7	Methylcyclohexane	85	Flam. Liquid 2; H225 Asp. Toxicity 1; H304 Skin Irritation 2;H315 STOT SE 3;H336 Aquatic Chronic 2;H411
1. 9006-04-6 2. 232-689-0 3. N/A	Rubber, natural	15	Not classified

Full text of R-, H- and EUH-phrases: see section 16

Inhalation: Move victim to fresh air. If not breathing, give artificial respiration. Get medical attention.

Skin contact: Immediately wash with plenty of soap and water. Get medical attention if irritation occurs.

Eye contact: Immediately flush eyes with running water for at least 20 minutes holding eyelids open. Get medical attention.

Ingestion: Do not induce vomiting. Give 1-2 glasses of water to a conscious victim. Never give anything by mouth to an unconscious victim. Get medical attention.

Inhaled:

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by E C Directives using animal models).Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Ingestion:

Although ingestion is not thought to produce harmful effects (as classified under E C Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. P resent definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health).

Skin Contact:

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models).Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Eye:

When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after Instillation.

Chronic:

Long-term exposure to the product is not thought to produce chronic effects adverse to health (as classified by EC Directives using animal models); nevertheless exposure by al l routes should be minimised as a matter of course.

Get medical attention and treat symptomatically.

Foam.

Dry chemical powder.

BCF (where regulations permit).

Carbon dioxide.

Use extinguishing media suitable for surrounding area.

Fire Incompatibility: Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition mayResult.

Alert Fire Brigade and tell them location and nature of hazard.

Wear breathing apparatus plus protective gloves.

Prevent, by any means available, spillage from entering drains or water courses.

Use water delivered as a fine spray to control fire and cool adjacent area.

DO NOT approach containers suspected to be hot.

Cool fire exposed containers with water spray from a protected location.

Only when safe to do so, remove containers from path of fire.

Wear chemical goggles and chemical resistant gloves.

Wear breathing apparatus plus protective gloves. Remove ignition sources and provision of sufficient ventilation, evacuate the danger area and consult experts.

Take precautions to prevent entry into waterways, sewers, or surface drainage systems. Dispose according to local or international regulations.

Use appropriate tools to put the spilled chemicals in suitable container for recovery or disposal.

Refer to Section 8 for Personal Protective Equipment advice.

Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product.

Storage conditions: aluminium tube Refer to section 10.
Storage incompatibility: Avoid reaction with strong acid, alkali and oxidizing agents.

Apart from the uses mentioned in section 1.2, no other specific uses are stipulated.

Substance	Methylcyclohexane			
CAS No.	108-87-2			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia	400	1610		
Austria	400	1600	1600	6400
Belgium	400	1633		
Canada - Ontario	400			
Canada - Québec	400	1610		
Denmark	200	805	400	1610
European Union				
France	400	1600		
Germany (AGS)	200	810	400	1620
Germany (DFG)	200	810	400	1620
Hungary				
Ireland	400	1600		
Italy				
Japan				
Latvia				
New Zealand	400	1610		
Poland		1600		3000

Singapore	400	1610		
South Korea	400	1600		
Spain	400	1630		
Sweden				
Switzerland	400	1600	800	3200
The Netherlands				
USA - NIOSH	400	1600		
USA - OSHA	500	2000		
United Kingdom	196	800		

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

General Personal Protection: Safety goggles or face shield, chemical resistant gloves, protective clothing and apparatus.

Physical state:	liquid
Colour:	Clourless
Odour:	Characteristic
pH:	No data available
Melting point/freezing point:	No data available
Boiling point:	100
Flash point:	-4
Vapour pressure:	No data available
Relative density:	No data available
Water solubility:	No data available
Partition coefficient (n-octanol/water):	No data available
Auto-ignition temperature:	No data available
Flammability:	Flammable
Upper/lower explosive limits:	No data available
Explosive properties:	No data available
Oxidising properties:	No data available
Dissociation constants:	No data available
Surface tension:	No data available
Viscosity:	458 mm2/s@40°C

No data available.

May react with strong acid, alkali, oxidizing agents and incompatible materials.

Product is considered stable during storage and transporation under normal condition.

Hazardous reactions may occur if contact with incompatible material.

High temperature, ignition sources (sparks, flames, static), incompatible materials.

Strong acid, alkali and oxidizing agents

On combustion or thermal decomposition, may emit toxic fumes.

No data available for the mixture.

No data available for the mixture.

Biodegradation:	No data available
Abiotic degradation:	No data available
Bioconcentration factor (BCF):	No data available
Distribution to environmental compartments:	No data available
Adsorption/Desorption:	No data available

No data available.

No data available.

Product disposal: refer to specific national regulation.

Contaminated packaging: contaminated, empty containers must be disposed of as chemical waste.

Based on available information, the product is not considered as dangerous goods and the UN recommendation on the transport of dangerous goods does not necessarily apply, however, it is highly recommended to get professional advice for appropriate transport.

None

14.1 UN number	1133	
14.2 UN proper shipping name	ADHESIVES	
14.3 Transport hazard class(es)	3	
14.4 Packing group	II	
14.5 Environmental hazards	None	
14.6 Special precautions for user	Hazard identification (Kemler)	33
	Classification Code	F1
	Hazard Label	3
	Special provisions	640C
	Add limited quantity	5L

14.1 UN number	1133	
14.2 UN proper shipping name	ADHESIVES	
14.3 Transport hazard class(es)	ICAO/IATA Class: 3	
	ICAO/IATA Subrisk: None	
	ERG Code 3L	
14.4 Packing group	II	
14.5 Environmental hazards	None	
14.6 Special precautions for user	Special provisions	A3
	Cargo Only Packing Instructions	364
	Cargo Only Maximum Qty /Pack	60L
	Passenger and Cargo Packing Instructions	353
	Passenger and Cargo Maximum Qty / Pack	5L
	Passenger and Cargo Limited Quantity Packing Instructions	Y341
	Passenger and Cargo Maximum Qty / Pack	1L

14.1 UN number	1133	
14.2 UN proper shipping name	ADHESIVES	
14.3 Transport hazard class(es)	3	
14.4 Packing group	II	
14.5 Environmental hazards	None	
14.6 Special precautions for user	EMS Number	F-E ,S-D
	Special provisions	None
	Limited Quantities	5L

14.1 UN number	1133	
14.2 UN proper shipping name	ADHESIVES	
14.3 Transport hazard class(es)	3	
	ADNR Label: 3	
14.4 Packing group	II	
14.5 Environmental hazards	None	
14.6 Special precautions for user	Classification code	F1
	Limited quantity	LQ3
	Equipment required	No data available
	Fire cones number	1

No data available

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - 67/548/EEC, 1999/45/EC, Regulation (EC) No 1272/2008, Regulation (EC) No 1907/2006, 98/24/EC, 92/85/EEC, 94/33/EC, 91/689/EEC and 1999/13/EC.

UN recommendation on the transport of dangerous goods.

None

No chemical safety assessment report was provided for this safety data sheet compilation.

- ESIS (European chemical Substances Information System), *http://esis.jrc.ec.europa.eu/*
- Information on Chemicals in ECHA website, *http://echa.europa.eu/information-on-chemicals*
- IFA GESTIS - International limit values for chemical agents - Occupational exposure limits (OELs),

H phrase H304: May be fatal if swallowed and enters airways.

This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with any legal regulation. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EUCEN Standards:

EN 16 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices