

## 1. Product and Company Identification

**Material name** Carbon Dioxide (CO2) Cartridge  
**Version #** 01  
**Issue date** 04-11-2013  
**Revision date** -  
**Supersedes date** -  
**CAS #** N/A  
**Manufacturer information**  
**Supplier** Hologic Inc  
 250 Campus Drive  
 Marlborough, Massachusetts 01752  
 USA  
**Email:** sds@hologic.com  
**Telephone:** (800) 442-9892  
**Emergency telephone:** (3E): 1-866-519-4752 CODE: 333605  
**Manufacturer** Liss Patrongyártó, Töltő és Forgalmazó Kft  
 (Liss Ltd.)  
 Carl von Linde út 1.  
 H-9653 Répcelak  
**Telephone:** +06 (95) 588 100  
**Fax:** +06 (95) 588 114  
**Emergency telephone:** +36 1 476 6464

## 2. Hazards Identification

**Physical state** Gas.  
**Appearance** Colorless gas.  
**Emergency overview** CAUTION  
 Contents under pressure. Gas reduces oxygen available for breathing. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.  
**OSHA regulatory status** This product is hazardous according to OSHA 29 CFR 1910.1200.  
**Potential health effects**  
**Routes of exposure** Inhalation. Skin contact. Eye contact.  
**Eyes** Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").  
**Skin** Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").  
**Inhalation** Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.  
**Ingestion** This material is a gas under normal atmospheric conditions and ingestion is unlikely.  
**Target organs** Heart. Respiratory system. Central nervous system. Eye. Skin.  
**Chronic effects** May affect the nervous system and cause headache, nausea, vomiting, and narcosis.  
**Potential environmental effects** This material is not expected to be harmful to aquatic life. Emissions of gas affecting global warming.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
Carbon dioxide	124-38-9	>99

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First Aid Measures

### First aid procedures

#### Eye contact

GAS: Flush thoroughly with water for at least 15 minutes. Make sure to remove any contact lenses from the eyes before rinsing. LIQUEFIED GAS: If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation develops or persists.

#### Skin contact

GAS: Remove contaminated clothing immediately and wash skin with soap and water. LIQUEFIED GAS: If frostbite occurs, immerse involved area in warm water (between 100 F/38 C and 110 F/43 C, not exceeding 112 F/44 C). Keep immersed for 20 to 40 minutes. Seek medical assistance.

#### Inhalation

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory tract irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation. Get medical attention.

#### Ingestion

Seek medical advice.

### General advice

First aid personnel must be aware of own risk during rescue.

## 5. Fire Fighting Measures

### Flammable properties

The product is not flammable.

### Extinguishing media

#### Suitable extinguishing media

Dry chemical. Carbon Dioxide. Halon.

Large Fires: Foam, water spray or fog.  
Use fire-extinguishing media appropriate for surrounding materials.

### Protection of firefighters

#### Specific hazards arising from the chemical

The product itself does not burn. Closed containers can burst violently when heated, due to excess pressure build-up.

#### Protective equipment and precautions for firefighters

Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

### Fire fighting equipment/instructions

Evacuate area. Stop flow of gas. Remove pressurized gas cylinders from the immediate vicinity. Cool material exposed to heat with water spray and remove it if no risk is involved.

### Hazardous combustion products

Carbon oxides. Nitrogen oxides.

## 6. Accidental Release Measures

### Personal precautions

Avoid inhalation and contact with skin and eyes. Ensure adequate ventilation. Wear appropriate personal protective equipment (See Section 8). Stay upwind. Ventilate closed spaces before entering them.

### Environmental precautions

Avoid release to the environment.

### Methods for cleaning up

Ventilate well, stop flow of gas or liquid if possible.

## 7. Handling and Storage

### Handling

Avoid breathing gas. Avoid contact with eyes, skin, and clothing. Keep container closed. Use only with adequate ventilation. Contents under pressure. Do not puncture. Close valve after each use and when empty. Do not attempt to refill spent cartridges. Wear appropriate personal protective equipment. Wash thoroughly after handling.

### Storage

Keep container tightly closed. Store in a cool, dry place with adequate ventilation. Keep away from incompatible materials, open flames, and high temperatures. Keep out of the reach of children.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	PEL	9000 mg/m <sup>3</sup>
		5000 ppm

**Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	54000 mg/m <sup>3</sup>
	TWA	30000 ppm
		9000 mg/m <sup>3</sup>
	5000 ppm	

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	15000 ppm
	TWA	5000 ppm

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	54000 mg/m <sup>3</sup>
	TWA	30000 ppm
		9000 mg/m <sup>3</sup>
	5000 ppm	

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	27000 mg/m <sup>3</sup>
	TWA	15000 ppm
		9000 mg/m <sup>3</sup>
	5000 ppm	

**Engineering controls** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment**

<b>Eye / face protection</b>	Wear safety glasses with side shields (or goggles).
<b>Skin protection</b>	Wear appropriate clothing to prevent skin contamination or freezing.
<b>Respiratory protection</b>	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134. Respirator type: Wear air supplied respiratory protection.
<b>General hygiene considerations</b>	Do not eat, drink or smoke when using the product. Observe good industrial hygiene practices.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Colorless gas.
<b>Physical state</b>	Gas.

<b>Form</b>	Compressed gas.
<b>Color</b>	Colorless
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Vapor pressure</b>	43700 mm Hg (21.1°C / 70°F)
<b>Vapor density</b>	1.5
<b>Boiling point</b>	-109 °F (-78.33 °C)
<b>Melting point/Freezing point</b>	Not available.
<b>Solubility (water)</b>	Soluble in water.
<b>Specific gravity</b>	Not available.
<b>Flash point</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Molecular weight</b>	44.01 g/mol
<b>Molecular formula</b>	C-O2

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	This product is stable under expected conditions of use.
<b>Conditions to avoid</b>	Heat and direct sunlight.
<b>Incompatible materials</b>	Metals. Acids. Oxidizers.
<b>Hazardous decomposition products</b>	Temperatures above 1700° C may cause decomposition and the release of oxygen and highly toxic carbon monoxide.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

## 11. Toxicological Information

<b>Sensitization</b>	Not a skin sensitizer.
<b>Acute effects</b>	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. Carbon dioxide when inhaled in elevated concentrations may act to produce mild narcotic effects, stimulation of the respiratory center, and asphyxiation depending on the concentration present and duration of exposure. Low concentrations (3-5%) cause increased respiration and headache. Concentrations at 8% or higher cause headache, nausea and vomiting which may lead to unconsciousness if not moved to open air or given oxygen promptly. At concentrations of 10% or higher, carbon dioxide causes rapid circulatory insufficiency leading to coma and death.
<b>Local effects</b>	Contact with compressed gas can cause damage (frostbite) due to rapid evaporative cooling.
<b>Chronic effects</b>	May cause central nervous system effects.
<b>Carcinogenicity</b>	No data recorded.
<b>Mutagenicity</b>	No data recorded.
<b>Neurological effects</b>	May cause drowsiness or dizziness.
<b>Reproductive effects</b>	No data available.

## 12. Ecological Information

<b>Ecotoxicity</b>	This material is not expected to be harmful to aquatic life. Emissions of gas affecting global warming.
<b>Persistence and degradability</b>	Not available.
<b>Bioaccumulation / Accumulation</b>	Not available.

**Mobility in environmental media** The product is a volatile substance, which may spread in the atmosphere.

### 13. Disposal Considerations

**Waste codes** The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Disposal instructions** Dispose in accordance with all applicable regulations.

**Waste from residues / unused products** Dispose in accordance with all local, State and Federal regulations.

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### 14. Transport Information

#### DOT

**Basic shipping requirements:**

**UN number** UN2037  
**Proper shipping name** Receptacles, small, containing gas or gas cartridges  
**Hazard class** 2.2  
**Subsidiary hazard class** 5.1  
**Additional information:**  
**Special provisions** A14  
**Packaging exceptions** 306  
**Packaging non bulk** 304  
**Packaging bulk** None

#### DOT

#### BULK

**Basic shipping requirements:**

**UN number** UN2037  
**Proper shipping name** Receptacles, small, containing gas or gas cartridges  
**Hazard class** 2.2  
**Subsidiary hazard class** 5.1  
**Additional information:**  
**Special provisions** A14  
**Packaging exceptions** 306  
**Packaging non bulk** 304  
**Packaging bulk** None

#### IATA

**UN number** UN2037  
**UN proper shipping name** Receptacles, small, containing gas or gas cartridges  
**Transport hazard class(es)** 2.2  
**Subsidiary class(es)** 5.1  
**Labels required** 2.2, 5.1

#### IMDG

**UN number** UN2037  
**UN proper shipping name** Receptacles, small, containing gas or gas cartridges  
**Transport hazard class(es)** 2.2  
**Subsidiary class(es)** 5.1  
**Labels required** 2.2, 5.1

#### TDG

**UN number** UN2037  
**Proper shipping name** Receptacles, small, containing gas or gas cartridges  
**Hazard class** 2.2  
**Subsidiary hazard class** 5.1  
**Special provisions** A14  
**Labels required** 2.2, 5.1  
**Packaging exceptions** 306  
**Packaging non bulk** 304  
**Packaging bulk** None

## 15. Regulatory Information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - Yes  
Reactivity Hazard - No

**Section 302 extremely hazardous substance (40 CFR 355, Appendix A)** No

**SARA 311/312 Hazardous chemical** No

**Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)** Not controlled

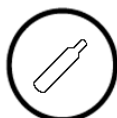
**Food and Drug Administration (FDA)** Total food additive  
Direct food additive  
GRAS food additive

**Canadian regulations** This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

**WHMIS status** Controlled

**WHMIS classification** A - Compressed Gas

**WHMIS labeling**



**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**State regulations**

**US - California Hazardous Substances (Director's): Listed substance**

Carbon dioxide (CAS 124-38-9)

Listed.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**US - New Jersey RTK - Substances: Listed substance**

Carbon dioxide (CAS 124-38-9) Listed.

**US. Massachusetts RTK - Substance List**

Carbon dioxide (CAS 124-38-9) Listed.

**US. New Jersey Worker and Community Right-to-Know Act**

Not regulated.

**US. Pennsylvania RTK - Hazardous Substances**

Carbon dioxide (CAS 124-38-9) Listed.

**Mexico regulations** This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

**16. Other Information**

**HMIS® ratings** Health: 1  
Flammability: 0  
Physical hazard: 0

**NFPA ratings** Health: 1  
Flammability: 0  
Instability: 0

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