

MATERIAL SAFETY DATA SHEET

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name: Carbon Dioxide (Dry Ice)

Synonyms: Carbonice, dry ice 6

Molecular Weight: 44.01

Manufacturer Name:

XDx

3260 Bayshore Blvd.

Brisbane, CA 94005

USA

Telephone: 415-287-2300

Emergency Telephone:

888-464-2967

Intended Use: Keep samples cold - shipping

2 HAZARDS IDENTIFICATION

Emergency Overview

Physical State: Solid

Color: White

Odor: Odorless

DANGER!

Extremely cold solid – direct contact may cause frostbite or freezing and tissue damage. Gas reduces oxygen available for breathing.

Potential Health Effects

Inhalation: Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Due to oxygen deficiency inhalation of gas may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Contact: Direct contact may cause frostbite or freezing.

Skin Contact: Direct contact may cause frostbite or freezing.

Ingestion: None known.

Target Organ(s): | Cardiovascular system | Eye | Skin |

OSHA Regulatory Status: This product is hazardous according to OSHA 29CFR 1910.1200.

3 COMPOSITION / INFORMATION ON INGREDIENTS

General Information: The product contains:

Chemical Name	CAS-No.	Concentration*
†Carbon dioxide	124-38-9	100%

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

† This chemical is hazardous according to OSHA/WHMIS criteria.

4 FIRST AID MEASURES

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 if symptoms persist.

Eye Contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention immediately.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

5 FIRE-FIGHTING MEASURES

Extinguishing Media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable Extinguishing Media: Not applicable.

Special Fire Fighting Procedures: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Unusual Fire & Explosion Hazards: None known.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Check oxygen content before entering the area. Wear protective clothing as described in Section 8 of this safety data sheet. If leakage cannot be stopped, evacuate area.

Spill Cleanup Methods: Sweep up spilled substance and remove to safe place.

7 HANDLING AND STORAGE

Handling: Do not get in eyes, on skin, on clothing. Avoid breathing gas. Control oxygen content in the workplace as described in section 8 of the MSDS.

Storage: Store in a cool and well-ventilated place. Store away from incompatible materials.

8	EXPOSURE CONTROLS / PERSONAL PROTECTION
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Exposure Limits:

Chemical Name	Source	Type	Exposure Limits	Notes
Carbon dioxide	CA. Alberta OELs	STEL	54000 mg/m ³ 30000 ppm	
Carbon dioxide	CA. Alberta OELs	TWA	9000 mg/m ³ 5000 ppm	
Carbon dioxide	CA. British Columbia OELs	STEL	15000 ppm	
Carbon dioxide	CA. British Columbia OELs	TWA	5000 ppm	
Carbon dioxide	CA. Ontario OELs	TWA	9000 mg/m ³ 5000 ppm	
Carbon dioxide	CA. Ontario OELs	STEL	54000 mg/m ³ 30000 ppm	
Carbon dioxide	MEX. OELs	STEL	27000 mg/m ³ 15000 ppm	
Carbon dioxide	MEX. OELs	TWA	9000 mg/m ³ 5000 ppm	
Carbon dioxide	US. ACGIH TLV	TWA	5000 ppm	
Carbon dioxide	US. ACGIH TLV	STEL	30000 ppm	
Carbon dioxide	US. NIOSH Guide	IDLH	40000 ppm	
Carbon dioxide	US. OSHA Z-1 PEL	TWA	9000 mg/m ³ 5000 ppm	

Engineering Controls: In confined spaces, make sure the area is well-ventilated and sufficient oxygen (19.5%) exists before entry. 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.

Respiratory Protection: 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 Standard 63 FR 1152, January 8, 1998. Respirator type: Full-face positive-pressure air-supplied.

Eye Protection: Wear safety glasses with side shields (or goggles).

Hand Protection: Thermally protective gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Skin Protection: Wear appropriate clothing to prevent freezing of skin.

Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental Exposure Controls: Environmental manager must be informed of all major spillages.

9	PHYSICAL AND CHEMICAL PROPERTIES
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Color: White

Odor: Odorless

Odor Threshold: No data available.

Physical State: Solid

pH: Not applicable

Melting Point: No data available.
Freezing Point: No data available.
Boiling Point: Not applicable.
Flash Point: Not applicable.
Evaporation Rate: No data available.
Flammability Limit - Upper (%): Not applicable.
Flammability Limit - Lower (%): Not applicable.
Vapor Pressure: No data available.
Vapor Density (Air=1): No data available.
Specific Gravity: 1.56
Solubility in Water: No data available.
Solubility (Other): No data available.
Partition Coefficient (n-Octanol/water): No data available.
Autoignition Temperature: No data available.
Decomposition Temperature: No data available.
Viscosity: No data available.

10	STABILITY AND REACTIVITY
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Stability: Stable.

Conditions to Avoid: None known.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: No data available.

11	TOXICOLOGICAL INFORMATION
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Specified Substance(s)

Acute Toxicity:

Test Results: No test data available for the ingredients.

Listed Carcinogens: None.

Product Information

Acute Toxicity:

Test Results: No test data available for the product.

Other Acute: Extremely cold solid – direct contact may cause frostbite or freezing and tissue damage.
Gas reduces oxygen available for breathing.

Chronic Toxicity: No additional adverse health effects noted.

12	ECOLOGICAL INFORMATION
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Ecotoxicity: Not expected to be harmful to aquatic organisms. No data available.

Mobility: Not relevant, due to the form of the product.

Persistence and Degradability: Not relevant.

Bioaccumulation Potential: No data available.

13	DISPOSAL CONSIDERATIONS
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General Information: Dispose of waste and residues in accordance with local authority requirements.

Disposal Methods: No specific disposal method required.

Container: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14	TRANSPORT INFORMATION
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DOT

UN No.: UN1845

Proper Shipping Name: Carbon dioxide, solid

Class: 9

Packing Group: III

Label(s): None

TDG

UN No.: UN1845

Proper Shipping Name: Carbon dioxide, solid

Class: 9

Packing Group: III

IATA

UN No.: UN1845

Proper Shipping Name: Carbon dioxide, solid

Class: 9

Packing Group: III

Label(s): Miscellaneous

IMDG

UN No.: UN1845

Proper Shipping Name: Carbon dioxide, solid

Class: 9

Packing Group: III

EmS No.: F-C, S-V

15	REGULATORY INFORMATION
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Canadian Controlled Products Regulations: This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

WHMIS Classification: This is not a WHMIS controlled product.

Mexican Dangerous Statement: This product is dangerous according to Mexican regulations.

Inventory Status

This product or all components are listed or exempt from listing on the following inventory: TSCA, DSL

US Regulations

CERCLA Hazardous Substance List (40 CFR 302.4): Not regulated.

SARA Title III

Section 302 Extremely Hazardous Substances (40 CFR 355, Appendix A): Not regulated.

Section 311/312 (40 CFR 370):

Acute (Immediate) Chronic (Delayed) Fire Reactive Pressure Generating

Section 313 Toxic Release Inventory (40 CFR 372): Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
Not regulated.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3): Not regulated.

Drug Enforcement Act: Not regulated.

TSCA

TSCA Section 4(a) Final Test Rules & Testing Consent Orders: Not regulated.

TSCA Section 5(a)(2) Final Significant New Use Rules (SNURs) (40CFR 721, Subpt. E): Not regulated.

TSCA Section 5(e) PMN-Substance Consent Orders: Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Not regulated.

Massachusetts Right-To-Know List: Carbon dioxide

Michigan Critical Materials List (Michigan Natural Resources and Environmental Protection Act (Act. 451 of 1994)): Not regulated.

Minnesota Hazardous Substances List: Carbon dioxide

New Jersey Right-To-Know List: Carbon dioxide

Pennsylvania Right-To-Know List: Carbon dioxide

Rhode Island Right-To-Know List: Carbon dioxide

16	OTHER INFORMATION
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HAZARD RATINGS

	Health Hazard	Fire Hazard	Instability	Special Hazard
NFPA	3	0	0	0

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

NFPA Label colored diamond code: Blue - Health; Red - Flammability; Yellow - Instability; White - Special Hazards

	Health Hazard	Flammability	Physical Hazard	Personal Protection
HMIS	3	0	0	--

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

HMIS Label colored bar code: Blue - Health; Red - Flammability; Orange - Physical Hazards; White - Special

Issue Date: 21-Dec-2009

Supercedes Date: New

SDS No.: 1020954

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.