

Safety Data Sheet P-4575

Making our planet more productive"

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 01/01/1997 Revision date: 02/06/2019 Supersedes: 10/17/2016

SECTION: 1. Product and company identification **Product identifier** 1.1. Product form : Substance Trade name : Dry Ice, Ultralce CAS-No 124-38-9 Formula : CO2 Other means of identification : Dry ice (nuggets, pellets, or blocks), carbonice, carbonic anhydride Relevant identified uses of the substance or mixture and uses advised against 1.2. : Industrial use; Use as directed. Use of the substance/mixture Details of the supplier of the safety data sheet 1.3. Praxair, Inc. 10 Riverview Drive Danbury, CT 06810-6268 - USA T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146 www.praxair.com **Emergency telephone number** 1.4. **Emergency number** : Onsite Emergency: 1-800-645-4633 CHEMTREC, 24hr/day 7days/week - Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887 (collect calls accepted, Contract 17729) **SECTION 2: Hazard identification** 2.1. Classification of the substance or mixture **GHS US classification** Label elements 2.2. **GHS US labeling** No labeling applicable 2.3. **Other hazards** Other hazards not contributing to the : Refrigerated solidified gas. CONTACT WITH PRODUCT MAY CAUSE COLD BURNS OR classification FROSTBITE. Dry ice sublimes to carbon dioxide vapor at -109°F (-78°C). VAPOR MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION. 2.4. Unknown acute toxicity (GHS US) No data available SECTION 3: Composition/Information on ingredients **Substances** 3.1. **Product identifier** % Name Carbon Dioxide, Solid or Dry Ice (CAS-No.) 124-38-9 100 (Main constituent) 3.2. **Mixtures** Not applicable

EN (English US)

SDS ID: P-4575

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SECT	ION 4: First aid measures	
4.1.	Description of first aid measures	
First-aid	d measures after inhalation	: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
First-aid	d measures after skin contact	: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
-irst-aid	d measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately Get immediate medical attention.
First-aid	d measures after ingestion	: Ingestion is not considered a potential route of exposure.
4.2.	Most important symptoms and effe	ects, both acute and delayed
		No additional information available
4.3.	Indication of any immediate medic	al attention and special treatment needed
None.		
SECT	ION 5: Firefighting measures	
5.1.	Extinguishing media	
	itional information available	
5.2.	Special hazards arising from the s	ubstance or mixture
Reactiv		: None.
	•	
5.3.	Advice for firefighters ting instructions	: Evacuate all personnel from danger area. Do not discharge sprays onto solid carbon dioxide.
		Solid carbon dioxide will freeze water rapidly. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP. Move packages away from fire area if safe to do so. Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
SECT	ION 6: Accidental release mea	asures
6.1.	Personal precautions, protective e	quipment and emergency procedures
Genera	I measures	: Use protective clothing. Wear cold-insulating gloves/face shield/eye protection. Chemical asphyxiant. Exposure to low concentrations for extended periods may result in dizziness or unconsciousness, and may lead to death. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP.
6.1.1.	For non-emergency personnel	No additional information available
6.1.2.	For emergency responders	
		No additional information available
6.2.	Environmental precautions	
		Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.
6.3.	Methods and material for containm	nent and cleaning up
		No additional information available
6.4.	Reference to other sections	
		See also sections 8 and 13.



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SECTI	ON 7: Handling and storage	
7.1.	Precautions for safe handling	
Precautio	ons for safe handling	: Avoid materials incompatible with cryogenic use; some metals such as carbon steel may fracture easily at low temperature. Vapor can cause rapid suffocation due to oxygen deficiency. Never allow any unprotected part of your body to touch solid carbon dioxide or to touch uninsulated pipes or vessels containing solid or liquid carbon dioxide or cold carbon dioxide gas. Not only can you suffer frostbite, your skin may stick fast to the cold surfaces. Use tongs or insulated gloves when handling solid carbon dioxide or objects in contact cold carbon dioxide in any form. Wear protective clothing and equipment as prescribed in section 8. For other precautions in using carbon dioxide, see section 16.
7.2.	Conditions for safe storage, includin	g any incompatibilities
Storage	conditions	: Store and use with adequate ventilation. Do not store in tight containers or confined spaces. Storage areas should be clean and dry. Solid carbon dioxide is generally delivered to customers in 50-lb (22.7-kg), ½-cubic ft (0.0142 cubic meter) blocks (approximate dimensions), wrapped in kraft paper. Small pellets or nuggets are also produced. The product should be stored in insulated containers that open from the top. Lids should fit loosely so the carbon dioxide yapor given off as the solid sublimes can escape into the atmosphere. Carbon dioxide gas is about 1½ times as heavy as air and will accumulate in low-lying areas, so ventilation must be adequate at floor or below grade level.
7.3.	Specific end use(s)	
		None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters			
Carbon Dioxide, Solid or Di	y Ice (124-38-9)		
ACGIH	ACGIH TLV-TWA (ppm)	5000 ppm	
ACGIH	ACGIH TLV-STEL (ppm)	30000 ppm	
USA OSHA	OSHA PEL (TWA) (mg/m ³)	9000 mg/m ³	
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm	
USA IDLH	US IDLH (ppm)	40000 ppm	
8.2. Exposure controls			
Appropriate engineering contro	used when asphyxiating gases may be released. Ensure exposure ire limits (where available). Systems under pressure should be as. Provide adequate general and local exhaust ventilation. e.g. for maintenance activities.		
Hand protection	: Cold-insulating gloves.	Cold-insulating gloves.	
Eye protection	: Wear safety glasses with side	: Wear safety glasses with side shields.	
Respiratory protection	meets OSHA 29 CFR 1910.1 Use an air-supplied or air-pur respirator has the appropriate respirators are used, the cartu	varrant respirator use, follow a respiratory protection program that 34, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). ifying cartridge if the action level is exceeded. Ensure that the e protection factor for the exposure level. If cartridge type ridge must be appropriate for the chemical exposure. For h unknown exposure levels, use a self-contained breathing	
Thermal hazard protection	Wear cold insulating gloves		

i nermai nazard protection	: vvear cold insulating gloves.
Environmental exposure controls	: None necessary.
Other information	: Wear safety shoes while handling containers.

SECTION 9: Physical and chemical properties		
9.1. Information on basic physical and chemical properties		
Physical state	: Solid	
Appearance	: Opaque. White crystalline solid.	
Molecular mass	: 44 g/mol	
Color	: White.	
Odor	: No odor warning properties.	
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Odor threshold	: No data available
рН	: 3.7 (carbonic acid)
Relative evaporation rate (butyl acetate	=1) : No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -78.5 °C
Freezing point	: No data available
Boiling point	: -78.4 °C
Flash point	: Not applicable.
Critical temperature	: 30 °C
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 5730 kPa
Critical pressure	: 7375 kPa
Relative vapor density at 20 °C	: No data available
Relative density	: 0.82
Density	: 1562 kg/m ³
Relative gas density	: 1.52
Solubility	: Water: 2000 mg/l Completely soluble.
Log Pow	: 0.83
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Explosion limits	: Not applicable.
9.2. Other information	
Sublimation point	: -78.5 °C Expansion ratio for solid to gas at sublimation point is 1 to 554.
Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECT	ION 10: Stability and reactivity	
10.1.	Reactivity	
		None.
10.2.	Chemical stability	
		Stable under normal conditions.
10.3.	Possibility of hazardous reactions	
		None.
10.4.	Conditions to avoid	
		None under recommended storage and handling conditions (see section 7).
10.5.	Incompatible materials	
		Alkali metals, Alkaline earth metals, Acetylide forming metals, Chromium, Titanium > 1022°F (550°C), Uranium (U) > 1382°F (750°C), Magnesium > 1427°F (775°C).
10.6.	Hazardous decomposition products	
		Electrical discharges and high temperatures decompose carbon dioxide into carbon monoxide and oxygen.
SECT	ION 11: Toxicological informatic	n
11.1.	Information on toxicological effects	

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Serious eye damage/irritation pH: 3.7 (carbonic acid) Serious eye damage/irritation : Not classified pH: 3.7 (carbonic acid) pH: 3.7 (carbonic acid) Respiratory or skin sensitization : Not classified Germ cell mutagenicity : Not classified	Da	te of issue: 01/01/1997 Revision date: 02/06/2019 Supersedes: 10/17/2016
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UN-No.(DOT) : UN1845	In accordance with DOT	
	Transport document description	: UN1845 Carbon dioxide, solid, 9
Proper Shipping Name (DOT) : Carbon dioxide, solid	UN-No.(DOT)	: UN1845
	Proper Shipping Name (DOT)	: Carbon dioxide, solid

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Safety Data Sheet P-4575

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 01/01/1997 Revision date: 02/06/2019 Supersedes: 10/17/2016

Class (DOT)	: 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140
Hazard labels (DOT)	: 9 - Class 9 (Miscellaneous dangerous materials)
DOT Symbols	: A - Material is regulated as a hazardous material only when transported by air,W - Material is regulated as a hazardous material only when transported by water
Additional information	
Emergency Response Guide (ERG) Number	: 120 (UN1013)
Other information	: No supplementary information available.
Special transport precautions	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation Ensure that containers are firmly secured Ensure cylinder valve is closed and not leaking Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Transport by sea	
UN-No. (IMDG)	: 1845
Proper Shipping Name (IMDG)	: CARBON DIOXIDE, SOLID (DRY ICE)
Class (IMDG)	: 9 - Miscellaneous dangerous substances and articles
Air transport	
UN-No. (IATA)	: 1845
	: Carbon dioxide, solid
Proper Shipping Name (IATA)	

15.1. US Federal regulations		
Carbon Dioxide, Solid or Dry Ice (124-38-9)		
Listed on the United States TSCA (Toxic Substances Control Act) inventory		
SARA Section 311/312 Hazard Classes Immediate (acute) health hazard		

15.2. International regulations	
CANADA	
Carbon Dioxide. Solid or Dry Ice (124-38-9)	

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Carbon Dioxide, Solid or Dry Ice (124-38-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)



Safety Data Sheet P-4575

Making our planet more productive" This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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15.2.2. National regulations

Carbon Dioxide, Solid or Dry Ice (124-38-9)

Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Japanese ISHL (Industrial Safety and Health Law)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations		
Carbon Dioxide, Solid or Dry Ice(124-38-9)		
U.S California - Proposition 65 - Carcinogens List	No	
U.S California - Proposition 65 - Developmental Toxicity	No	
U.S California - Proposition 65 - Reproductive Toxicity - Female	No	
U.S California - Proposition 65 - Reproductive Toxicity - Male	No	
State or local regulations	U.S Massachusetts - Right To Know List U.S New Jersey - Right to Know Hazardous Substance List U.S Pennsylvania - RTK (Right to Know) List	

SECTION 16: Other information	
Revision date	: 02/06/2019
NFPA health hazard	: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.
NFPA fire hazard	: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
NFPA reactivity	: 0 - Material that in themselves are normally stable, even under fire conditions.
NFPA specific hazard	: SA - This denotes gases which are simple asphyxiants.

SDS US (GHS HazCom 2012) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.