

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: 10/17/2016 Supersedes: 01/12/2015

.1. Product identifier	y identification		
.1. Product identifier roduct form	: Substance		
lame	: Carbon Dioxide, Solid or Dry Ice		
AS No	: 124-38-9		
ormula	: CO2		
other means of identification	: Dry ice (nuggets, pellets, or blocks), carbonice, carbonic anhydride		
	Ibstance or mixture and uses advised against		
lse of the substance/mixture	: Industrial use. Use as directed.		
.3. Details of the supplier of the safet			
	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		
4 Emergency folgely and number	www.praxan.com		
.4. Emergency telephone number mergency number	: Onsite Emergency: 1-800-645-4633		
	. Onone Entergency. 1-000-040-4050		
	CHEMTREC, 24hr/day 7days/week — Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887 (collect calls accepted, Contract 17729)		
ECTION 2: Hazard identification			
.1. Classification of the substance or	r mixture		
HS-US classification			
2 I shal slowents			
.2. Label elements			
HS-US labeling			
lo labeling applicable			
.3. Other hazards			
other hazards not contributing to the	: Refrigerated solidified gas. CONTACT WITH PRODUCT MAY CAUSE COLD BURNS OR		
lassification	FROSTBITE		
	Dry ice sublimes to carbon dioxide vapor at -109°F (-78°C). VAPOR MAY DISPLACE OXY AND CAUSE RAPID SUFFOCATION.	Dry ice sublimes to carbon dioxide vapor at -109°F (-78°C). VAPOR MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.	
Unknown acute toxicity (GHS US)			
.4. Unknown acute toxicity (GHS US)	No data available		
ECTION 3: Composition/Informati	tion on ingredients		
	tion on ingredients		
ECTION 3: Composition/Informati			
ECTION 3: Composition/Informati .1. Substance Name Carbon Dioxide, Solid or Dry Ice			
SECTION 3: Composition/Information 1. Substance Name Carbon Dioxide, Solid or Dry Ice (Main constituent)	Product identifier %		
ECTION 3: Composition/Informati .1. Substance Name Carbon Dioxide, Solid or Dry Ice	Product identifier %		

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SDS ID: P-4575

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SECTION	V 4: First aid measures		
4.1. D	escription of first aid measures		
First-aid me	easures 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 me	easures 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.	
First-aid me	easures 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 me	easures after ingestion :	Ingestion is not considered a potential route of exposure.	
4.2. M	Most important symptoms and effects, both acute and delayed		
		No additional information available	
4.3. In	ndication of any immediate medical at	tention and special treatment needed	
None.			
SECTION	N 5: Firefighting measures		
	xtinguishing media		
	al information available		
5.2. S	pecial hazards arising from the subst	ance or mixture	
Reactivity		None.	
-	dvice for firefighters		
Firefighting		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.	
SECTION	N 6: Accidental release measu	res	
6.1. P	ersonal precautions, protective equip	oment and emergency procedures	
General me	asures :	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. F	or non-emergency personnel		
		No additional information available	
6.1.2. F	or emergency responders		
		No additional information available	
6.2. E	nvironmental 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. M	lethods and material for containment	and cleaning up	
		No additional information available	
6.4. R	eference to other sections		
		See also sections 8 and 13.	



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SECT	TION 7: Handling and storage	
7.1.	Precautions for safe handling	
Precau	itions 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, including	g any incompatibilities
Storag	e 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 vapor 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

Other information

8.1. Control parameters		
Carbon Dioxide, Solid or Dry	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 <sup>3</sup> )	9000 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm
USA IDLH	US IDLH (ppm)	40000 ppm
8.2. Exposure controls		
Appropriate engineering control:	is below occupation regularly checked for Consider work perm	should be used when asphyxiating gases may be released. Ensure exposure nal exposure limits (where available). Systems under pressure should be or leakages. Provide adequate general and local exhaust ventilation. nit system e.g. for maintenance activities.
Hand protection	: Cold-insulating glov	
Eye protection	: Wear safety glasse	s with side shields.
<ul> <li>Respiratory protection</li> <li>When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).</li> </ul>		
Thermal hazard protection	: Wear cold insulating	g gloves.
Environmental exposure control	S : None necessary.	

SECTION 9: Physical and chemical properties			
9.1. Information on basic	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.		
EN (English US)	SDS ID: P-4575	3/7	

: Wear safety shoes while handling containers.

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Safety Data Sheet P-4575

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	Date of Issue. 01/01/1997 Revision date. 10/11/2016 Superseues. 01/12/2015
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/m³
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

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 informatio	n
11.1.	Information on toxicological effects	

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EN (English US)

# Carbon Dioxide, Solid or Dry Ice

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maning our pranet more protactive	Date of issue: 01/01/1997 Revision date: 10/17/2016 Supersedes: 01/12/2015
Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	pH: 3.7 (carbonic acid) : Not classified pH: 3.7 (carbonic acid)
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exp	osure) : Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
SECTION 12: Ecological inform	nation
12.1. Toxicity	
Ecology - general	: No ecological damage caused by this product.
12.2. Persistence and degradabili	ty
Carbon Dioxide, Solid or Dry Ice (12	4-38-9)
Persistence and degradability	No ecological damage caused by this product.
12.3. Bioaccumulative potential	
Carbon Dioxide, Solid or Dry Ice (12	4-38-9)
BCF fish 1	(no bioaccumulation)
Log Pow	0.83
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
12.4. Mobility in soil	
Carbon Dioxide, Solid or Dry Ice (12	4-38-9)
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
12.5. Other adverse effects	
Other adverse effects	: Can cause frost damage to vegetation.
Effect on ozone layer	: None
Global warming potential [CO2=1]	: 1
Effect on the global warming	: When discharged in large quantities may contribute to the greenhouse effect
<b>SECTION 13: Disposal consid</b>	erations
13.1. Waste treatment methods	
Waste treatment methods	: See Section 6.
Waste disposal recommendations	: Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.
<b>SECTION 14: Transport inform</b>	hation
In accordance with DOT	
Transport document description	: UN1845 Carbon dioxide, solid, 9
UN-No.(DOT)	: UN1845
Proper Shipping Name (DOT)	: Carbon dioxide, solid

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SDS ID: P-4575

5/7



Safety Data Sheet P-4575

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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	<ul> <li>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:</li> <li>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.</li> </ul>
Transport by sea	
UN-No. (IMDG)	: 1845
Proper Shipping Name (IMDG)	: CARBON DIOXIDE, SOLID (DRY ICE)
Class (IMDG)	: 9 - Miscellaneous dangerous compounds
Air transport	
UN-No. (IATA)	: 1845
Proper Shipping Name (IATA)	: Carbon dioxide, solid
Class (IATA)	: 9 - Miscellaneous Dangerous Goods
SECTION 15: Regulatory information	n

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)



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Revision date: 10/17/2016 Date of issue: 01/01/1997 Supersedes: 01/12/2015

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 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 CICR (Turkish Inventory and Control of Chemicals)

15.3. US State	regulations
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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**

NFPA health hazard	: 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.
NFPA fire hazard	: 0 - Materials that will not burn.
NFPA reactivity	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
NFPA specific hazard	: SA - This denotes gases which are simple asphyxiants.
HMIS III Rating	
Health	: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Physical

Flammability

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.

0 Minimal Hazard : 0 Minimal Hazard

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