Material Safety Data Sheet

Carbon Dioxide (Dry Ice)

Section 1. Chemical product and company identification

Product Name : Carbon Dioxide (Dry Ice)

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Synonym : carbonice ; dry ice 6

MSDS# : 001091

Date of Preparation/Revision : **6/7/2007.**

In case of emergency : 1-866-734-3438

Section 2. Hazards identification

Physical state : Solid. (WHITE SNOW-LIKE SOLID)

Emergency overview : Warning!

CAUSES DAMAGE TO THE FOLLOWING ORGANS: CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, SKIN.

Potential acute health effects

Eyes : No known significant effects or critical hazards.

Skin : Extremely cold material; can cause burns similar to frostbite.

Inhalation : Acts as a simple asphyxiant.

Ingestion : No known significant effects or critical hazards.

Potential chronic health effects : **CARCINOGENIC EFFECTS:** Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by overexposure : Repeated or prolonged exposure is not known to aggravate medical condition.

See toxicological Information (section 11)

Section 3. Composition, Information on Ingredients

United States

carbon dioxide	124-38-9	100	**Exposure limits**

ACGIH TLV (United States, 1/2005).
STEL: 54000 mg/m^3 15 minute(s). Form: All forms
STEL: 30000 ppm 15 minute(s). Form: All forms
TWA: 9000 mg/m^3 8 hour(s). Form: All forms
TWA: 5000 ppm 8 hour(s). Form: All forms

NIOSH REL (United States, 12/2001).
STEL: 54000 mg/m^3 15 minute(s). Form: All forms
STEL: 30000 ppm 15 minute(s). Form: All forms
TWA: 9000 mg/m^3 10 hour(s). Form: All forms
TWA: 5000 ppm 10 hour(s). Form: All forms

OSHA PEL (United States, 8/1997).
TWA: 9000 mg/m^3 8 hour(s). Form: All forms
TWA: 5000 ppm 8 hour(s). Form: All forms

Section 4. First aid measures

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

Flammability of the product : Non-flammable.

Products of combustion : These products are carbon oxides (CO, CO_2).

Fire fighting media and instructions : Use an extinguishing agent suitable for surrounding fires.

No specific hazard.

Special protective equipment for fire-fighters : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable vacuum or carefully scoop up spilled materials and place in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal.

Section 7. Handling and storage

Handling : Wash thoroughly after handling. Use with adequate ventilation.

Storage : Keep container closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls, Personal Protection

Engineering controls : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Insulated gloves suitable for low temperatures

Personal protection in case of a large spill : Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product name	Exposure limits
United States	

Carbon Dioxide (Dry Ice)

carbon dioxide

ACGIH TLV (United States, 1/2005).
STEL: 54000 mg/m^3 15 minute(s). Form: All forms
STEL: 30000 ppm 15 minute(s). Form: All forms
TWA: 9000 mg/m^3 8 hour(s). Form: All forms
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TWA: 9000 mg/m^3 8 hour(s). Form: All forms
TWA: 5000 ppm 8 hour(s). Form: All forms

Section 9. Physical and chemical properties

Physical state : Solid. (WHITE SNOW-LIKE SOLID)
Color : WHITE
Molecular weight : 44.01 g/mole
Molecular formula : CO2
Melting/freezing point : Sublimation temperature: -78.5°C (-109.3°F)
Critical temperature : 31°C (87.8°F)
Specific gravity : 1.56 (Water = 1)

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.
Incompatibility with various substances : Not considered to be reactive according to our database.

Section 11. Toxicological information

Toxicity data
IDLH : 40000 ppm
Chronic effects on humans : Causes damage to the following organs: cardiovascular system, upper respiratory tract, skin.
Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material for humans.
Specific effects
Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.
Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Products of degradation : These products are carbon oxides (CO, CO_2).
Toxicity of the products of biodegradation : The product itself and its products of degradation are not toxic.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Consult your local or regional authorities.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1845	CARBON DIOXIDE, SOLID OR DRY ICE	Not available.	-		**Limited quantity** Yes. **Packaging instruction** **Passenger Aircraft** Quantity limitation: 200 kg **Cargo Aircraft** Quantity limitation: 200 kg
TDG Classification	UN1845	CARBON DIOXIDE, SOLID; OR DRY ICE	Not available.	-		**Special provisions** 18
Mexico Classification	UN1845	CARBON DIOXIDE, SOLID OR DRY ICE	Not available.	-		**Limited quantity** Yes. **Packaging instruction** **Passenger Aircraft** Quantity limitation: 200 kg **Cargo Aircraft** Quantity limitation: 200 kg

Section 15. Regulatory information

United States

HCS Classification : Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: carbon dioxide

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: carbon dioxide
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: carbon dioxide: Sudden Release of Pressure, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: carbon dioxide: (generic environmental hazard)
Massachusetts RTK: carbon dioxide
New Jersey: carbon dioxide

Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).

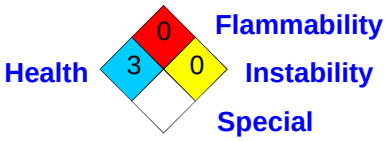
CEPA DSL: carbon dioxide

Section 16. Other information

Label Requirements : CAUSES DAMAGE TO THE FOLLOWING ORGANS: CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, SKIN.

Hazardous Material Information System (U.S.A.) :

National Fire Protection Association (U.S.A.) :



Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.