

DOWBICO SUPPLIES LIMITED
o/a DRY ICE & GASES CO.
26 Dorchester Ave.
Toronto, Ontario
M8Z 4W3

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTIFIER: DRY ICE

I PRODUCT INFORMATION

SHIPPING NAME: Dry Ice
UN #: 1845 **CAS NO.:** 124-38-91
MOLECULAR WEIGHT: 44.01
FACTNAME & SYNONYMS: Dry Ice
Carbonice
WHMIS CLASSIFICATION: None
24 HOUR TELEPHONE NO.: 416-503-0781
CANUTEC EMERGENCY NO.: 613-996-6666

CHEMICAL NAME: Carbon Dioxide,
Solid
CHEMICAL FAMILY; Oxide of Carbon
TDG CLASSIFICATION: 9.1
CHEMICAL FORMULA: CO₂
USE(S): Food Cooling, Cooling

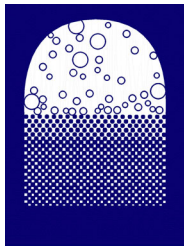
II HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	APPROX. CONC. %	LD50	LC50
Carbon Dioxide	100%	None	None

III PHYSICAL DATA

APPEARANCE & ODOUR; White solid in the form of snow, blocks, slices, chunks or nuggets.
Very cold, causing a fog in air. Sublimes giving off CO₂ vapour which
produces a sharp nasal sensation at high concentration.

PHYSICAL STATE (AT N.P.T.) Solid
SPECIFIC GRAVITY: (WATER = 1) 1.35
ODOUR THRESHOLD (ppm): Not Available
BOILING POINT: Not Applicable
FREEZING POINT: Sublimates at 1 atm at -78.5°C/-109.3°F
SPECIFIC GRAVITY (AIR = 1): 1.52 (@ 21°C/70°F)
GAS DENSITY (g/ml): 0.00197 (@ 0°C/32°F)
VAPOR PRESSURE: 0 kPa, 0 psig @ -78.5°C/-109.3°F
pH: Not Applicable



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III PHYSICAL DATA (CONT'D)

%VOLATILE (BY VOLUME): 100
LIQUID DENSITY (g/ml): 1.35 (Solid)
EVAPORATION RATE: Slow sublimation rate
SOLUBILITY IN WATER (vol/vol): 0.9 (@ 20°C/68°F)
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not Available

IV FIRE AND EXPLOSION HAZARD OF MATERIAL

FLAMMABILITY

_____ Yes No If yes, under which conditions? Non Flammable. Will not support combustion.

MEANS OF EXTINCTION

Not Applicable.

SPECIAL PROCEDURES:

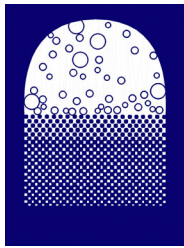
Not Applicable.

FLASHPOINT (°C) AND METHOD: None
LOWER EXPLOSION LIMIT (% BY VOLUME): None
UPPER EXPLOSION LIMIT (% BY VOLUME): None
AUTO IGNITION TEMPERATURE (°C) None
TDG FLAMMABILITY CLASSIFICATION: Non Flammable
HAZARDOUS COMBUSTION PRODUCTS: None
SENSITIVITY TO MECHANICAL IMPACT: None
RATE OF BURNING: Not Applicable
SENSITIVITY TO STATIC DISCHARGE: None

V REACTIVITY DATA

CHEMICAL STABILITY

Yes _____ No If no, under which conditions? Stable at normal temperatures and pressures.



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REACTIVITY DATA (CONT'D)

INCOMPATIBILITY TO OTHER SUBSTANCES

Yes No If yes, which ones? Very cold temperature may embrittle some materials.

REACTIVITY

Yes No If yes, under which conditions? In the presence of moisture, will form carbonic acid which may corrode some metals.

VI TOXICOLOGICAL PROPERTIES OF MATERIAL

ROUTE OF ENTRY

Skin Contact Skin Absorption Eye Contact

Inhalation Acute Inhalation Chronic Ingestion

EFFECTS OF ACUTE EXPOSURE TO MATERIAL

Skin

Very cold solid (-78°C/-109°F) which may cause frostbite. Solid sublimates and can cool materials it is in contact with to -78°C (-109°F) which can cause frostbite if touched.

Eye

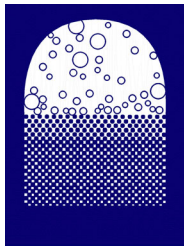
Very cold solid (-78°C/-109°F) which may cause frostbite.

Inhalation

Sublimed vapour is carbon dioxide.

Carbon Dioxide is present in air at 0.03% and, at higher levels in exhaled breath. Low concentrations (3-5%) increase the respiration rate and can cause headache. Levels of 8% to 15% cause headache, nausea, vomiting and may lead to unconsciousness. Higher concentrations can cause coma and death.

Carbon Dioxide is denser than air and can displace air forming low level pockets of higher concentration. Solid carbon dioxide gives off very cold vapour which can cause a fog in air, but this may not be sufficient warning of dangerous concentrations. If the oxygen concentration is reduced below 18% it is an asphyxiation hazard.



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VI TOXICOLOGICAL PROPERTIES OF MATERIAL (CONT'D)

Ingestion

Swallowing of solid will cause severe burns. Keep out of reach of children.

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL

No known chronic effects to repeated exposures of low concentrations (3-5%).

EXPOSURE LIMIT(S); STEL 30,000 ppm (3%) ACGIH
TWA 5,000 ppm (.5%) ACGIH, OSHA
LCLo 90% 5 min. human

IRRITANCY OF MATERIAL; Sharp sensation on nasal membranes at higher concentration.

SENSITIZATION OF MATERIAL: None

CARCINOGENICITY: None

REPRODUCTIVE EFFECTS: None

TERATOGENICITY: None

MUTAGENICITY: None

SYNERGISTIC MATERIALS: None

VII PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT

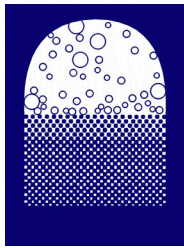
GLOVES; Insulated gloves.
RESPIRATORY: SCBA in case of suspected leak or oxygen-deficient atmosphere.
EYES: Safety glasses.
FOOTWEAR: Safety shoes for container handling, if applicable.
CLOTHING: Long sleeves/trousers recommended.

ENGINEERING CONTROLS

Provide good ventilation to maintain more than 18% oxygen and less than 0.5% CO₂ (TWA). Air monitoring device is recommended.

LEAK AND SPILL PROCEDURE

Do not enter enclosed or low areas unless wearing SCBA or unless ventilation is verified to have maintained 18% oxygen and less than 0.5% carbon dioxide. Allow gas to dissipate. Provide additional ventilation, if without risk. Verify Oxygen and Carbon Dioxide concentration of any enclosed or low areas before permitting re-entry.



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VII PREVENTIVE MEASURES (CONT'D)

WASTE DISPOSAL

No residual waste.

STORAGE REQUIREMENTS

Keep in its wrapper, if applicable, and supply ventilation.
Protect wrapping from physical damage.
Store in cool, dry, well ventilated area.
Do not store in sealed containers.

SPECIAL SHIPPING INFORMATION

Do not place next to material that may be damaged by cold.
Transport secured in well ventilated truck.
Never transport in passenger compartment, trunk or enclosed vehicle.
If small quantities are transported in trunk of passenger vehicle, one window must be fully open at all times.
Do not transport in same compartment as pets, livestock or plants.

HANDLING PROCEDURES AND EQUIPMENT

Keep in its wrapper, if applicable, as long as possible.
Use only in well ventilated areas.
Dry ice and any solid or liquid it has been in contact with are extremely cold and may cause frostbite. Bare skin may stick to such surfaces and cause severe frostbite.
Insulated gloves must be worn at all times.

Materials or tools may become brittle at these cold temperatures.
Moisture from the air may condense or freeze on surface of dry ice making it slippery.
Always support or lift it from the bottom.
Use a suitable hand truck for container movement, if applicable.

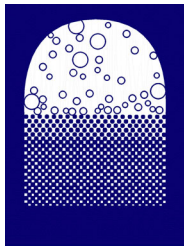
If placed on a flat nearly level surface, sublimed gas between dry ice and the surface may prevent actual physical contact and allow the dry ice to glide downhill.

Do not allow to fall.

Do not put dry ice in sealed or stoppered containers as sublimed vapours can develop high pressure which may rupture containers (unless container is specifically designed for this).

If dry ice is put in a liquid, the sublimed vapours will cause bubbling and may cause splashing or boil over. Add dry ice slowly and avoid direct skin contact with dry ice or the liquid.

Keep out of reach of children.



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VII PREVENTIVE MEASURES (CONT'D)

CORROSIVITY

Not applicable.

VIII FIRST AID MEASURES

EYES; For frostbite, rinse with warm water for 15 minutes. Obtain medical attention.

SKIN: For frostbite, allow affected body parts to thaw. Obtain medical attention.

INHALATION: Move victim to fresh air.
Give oxygen, if breathing is difficult.
Give artificial respiration, if breathing has stopped.
Ensure that vomit does not obstruct airway.
Obtain medical attention.

INGESTION; Maintain breathing.
Obtain medical attention immediately.

IX PREPARATION OF M.S.D.S.

Use, handling or storage of the product described in this MSDS is at the users sole risk.

Dowbico Supplies Limited shall not be liable for any loss or damages of any nature whatsoever, however arising, relating to the use, handling or storage of the product of the statements and information contained in or omitted from this MSDS.

Prepared By:

Safety Director
Dowbico Supplies Limited.

Phone Number:

(416) 252-7137

Date:

Prepared: October 1, 1994
Reviewed: October 1, 1997
Reviewed: October 1, 2000
Reviewed: October 1, 2003

Reviewed: October 1, 2005