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MSDS: Liquid Nitrogen

PRODUCT INFORMATION

PRODUCT: Liquid Nitrogen
TRADE NAME: Liquid Nitrogen
CHEMICAL NAME: Liquified Nitrogen
SYNONYMS: LIN; Nitrogen, Refrigerated Liquid
FORMULA: Liquefied N₂
CHEMICAL FAMILY: Cryogenic Liquid Inert
SUPPLIER'S NAME: MEGS Inc.
SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Québec, H4S 1E5
EMERGENCY PHONE NUMBER: (514) 956-7503
MOLECULAR WEIGHT: 28.01
PRODUCT USE: Various
PRODUCT IDENTIFICATION UN 1977
NUMBER:

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Nitrogen	100%	7727-37-9	None	None

PHYSICAL DATA

PHYSICAL STATE: Cryogenic liquid and gas
APPEARANCE: Colourless, (clear) liquid and gas
ODOR: Odourless
ODOR THRESHOLD: Not applicable
SPECIFIC GRAVITY (H₂O = 1): @ Boiling Point = 0.809
VAPOR PRESSURE: Not applicable (gas)
VAPOR DENSITY (air = 1): 0.967
EVAPORATION RATE: Varies with container insulation
BOILING POINT: -195.8°C
FREEZING POINT: -210.0°C
pH: Not applicable
GAS DENSITY: Liquid @ Boiling Point = 808.6 kg/m³

Vapour @ 15°C, 101.3 kPa = 1.185 kg/m³

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Non-flammable gas

MEANS OF EXTINCTION: Non-flammable gas

FLASHPOINT AND METHOD OF DETERMINATION: Non-flammable gas

UPPER EXPLOSION LIMIT (% BY VOL): Non-flammable gas

LOWER EXPLOSION LIMIT (% BY VOL): Non-flammable gas

AUTO-IGNITION TEMPERATURE: Non-flammable gas

FLAMMABILITY CLASSIFICATION: Non-flammable gas

HAZARDOUS COMBUSTION PRODUCTS: Non-flammable gas

EXPLOSION DATA: Non-flammable gas

SENSITIVITY TO STATIC DISCHARGE: None

REACTIVITY DATA

CHEMICAL STABILITY: Stable

INCOMPATIBLE MATERIALS: None

CONDITIONS OF REACTIVITY: Non-reactive

HAZARDOUS DECOMPOSITION PRODUCTS: None

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: Contact with the cryogenic liquid or cold piping containing the liquid can cause tissue freezing or frostbite on dermal contact or if splashed into the eyes.

SKIN ABSORPTION: None

EYE: See Skin Contact, above

INHALATION: Effects of exposure to high concentrations so as to displace the oxygen in the air necessary for life are headaches, dizziness, labored breathing and eventual unconsciousness.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: Liquid nitrogen is non-toxic but the

liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life.

Frostbite effects are a change in colour of the skin to grey or white possibly followed by blistering.

CHRONIC OVER EXPOSURE EFFECTS: None

EXPOSURE LIMITS: Nitrogen is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. (ACGIH, 1995-1996).

IRRITANCY OF PRODUCT: See Skin Contact, above.

SENSITIZATION TO MATERIAL: None

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None

TERATOGENICITY, MUTAGENICITY: None

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Loose fitting, insulated gloves. Safety goggles or glasses and face shield. safety shoes.

SPECIFIC ENGINEERING CONTROLS: Liquid nitrogen cannot be handled in carbon or low steels. Eighteen-eight and 18-10 stainless steels are acceptable as are copper and its alloys, nickel and its alloys, brass, bronze, silicon alloys, Monel®, Inconel®, and beryllium. Also see CGA Safety Bulletin SB-2 and CGA pamphlets P-9, P-12, P-14.

LEAK AND SPILL PROCEDURES: See Handling Procedures and Equipment, below.

WASTE DISPOSAL: See Handling Procedures and Equipment, below.

HANDLING PROCEDURES AND EQUIPMENT: Liquid nitrogen is delivered to a customer in stationary vacuum-jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid cylinders". Stationary customer-site vessels should be operated in accordance with the manufacturer's and MEGS Inc.'s instructions. Do not attempt to repair, adjust, or in any other way modify the operation of these vessels. If there is a malfunction or other type of operational

problem with the vessel, contact the closest MEGS Inc. location immediately.

Liquid nitrogen cylinder should be used only in well-ventilated areas and in accordance with the manufacturer's and MEGS Inc.'s instructions. These cylinders must always be kept in an upright position. Specialized hand trucks are needed for their movement. A "first in - first out" inventory system should be used with these cylinders.

STORAGE REQUIREMENTS: See Handling Procedures and Equipment, above.

TDG CLASSIFICATION: 2.2

WHMIS CLASSIFICATION: A

SPECIAL SHIPPING INFORMATION: Always ship and handle liquid nitrogen cylinders in an upright position.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO NITROGEN. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

INHALATION: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

EYE CONTACT: See Skin Contact

SKIN CONTACT: For dermal Contact or Frostbite: flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface of or deep tissue freezing.

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 09/01/2002

LAST REVISION DATE: 02/01/2012

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