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MSDS: Boron Trichloride

PRODUCT INFORMATION

PRODUCT: Boron Trichloride

TRADE NAME: Boron Trichloride

CHEMICAL NAME: Boron Trichloride

SYNONYMS: Trichloro Borane or Boron chloride

FORMULA: BCl_3

CHEMICAL FAMILY: Boron Halide

SUPPLIER'S NAME: MEGS Inc.

SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Qc, H4S 1E5

EMERGENCY PHONE NUMBER: (514) 956-7503

MOLECULAR WEIGHT: 117.16

PRODUCT USE: Various

PRODUCT IDENTIFICATION NUMBER: UN 1741

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
	100%			
Boron Trichloride		10294-34	None published	Inhl-Rat 20 ppm/7 h

PHYSICAL DATA

PHYSICAL STATE: Corrosive liquid with fuming vapors

APPEARANCE: Colorless gas producing heavy acidic fumes in moist air.

ODOR: Pungent and irritating

ODOR THRESHOLD: Unknown

SPECIFIC GRAVITY (H_2O = 1): 1.34

VAPOR PRESSURE:	110 kPa
VAPOR DENSITY (air = 1):	4.04
EVAPORATION RATE:	Unknown
BOILING POINT:	12.5°C
FREEZING POINT:	-107.5°C
pH:	Acidic
GAS DENSITY:	2.86 kg/m³ @ 15°C, 101.3 kPa
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Hydrolyzes in water to form hydrochloric and boric acids

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY:	Nonflammable
MEANS OF EXTINCTION:	Nonflammable
FLASHPOINT AND METHOD OF DETERMINATION:	Nonflammable
UPPER EXPLOSION LIMIT (% BY VOL):	Nonflammable
LOWER EXPLOSION LIMIT (% BY VOL):	Nonflammable
AUTO-IGNITION TEMPERATURE:	Nonflammable
FLAMMABILITY CLASSIFICATION:	Nonflammable
HAZARDOUS COMBUSTION PRODUCTS:	Nonflammable
EXPLOSION DATA:	Nonflammable
SENSITIVITY TO STATIC DISCHARGE:	None

REACTIVITY DATA

CHEMICAL STABILITY:	Stable
INCOMPATIBLE MATERIALS:	Water and water vapor
CONDITIONS OF REACTIVITY:	Presence of moisture & heat
HAZARDOUS DECOMPOSITION PRODUCTS:	Hydrolysis yields hydrochloric and boric acids

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: Boron trichloride is irritating and corrosive to all living tissues. Toxic level exposure to dermal tissue causes hydrochloric acid burns and skin lesions resulting in early necrosis and scarring.

SKIN ABSORPTION: None

EYE: Burns to the eye result in lesions and possible loss of vision.

INHALATION: Corrosive and irritating to the upper and lower respiratory tracts. Skin burns and mucosal irritation are like that from exposure to hydrochloric acid. Hydrochloric acid burns exhibit severe pain, redness, possible swelling and early necrosis.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: Boron trichloride is irritating and corrosive to all living tissues. Toxic level exposure to dermal tissue cause hydrochloric acid burns and skin lesions resulting in early necrosis and scarring. Chemical pneumonitis and pulmonary edema result from exposure to the lower respiratory tract and deep lung. Symptoms of exposure include tearing of eyes, coughing, laboured breathing, and excessive salivary and sputum formation. Residual pulmonary malfunction might also occur.

CHRONIC OVER EXPOSURE EFFECTS: None other than residual pulmonary malfunction which might result from acute effects.

EXPOSURE LIMITS: No TWA is established. Recommend using hydrogen chloride which is a hydrolysis product of boron trichloride. Hydrogen chloride has a ceiling limit of 5 molar ppm (ACGIH 1995-1996).

IRRITANCY OF PRODUCT: Yes, see above

SENSITIZATION TO MATERIAL: None

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None known

TERATOGENICITY, MUTAGENICITY: None known

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Gloves of neoprene or butyl rubber, PVC or polyethylene. Safety goggles or glasses and face shield. Safety shoes, safety shower and eyewash "fountain".

SPECIFIC ENGINEERING CONTROLS: Any materials suitable for use with anhydrous hydrogen chloride may be used with boron trichloride. Systems and equipment must be kept scrupulously dry. Metals which may be employed are; nickel steel (13.5 - 32% Ni), Ni-Cu alloys, Hastelloy® A, B, C. Refer to Liquid Air's

Gas Encyclopedia for a complete listing.

LEAK AND SPILL PROCEDURES: EVACUATE ALL PERSONNEL FROM AFFECTED AREA.
Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

WASTE DISPOSAL: Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

HANDLING PROCEDURES AND EQUIPMENT: USE ONLY IN WELL-VENTILATED AREAS.
Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

STORAGE REQUIREMENTS: Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

TDG CLASSIFICATION: 2.3 (8)

WHMIS CLASSIFICATION: A, D1, E

SPECIAL SHIPPING INFORMATION: Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO BORON TRICHLORIDE.

INHALATION: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area, given assisted resuscitation and supplemental oxygen. Keep the victim warm and quiet. Assure that mucous or vomited material does not obstruct the airway by positional drainage. Delayed pulmonary edema may occur. Keep patient under medical observation for at least 24 hours.

EYE CONTACT: PERSONS WITH POTENTIAL EXPOSURE TO BORON TRICHLORIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

SKIN CONTACT: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 09/01/1999

LAST REVISION DATE: 05/21/2002