PRODUCT NAME	CAS#
Diborane Mixtures	19287-45-7
TRADE NAME AND SYNONYMS	DOT I.D. NO.
Diborane Mixtures, Compressed, (D.O.T.);	
Boron Hydride; Boroethane	Na 1911
CHEMICAL NAME AND SYNONYMS	DOT HAZARD CLASS
Boron Hydride	Division 2.1
ISSUE DATE AND REVISIONS	FORMULA
Revised July 2007	B_2H_6

HEALTH HAZARD DATA

EMERGENCY OVERVIEW

Diborane is a colorless, flammable, toxic gas, with a sickly sweet odor. It may cause headache, nausea, weakness, tremors, convulsions, general lassitude, tightness of chest, coughing, respiratory difficulties, pulmonary edema and hemorrhage..

SYMPTOMS OF EXPOSURE

It is an irritant to the respiratory system causing headache, fatigue, drowsiness, shortness of breath, coughing and eventual convulsions and death.

TOXICOLOGICAL PROPERTIES

 LC_{50} Human, Inhalation = 159 molar PPM for 15 Minutes Also Lethal Dose, Human, Inhalation = 30-90 mg/m³ for 4 hours

Its toxicity seems to be similar to that for phosgene, chlorine, fluorine, and arsine. Damage to the lungs resulting in pulmonary edema will most probably occur as well as kidney and liver damage. The signs of the intoxication may be delayed for up to 24 hours or occur immediately after the exposure.

Persons in ill health where such illness would be aggravated by exposure to diborane should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO DIBORANE. RESCUERS SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

<u>Inhalation</u>: Move affected person to an uncontaminated area. If breathing has stopped, give assisted respiration. Oxygen should be administrated by a qualified person. Keep victim warm and calm. Seek immediate medical assistance. Continued treatment should be symptomatic and supportive.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Pure diborane is flammable in air over a very wide range. It will ignite spontaneously in moist air at room temperatures. It also reacts violently with oxides, ammonia, alcohols, lithium and similar reactive metals, halogens and halogenated compounds.

PHYSICAL DATA

BOILING POINT	LIQUID DENSITY AT BOILING POINT
-134.5 °F (-92.5 °C)	26.3 lb/ft^3 (421kg/m^3)
vAPOR PRESSURE@ 70°F (21.1°C):Above the critical temp. of 62°F (16.7°C)	GAS DENSITY AT 70°F. 1 atm .0711 lg/ft ³ (1.141 kg/m ³)
SOLUBILITY IN WATER	FREEZING POINT
Hydrolyzes	-264.7°F (-164.9°C)
EVAPORATION RATE	SPECIFIC GRAVITY (AIR=1)
N/A (Gas)	(a) 70°F (21.1 °C) = 0.95
APPEARANCE AND ODOR	
Colorless gas with character	istic sickly sweet odor.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	AUTO IGNITION TEMPERATURE	FLAM	MABLE LIMI	FS % BY V	OLUME
N/A (Gas)	100°F (38°)	LEL	0.9	UEL	98
EXTINGUISHING MEDIA			ELECTRIC	CAL CLAS	SIFICATION
Only acceptable are prote	in based foams with a nitrogen c	arrier	Class	1, Grou	p not specified
SPECIAL FIRE FIGHTING PROCEDURES					
Diborane reacts with most extinguishing media such as water, carbon dioxide, chemical powders					
and halogenated compounds. Attempting to stop the flow of gas and allow the fire to burn itself					
out. Use water spray to cool surrounding containers.					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
Ignites spontaneously in moist air. The heat of combustion from a diborane fire is greater than that					
from siliar hydrocarbon su	uch as an ethane fire.				

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable	Х	Elevates temperatures. Diborane mixture storage time
Stable		should minimized. Higher borane decomposition products
		(typically tetraborane) may be ore shock sensitive that
		diborane.
INCOMPATIBILITY (Materi	als to avoid)	
		None
HAZARDOUS POLYMERIZ	ATION	HAZARDOUS DECOMPOSITION PRODUCTS
May Occur		
Will Not Occur	X	None

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

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 in container or container valve, contact HSG for special advice.

WASTE DISPOSAL METHOD

Do not attempt to dispose of waste or unused quantities. Return in the shipping container <u>properly</u> <u>labeled with any valve outlet plugs or caps secured and valve protection cap in place</u> to HSG. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRTORY PROTECTION (Specify typ	pe)				
Positive pressure air line with mask or self-contained breathing apparatus should be available for					
emergency use.					
VENTILATION	LOCAL EXHAUST	SPECIAL			
Hood with forced	To prevent accumulation above the TWA.	N/A			
ventilation	MECHANICAL (Gen.)	OTHER			
	In accordance with electrical codes	N/A			
PROTECTIVE GLOVES					
Plastic or rubber					
EYE PROTECTION					
Safety goggles or glasses					
OTHER PROTECTIVE EQUIPMENT					
Safety shoes, safety shower					

SPECIAL PRECAUTIONS*

DOT Shipping Name: Diborane Mixtures, compressed DO	OT Hanand Classe	D' ' ' 00
	OT Hazard Class.	Division 2.2
DOT Shipping Label: Flammable Gas	D. No.:	NA 1911

SPECIAL HANDLING RECOMMENDATIONS

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 pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. 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.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should 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.

SPECIAL PACKAGING RECOMMENDATIONS

Diborane is non-corrosive and most common structural materials (except aluminum) may be used. It is also compatible with ordinary glass, pyrex and quartz. Kel-F and Teflon are preferred gasketing materials.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Earth-ground and bond all lines and equipment associated with the diborane system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Law.

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