



MATERIAL SAFETY DATA SHEETS

469

Pentaborane

1. CHEMICAL IDENTITY

Chemical Name : Pentaborane

Chemical Classification: Toxic, Flammable

Trade Name :

Synonyms: Pentaboron nonahydride

Formula : B₅H₉

CAS No: 19624-22-7

UN No: 1380

Regulated Identification

Shipping Name : Pentaborane

Hazchem Code : 4W

Codes / Label : Class4.2, Toxic, Flammable

Hazardous Waste ID No : 17

HAZARDOUS INGREDIENTS	C.A.S. No.	HAZARDOUS INGREDIENTS	C.A.S. No.
1 Pentaborane	19624-22-7	3	
2		4	

2. PHYSICAL / CHEMICAL DATA

Boiling Pt. °C: 60

Physical State: Liquid

Appearance: Clear colourless

Melting Pt °C: -46.6

Vapour Pressure @ 35°C mmHg: 171 mm Hg at 20 deg C; 66 mm Hg at 0 deg C

Odour: Pungent odor like sour milk.

Vapour Density(Air =1): 2.2

Solubility in water at 30°C g/100ml: Reacts

Others: Decomposes slowly at 150 deg C; ignites spontaneously in air; hydrolyzes in water after long heating; reacts with ammonia to form diammoniate.

Specific Gravity (Water =1): 0.61 at 0 deg C/4 deg C

pH :

3. FIRE / EXPLOSION HAZARD DATA

Flammability : Yes

LEL: 0.42

Flash Point °C in OC:

TDG Flammability: 4.2

UEL: 98

Flash Point °C in CC: 30

Autoignition Temperature °C : 350(WhenPure)

Explosion sensitivity to impact: Explodes

Explosion sensitivity to static Electricity: Explodes

Hazardous Combustion Products : Toxic gases and vapors (such as boron acids) may be released in a fire involving pentaborane.

Hazardous Polymerization : Will not occur.

Combustible Liquid: Yes

Explosive Material: Yes

Corrosive Material No

Flammable Material: Yes

Oxidiser : No

Others:

Pyrophoric Material: Yes

Organic Peroxide : No

4. REACTIVITY DATA

Chemical Stability : Stable below 150 °C. Reactive under confinement. Unstable.

Incompatibility with other material : Oxidizers, halogens, water, halogenated hydrocarbons

Reactivity : May ignite in moist air. Corrosive to natural rubber. Hydrolyzes slowly with heat in water to form boric acid. Dangerous fire hazard by chemical reaction. Corrosive to natural and some synthetic rubbers, some lubricants.

Hazardous Reaction Products : Explosive reaction with oxygen.

5. HEALTH HAZARD DATA

Routes of entry: Inhalation, Skin & Eyes.

Effects of Exposure / Symptoms:

Inhalation : Tightness in the chest, dyspnea, cough and wheezing for 3 to 5 days after exposure to boron hydrides. Diborane is the most active boron hydride for respiratory effects; pentaborane and decaborane have fewer respiratory symptoms. **Skin**: Pentaborane can be rapidly fatal by the dermal route. Pentaborane is an irritant of the skin and mucous membranes. Reddened skin may occur from exposure to the vapor. The liquid can cause blisters. **Eyes**: Headaches have been reported following exposure to pentaborane or decaborane. Borohydrides have also caused irreversible eye damage. **Ingestion**: Nausea is one of the first symptoms seen. Hypersalivation and anorexia may occur.

Emergency Treatment :

Inhalation: Move patient to fresh air. Monitor for respiratory distress. Administer oxygen and assist ventilation as required. Treat bronchospasm with beta2 agonist and corticosteroid aerosols.

Skin: Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush with running water for at least 20 minutes.

Eyes: Irrigate exposed eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

Ingestion: Do not induce emesis. Activated charcoal: administer charcoal as a slurry (240 ml water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents.

LD50 (oral-rat) mg/kg:	50 mg/kg	STEL:	0.015 ppm (0.03 mg/m ³)
LC50 (rat) mg/kg:	0.018 mg/liter 4 hours	Odour Threshold:	2.5 mg/m ³
Permissible Exposure Limit:	0.005 ppm (0.01 mg/m ³)	TLV (ACGIH) :	0.005 ppm (0.01 mg/m ³)

NFPA Hazard	Health	Flammability	Reactivity	Special
Signals	4	4	2	

6. PREVENTIVE MEASURES

Personal Protective : Wear appropriate protective gloves, clothing and goggles.

Equipment

Handling : All chemicals should be considered hazardous. Avoid direct physical contact. Use appropriate, approved safety equipment. Untrained individuals should not handle this chemical or its container. Handling should occur in a chemical fume hood.

Storage : This chemical should be stored under dry nitrogen (nitrogen blanketing), away from other chemicals.

Precautions :

7. EMERGENCY / FIRST AID MEASURES

FIRE:

Fire Extinguishing Media : Use special fire fighting materials.

Special Procedure : Keep the containers cool by spraying water, if exposed to heat or flame.

Unusual Hazards : Dangerous explosion hazard. Reacts violently with halogenated extinguishing agents

EXPOSURE: First Aid Measures:

Inhalation: Move patient to fresh air. Monitor for respiratory distress. Administer oxygen and assist ventilation as required. Treat bronchospasm with beta2 agonist and corticosteroid aerosols.

Skin: Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush with running water for at least 20 minutes.

Eyes: Irrigate exposed eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

Ingestion: Do not induce emesis. Activated charcoal: administer charcoal as a slurry (240 ml water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents.

Antidotes / Dosages: 3% Ammonia solution for skin.

SPILLS :

Steps To Be Taken : Do not use water. Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Build dikes to contain flow as necessary. Attempt to stop leak if without undue personnel hazard.

Waste Disposal Method: Ignites when exposed to air.

8. ADDITIONAL INFORMATION / REFERENCES

Spontaneously flammable in air. Explosive reaction with oxygen. Forms shock - sensitive solutions in solvents containing carbonyl, ether or ester functions or halogens.

9. MANUFACTURERS / SUPPLIERS DATA

NAME OF FIRM :

Contact person

MAILING ADDRESS :

in Emergency :

TELEPHONE / TELEX NOS :

Local Bodies involved :

TELEGRAPHIC ADDRESS :

Standard Packing :

OTHERS :

Trem Card Details / Ref :

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