

**PENTABORANE****0819**

November 1998

**CAS No:** 19624-22-7  
**RTECS No:** RY8925000  
**UN No:** 1380  
**EC No:**

Pentaboron nonahydride  
 $B_5H_9$   
 Molecular mass: 63.2

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
<b>FIRE</b>	Flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with halogens, halogenated compounds and oxidizers.	Carbon dioxide, special powder, dry sand, NO other agents.
<b>EXPLOSION</b>	Above 30°C explosive vapour/air mixtures may be formed.	Above 30°C use a closed system, ventilation, and explosion-proof electrical equipment.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.

EXPOSURE		AVOID ALL CONTACT!	
<b>Inhalation</b>	Nausea. Drowsiness. Headache. Dizziness. Convulsions. Unconsciousness. Weakness. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
<b>Skin</b>	MAY BE ABSORBED! Redness. (See Inhalation).	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
<b>Eyes</b>	Redness. Pain.	Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
<b>Ingestion</b>	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Symbol R: S: UN Hazard Class: 4.2 UN Subsidiary Risks: 6.1 UN Pack Group: I Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs.

EMERGENCY RESPONSE	STORAGE
Transport Emergency Card: TEC (R)-42G11 NFPA Code: H4; F4; R2;	Fireproof. Separated from strong oxidants, food and feedstuffs, halogens. Cool. Dry. Under nitrogen atmosphere.

### IMPORTANT DATA

**Physical State; Appearance**

COLOURLESS LIQUID, WITH PUNGENT ODOUR.

**Physical Dangers**

The vapour is heavier than air.

**Chemical Dangers**

The substance decomposes slowly on heating to 150°C to form boron and the flammable gas hydrogen - see ICSC # 0001, and on burning producing toxic fumes (boron oxides). Reacts with halogens, halogenated compounds, oils and greases, and oxidants causing fire and explosion hazard. Impure material ignites spontaneously in air.

**Occupational Exposure Limits**

TLV: 0.005 ppm; 0.013 mg/m<sup>3</sup> (as TWA);  
0.015 ppm; 0.039 mg/m<sup>3</sup> (as STEL) (ACGIH 1998).  
MAK: 0.005 ppm; 0.013 mg/m<sup>3</sup>; (1998)

**Routes of Exposure**

The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion.

**Inhalation Risk**

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

**Effects of Short-term Exposure**

The substance severely irritates the eyes, the skin and the respiratory tract. The substance may cause effects on the central nervous system and liver, resulting in convulsions, acidosis and liver impairment. Exposure above the OEL may result in death. The effects may be delayed. Medical observation is indicated.

### PHYSICAL PROPERTIES

Boiling point: 60°C  
Melting point: -47°C  
Relative density (water = 1): 0.6  
Solubility in water: reacts  
Vapour pressure, kPa at 20°C: 22.8

Relative vapour density (air = 1): 2.2  
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.3  
Flash point: 30°C c.c.  
Auto-ignition temperature: approx. 35°C  
Explosive limits, vol% in air: 0.42-98

### ENVIRONMENTAL DATA

### NOTES

Reacts violently with fire extinguishing agents such as halons. The symptoms of some effects do not become manifest until up to 48 hours later. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT take working clothes home.

### ADDITIONAL INFORMATION

**LEGAL NOTICE**

Neither the EC nor the IPCS nor any person acting on behalf of the EC or the IPCS is responsible