

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

## 1 Identification of substance:

### Product details:

**Product name:** Boron phosphide

**Stock number:** 32586

### Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company  
Johnson Matthey Catalog Company, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Emergency Phone: (978) 521-6300  
CHEMTREC: (800) 424-9300  
Web Site: [www.alfa.com](http://www.alfa.com)

**Information Department:** Health, Safety and Environmental Department

### Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

## 2 Composition/Data on components:

### Chemical characterization:

#### Description: (CAS#)

Boron phosphide (CAS# 20205-91-8): 100%

#### Identification number(s):

EINECS Number: 243-593-3

## 3 Hazards identification

### Hazard description:



T Toxic  
F Highly flammable

### Information pertaining to particular dangers for man and environment

R 15/29 Contact with water liberates toxic, extremely flammable gas.

R 25 Toxic if swallowed.

### Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	3
FIRE	2
REACTIVITY	3

Health (acute effects) = 3

Flammability = 2

Reactivity = 3

### GHS label elements



**Danger**

2.12/1 - In contact with water releases flammable gases which may ignite spontaneously.



**Danger**

3.1/2 - Fatal if swallowed.

### Prevention:

Handle under inert gas. Protect from moisture.

Keep container tightly closed.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Wear protective gloves/protective clothing/eye protection/face protection.

### Response:

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Specific treatment (see label).

Rinse mouth.

Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

In case of fire: Use for extinction: CO2, powder or water spray.

### Storage:

Store in a dry place. Store in a closed container.

Store locked up.

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**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing**

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

**For safety reasons unsuitable extinguishing agents** Water**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Boron oxide

Phosphorus oxides

Hydrogen phosphide (Phosphine)

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Mount respiratory protective device.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

Keep away from ignition sources.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Handle under dry protective gas.

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:**

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:**

Store away from water/moisture.

Do not store together with acids.

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**Product name:** Boron phosphide

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**Further information about storage conditions:**

Store under dry inert gas.  
 This product is moisture sensitive.  
 Keep container tightly sealed.  
 Store in cool, dry conditions in well sealed containers.  
 Protect from humidity and water.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:** Not required.

**Additional information:** No data

**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.  
 Keep away from foodstuffs, beverages and feed.  
 Remove all soiled and contaminated clothing immediately.  
 Wash hands before breaks and at the end of work.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality.  
 Quality will vary from manufacturer to manufacturer.

**Eye protection:**

Safety glasses

Full face protection

**Body protection:** Protective work clothing.

**9 Physical and chemical properties:****General Information**

<b>Form:</b>	Powder
<b>Color:</b>	Red-brown
<b>Odor:</b>	Not determined

**Change in condition**

<b>Melting point/Melting range:</b>	200°C (392°F)
<b>Boiling point/Boiling range:</b>	Not determined
<b>Sublimation temperature / start:</b>	Not determined

<b>Flash point:</b>	Not applicable
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<b>Flammability (solid, gaseous)</b>	Contact with water liberates extremely flammable gases.
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<b>Ignition temperature:</b>	Not determined
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<b>Decomposition temperature:</b>	Not determined
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**Explosion limits:**

<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined

<b>Vapor pressure:</b>	Not determined
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<b>Density:</b>	Not determined
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**Solubility in / Miscibility with**

<b>Water:</b>	Contact with water releases flammable gases
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**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Water/moisture

Acids

**Dangerous reactions**

Contact with water releases flammable gases

Contact with water releases toxic gases

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**Product name:** Boron phosphide

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Contact with acids releases toxic gases

**Dangerous products of decomposition:**

Boron oxide

Phosphorus oxides (e.g. P2O5)

Hydrogen phosphide (Phosphine)

**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Inorganic phosphorus compounds may cause irritation and hemorrhages in the stomach as well as liver and kidney damage. Bone structure may be attacked, especially the jaw and teeth.

**Subacute to chronic toxicity:**

Boron affects the central nervous system. Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body.

Phosphine, if generated, is a very toxic, flammable gas. The chief effects are central nervous system depression and lung irritation. Inhalation can cause coma and convulsions leading to death within 48 hours.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****General notes:**

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:****Recommendation:** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**14 Transport information****DOT regulations:****Hazard class:**

4.3

**Identification number:**

UN3134

**Packing group:**

I

**Proper shipping name (technical name):** WATER-REACTIVE SOLID, TOXIC, N.O.S. (Boron phosphide)**Label**

4.3+6.1

**Land transport ADR/RID (cross-border)****ADR/RID class:**

4.3 (WT2) Substances which, in contact with water, emit flammable gases

**Danger code (Kemler):**

-

**UN-Number:**

3134

**Packing group:**

I

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Product name: Boron phosphide

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**Description of goods:** 3134 WATER-REACTIVE SOLID, TOXIC, N.O.S. (Boron phosphide)

**Maritime transport IMDG:**

**IMDG Class:** 4.3  
**UN Number:** 3134  
**Label** 4.3+6.1  
**Packaging group:** I  
**Proper shipping name:** WATER-REACTIVE SOLID, TOXIC, N.O.S. (Boron phosphide)

**Air transport ICAO-TI and IATA-DGR:**

**ICAO/IATA Class:** 4.3  
**UN/ID Number:** 3134  
**Label** 4.3+6.1  
**Packaging group:** I  
**Proper shipping name:** WATER-REACTIVE SOLID, TOXIC, N.O.S. (Boron phosphide)

**UN "Model Regulation":** UN3134, WATER-REACTIVE SOLID, TOXIC, N.O.S., 4.3 (6.1), I

## 15 Regulations

**Product related hazard informations:****Hazard symbols:**

T Toxic  
 F Highly flammable

**Risk phrases:**

15/29 Contact with water liberates toxic, extremely flammable gas.  
 25 Toxic if swallowed.

**Safety phrases:**

7/8 Keep container tightly closed and dry.  
 20 When using do not eat or drink.  
 33 Take precautionary measures against static discharges.  
 36 Wear suitable protective clothing.  
 43 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.  
 45 In case of accident or if you feel unwell, seek medical advice immediately.  
 60 This material and its container must be disposed of as hazardous waste.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

**Information about limitation of use:** For use only by technically qualified individuals.

## 16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 IMDG: International Maritime Code for Dangerous Goods  
 DOT: US Department of Transportation  
 IATA: International Air Transport Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organization

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ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)

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