

# SAFETY DATA SHEET

Date Printed: 04/19/2024

Date Revised: 01/15/2022

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (4N) 99.99% Boron Phosphide

**Product Code:** BO-P-04

**CAS Number:** 20205-91-8

**Relevant identified uses of the substance:** Scientific research and development

Supplier details:

American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351  
Emergency telephone number:  
+1 800-424-9300

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## SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS02 Flame

Water-react. 3 H261 In contact with water releases flammable gas.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

Xi; Irritant

R36/37/38: Irritating to eyes, respiratory system and skin.

N; Dangerous for the environment

R50: Very toxic to aquatic organisms.

R31: Contact with acids liberates toxic gas.

Information concerning particular hazards for human and environment:

N/A

Hazards not otherwise classified

No data available

Label elements

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labeled according to the CLP regulation.

## Hazard pictograms



GHS02

GHS07

Signal word

Warning

Hazard statements

H261 In contact with water releases flammable gas.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Precautionary statements

P231+P232 Handle under inert gas. Protect from moisture.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

B6 - Reactive flammable material

D1B - Toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH

FIRE

REACTIVITY

2

3

3

Health (acute effects) = 2

Flammability = 3

Physical Hazard = 3

Other hazards

Results of PBT and vPvB assessment

PBT:

N/A

vPvB:

N/A

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization:

Description: (CAS#)

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

Identification number(s):

EINECS Number: 243-593-3

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## SECTION 4. FIRST AID MEASURES

Description of first aid measures

If inhaled:

Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

In case of skin contact:

Immediately wash with soap and water; rinse thoroughly.

Seek immediate medical advice.

In case of eye contact:

Rinse opened eye for several minutes under running water. Consult a physician.

If swallowed:

Seek medical treatment.

Information for doctor

Most important symptoms and effects, both acute and delayed

No data available

Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5. FIREFIGHTING MEASURES

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.

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

Accidental release measures

Person-related safety precautions:

Mount respiratory protective device.

Use personal 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 official 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.

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## **SECTION 7. HANDLING AND STORAGE**

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.

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.

Store under lock and key and with access restricted to technical experts or their assistants only.

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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

Inspect gloves prior to use.

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.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and chemical properties:

General Information

Form: Powder

Color: Red-brown

Odor: No data available

Melting point/Melting range: 200°C (392°F)

Boiling point/Boiling range: No data available

Sublimation temperature / start: No data available

Flash point: N/A

Flammability (solid, gas) Contact with water liberates extremely flammable gases.

Ignition temperature: No data available

Decomposition temperature: No data available

Explosion limits:

Lower: No data available

Upper: No data available

Vapor pressure: No data available

Density: No data available

Solubility in / Miscibility with

Water: Contact with water releases flammable gases

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## SECTION 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  
Contact with acids releases toxic gases

Dangerous products of decomposition:

Boron oxide

Phosphorus oxides (e.g. P<sub>2</sub>O<sub>5</sub>)

Hydrogen phosphide (Phosphine)

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

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 effects 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.

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## **SECTION 12. ECOLOGICAL INFORMATION**

General notes:

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

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Waste treatment methods

Recommendation

Consult official regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation:  
Disposal must be made according to official regulations.

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## SECTION 14. TRANSPORT INFORMATION

DOT regulations  
Hazard class: 4.3  
Identification number: UN3134  
Packing group: II  
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 Substances which, in contact with water, emit flammable gases  
Item: 22a  
Danger code (Kemler): 462  
UN-Number: 3134  
Description of goods: 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: II  
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: II  
Proper shipping name: Water-reactive solid, toxic, n.o.s. (boron phosphide)

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## SECTION 15. REGULATORY INFORMATION

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.

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## 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.