

<a href="#">Black Phosphorus</a>		<a href="#">Pricing &gt;</a>
<b>Linear Formula</b>	P	
<b>Pubchem CID</b>	5462309	
<b>MDL Number</b>	MFCD00011435	
<b>EC No.</b>	231-768-7	
<b>IUPAC Name</b>	phosphorus	
<b>SMILES</b>	[P]	
<b>Inchl Identifier</b>	InChI=1S/P	
<b>Inchl Key</b>	OAICVXFJPJFONN-UHFFFAOYSA-N	
<b>Signal Word</b>	Warning	
<b>Hazard Statements</b>	H228-H412	
<b>Hazard Codes</b>	f	
<b>Risk Codes</b>	N/A	
<b>Safety Statements</b>	N/A	
<b>Transport Information</b>	UN1338 4.1/PG III	

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## SAFETY DATA SHEET

Date Accessed: 09/19/2024

Date Revised: 01/15/2022

### SECTION 1. IDENTIFICATION

**Product Identifiers:** All applicable American Elements product codes for CAS #7723-14-0

**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:  
Domestic, North America +1 800-424-9300  
International +1 703-527-3887

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## SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture  
GHS Classification in accordance with 29 CFR 1910  
(OSHA HCS)

Flammable solids (Category 2), H228  
Acute aquatic toxicity (Category 3), H402  
Chronic aquatic toxicity (Category 3), H412

2.2 GHS Label elements, including precautionary  
statements



Pictogram

Signal word Warning

Hazard statement(s)

H228 Flammable solid.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot  
surfaces. No smoking.

P240 Ground/bond container and receiving  
equipment.

P241 Use explosion-proof electrical/ ventilating/  
lighting/ equipment.

P273 Avoid release to the environment.

P280 Wear protective gloves/ eye protection/ face  
protection.

P370 + P378 In case of fire: Use dry sand, dry  
chemical or alcohol-resistant foam to  
extinguish.

P501 Dispose of contents/ container to an approved  
waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not  
covered by GHS - none

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : Phosphorus

Formula : P

Molecular weight : 30.97 g/mol  
CAS-No. : 7723-14-0  
EC-No. : 231-768-7  
Index-No. : 015-002-00-7  
Hazardous components  
Component Classification Concentration  
Red phosphorus  
Flam. Sol. 2; Aquatic Acute 3;  
Aquatic Chronic 3; H228,  
H412  
<= 100 %

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## **SECTION 4. FIRST AID MEASURES**

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## **SECTION 5. FIREFIGHTING MEASURES**

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2 Special hazards arising from the substance or mixture

Oxides of phosphorus

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

#### 5.4 Further information

Use water spray to cool unopened containers.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

### 6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing Vapors, mist or gas. Ensure adequate ventilation. Remove all sources of

ignition. Evacuate personnel to safe areas.

For personal protection see section 8.

### 6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment

must be avoided.

### 6.3 Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing

and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wetbrushing

and transfer to a container for disposal according to local regulations (see section 13).

### 6.4 Reference to other sections

For disposal see section 13.

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

### 7.1 Precautions for safe handling

Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible

dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No

smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Air-, heat-, and moisture-sensitive. Keep in a dry place. Handle and store under inert gas.

Storage class (TRGS 510): Flammable solid hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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

8.1 Control parameters

Components with workplace control parameters

Component CAS-No. Value Control parameters

Basis

Red phosphorus 7723-14-0 TWA 0.100000 mg/m<sup>3</sup>

USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 0.1 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 0.100000 mg/m<sup>3</sup>

USA. NIOSH Recommended Exposure Limits

TWA 0.1 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166

Use equipment for eye protection tested and approved

under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after

use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Body Protection

Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to

the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the

sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and

approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

a) Appearance Form: crystalline

Colour: grey

b) Odor No data available

c) Odor Threshold No data available

d) pH ca.3 at 10 g/l at 37 °C (99 °F)

e) Melting point/freezing point

Melting point/range: 416 °C (781 °F)

f) Initial boiling point and boiling range

No data available

g) Flash point N/A

h) Evaporation rate No data available

i) Flammability (solid, gas) The substance or mixture is a flammable solid with the category 2.

j) Upper/lower flammability or explosive limits

No data available

k) Vapor pressure 0.04 hPa (0.03 mmHg) at 21 °C (70 °F)

l) Vapor density No data available

m) Relative density 2.340 g/cm<sup>3</sup>

n) Water solubility 0.3 g/l at 20 °C (68 °F) - slightly

soluble  
o) Partition coefficient: noctanol/  
water  
No data available  
p) Auto-ignition  
temperature  
> 300 °C (> 572 °F) at 1,013 hPa (760 mmHg)  
q) Decomposition  
temperature  
No data available  
r) Viscosity No data available  
s) Explosive properties No data available  
t) Oxidizing properties No data available  
9.2 Other safety information  
No data available

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## **SECTION 10. STABILITY AND REACTIVITY**

10.1 Reactivity  
No data available  
10.2 Chemical stability  
Stable under recommended storage conditions.  
10.3 Possibility of hazardous reactions  
No data available  
10.4 Conditions to avoid  
Heat  
Heat, flames and sparks.  
10.5 Incompatible materials  
Sulphur compounds, Oxidizing agents, Copper,  
Oxygen, Bases  
10.6 Hazardous decomposition products  
Other decomposition products - No data available  
In the event of fire: see section 5

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

11.1 Information on toxicological effects  
Acute toxicity  
LD50 Oral - Rat - female - > 15,000 mg/kg  
(OECD Test Guideline 401)  
Inhalation: No data available  
Dermal: No data available  
No data available  
Skin corrosion/irritation  
Skin - Rabbit  
Result: No skin irritation - 24 h  
(OECD Test Guideline 404)  
Serious eye damage/eye irritation  
Eyes - Rabbit  
Result: No eye irritation - 24 h

(OECD Test Guideline 405)  
Respiratory or skin sensitisation  
Buehler Test - Guinea pig  
Result: Does not cause skin sensitisation.  
(OECD Test Guideline 406)  
Germ cell mutagenicity  
Hamster  
fibroblast  
Result: negative  
Carcinogenicity  
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.  
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.  
Reproductive toxicity  
No data available  
No data available  
Specific target organ toxicity - single exposure  
No data available  
Specific target organ toxicity - repeated exposure  
No data available  
Aspiration hazard  
No data available  
Additional Information  
RTECS: Not available  
Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue., Vomiting, Diarrhoea, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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## **SECTION 12. ECOLOGICAL INFORMATION**

### 12.1 Toxicity

Toxicity to fish static test LC50 - Danio rerio (zebra fish) - 33.2 mg/l - 96 h

(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - Daphnia magna (Water flea) - 10.5 mg/l - 48 h

(OECD Test Guideline 202)

Toxicity to algae static test EC50 - Desmodesmus subspicatus (green algae) - 18.3 mg/l - 72 h



(OECD Test Guideline 201)  
Toxicity to bacteria Respiration inhibition EC50 -  
Sludge Treatment - > 1,000 mg/l - 3 h  
(OECD Test Guideline 209)  
12.2 Persistence and degradability  
No data available  
12.3 Bioaccumulative potential  
No data available  
12.4 Mobility in soil  
No data available  
12.5 Results of PBT and vPvB assessment  
PBT/vPvB assessment not available as chemical  
safety assessment not required/not conducted  
12.6 Other adverse effects  
An environmental hazard cannot be excluded in the  
event of unprofessional handling or disposal.  
Harmful to aquatic life with long lasting effects.

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

13.1 Waste treatment methods  
Product  
Burn in a chemical incinerator equipped with an  
afterburner and scrubber but exert extra care in  
igniting as this  
material is highly flammable. Offer surplus and non-  
recyclable solutions to a licensed disposal company.  
Contaminated packaging  
Dispose of as unused product.

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## **SECTION 14. TRANSPORT INFORMATION**

DOT (US)  
UN number: 1338 Class: 4.1 Packing group: III  
Proper shipping name: Phosphorus, amorphous  
Reportable Quantity (RQ): 1 lbs  
Poison Inhalation Hazard: No  
IMDG  
UN number: 1338 Class: 4.1 Packing group: III EMS-  
No: F-A, S-G  
Proper shipping name: PHOSPHORUS,  
AMORPHOUS  
Marine pollutant:yes  
IATA  
UN number: 1338 Class: 4.1 Packing group: III  
Proper shipping name: Phosphorus, amorphous

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## **SECTION 15. REGULATORY INFORMATION**

### SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

Red phosphorus

CAS-No.

7723-14-0

Revision Date

1991-07-01

### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Red phosphorus

CAS-No.

7723-14-0

Revision Date

1991-07-01

### SARA 311/312 Hazards

Fire Hazard

Massachusetts Right To Know Components

Red phosphorus

CAS-No.

7723-14-0

Revision Date

1991-07-01

Pennsylvania Right To Know Components

Red phosphorus

CAS-No.

7723-14-0

Revision Date

1991-07-01

New Jersey Right To Know Components

Red phosphorus

CAS-No.

7723-14-0

Revision Date

1991-07-01

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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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.

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