

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (4N) 99.99% Zinc Tin Phosphide Powder

**Product Code:** ZN-SNP-04-P

**CAS Number:** N/A

**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

## SECTION 2. HAZARDS IDENTIFICATION

Hazardous Components (Chemical Name): Tin Phosphide

CAS No. 25324-56-5

Concentration: 0.0 -100.0 %

OSHA PEL: 2 mg(Sn)/m3

ACGIH TLV: 2 mg(Sn)/m3

Other Limits: NE



Hazard statement

In contact with water releases flammable gases which may ignite spontaneously. Toxic if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Toxic if inhaled. May cause drowsiness or dizziness. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention: Do not allow contact with water. Handle under inert gas. Protect from moisture. Avoid breathing dust. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Zinc Tin Phosphide Powder  
Formula:  $\text{ZnSnP}_2$

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## SECTION 4. FIRST AID MEASURES

INHALATION: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention immediately.

INGESTION: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention immediately. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention.

EYE: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention.

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## SECTION 5. FIREFIGHTING MEASURES

FLASH PT: N.A.

Method Used: Unknown

LEL: NE

UEL: NE

EXPLOSIVE LIMITS:

EXTINGUISHING MEDIA

USE: Class D or other extinguishing agent for metal fires.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

UNUSUAL FIRE AND EXPLOSION HAZARDS

DANGEROUS WHEN WET.

When heated to decomposition, tin phosphide may emit toxic oxides of phosphorus.

On contact with water, steam, moisture or alkali, it may yield spontaneously flammable, phosphine gas.

HAZARDOUS COMBUSTION PRODUCTS: N.A.

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear appropriate respiratory and protective equipment specified in section VIII-control measures.

Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal.

Take care not to raise dust. Use non-sparking tools.

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## SECTION 7. HANDLING AND STORAGE

### PRECAUTIONS TO BE TAKEN IN HANDLING

May react with water, steam and moisture. Handle in a controlled environment and under an inert gas such as argon.

### HAZARD LABEL INFORMATION:

Store in cool, dry area. Store in tightly sealed container. Wash thoroughly after handling

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION:

NIOSH approved respirator Impervious gloves Safety goggles Clothes to prevent skin contact

### RESPIRATORY EQUIPMENT (SPECIFY TYPE)

NIOSH - approved respirator

### EYE PROTECTION

Safety goggles

### PROTECTIVE GLOVES

Impervious gloves

### OTHER PROTECTIVE CLOTHING

Protective gear suitable to prevent contamination

### VENTILATION

Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

Special: Handle in a controlled environment

Mechanical (Gen): Not recommended

Other: Handle and store in an inert gas such as argon

### WORK/HYGIENIC/MAINTENANCE PRACTICES

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATES: Solid

MELTING POINT: N.A.

BOILING POINT: N.A.

SPECIFIC GRAVITY (WATER = 1): N.A.

VAPOR PRESSURE (VS. AIR OR MM HG): N.A.

VAPOR DENSITY (VS. AIR = 1): N.A.

EVAPORATION RATE (VS BUTYL ACETATE=1): N.A.

SOLUBILITY IN WATER: N.A.

SOLUBILITY NOTES: N.A.

PERCENT VOLATILE: N.A.

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## SECTION 10. STABILITY AND REACTIVITY

STABILITY: Unstable

### CONDITIONS TO AVOID - INSTABILITY

Protect from moisture

## INCOMPATIBILITY - MATERIALS TO AVOID

Water, steam, moisture and alkalis

## HAZARDOUS DECOMPOSITION OR BY PRODUCTS

Oxides of phosphorus and phosphine

HAZARDOUS POLYMERIZATION: Will not occur

## CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

None

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## SECTION 11. TOXICOLOGICAL INFORMATION

### HEALTH HAZARDS (ACUTE AND CHRONIC)

To the best of our knowledge the chemical, physical and toxicological properties of tin phosphide have not been thoroughly investigated and recorded.

Tin compounds have variable toxicity. Elemental tin and inorganic tin compounds have low toxicity and are poorly absorbed when ingested. Some inorganic tin salts are irritating or can liberate toxic fumes on decomposition. The latter is particularly true of tin halogens. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Phosphides are particularly dangerous because they tend to decompose to the very toxic phosphine upon contact with moisture or acids. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Phosphine is a poison by inhalation. A very toxic gas whose effects are central nervous system depression and lung irritation. There may be pulmonary edema, dilation of the heart, and hyperemia of the visceral organs. Inhalation can cause coma and convulsions leading to death within 48 hours.

(Sax, Dangerous Properties of Industrial Materials, eighth edition)

### INHALATION:

Acute: POISON. Inhalation of dust or powder may cause irritation to the respiratory system. Phosphine may cause thirst, chest pressure, dyspnea, muscle pain, chills and stupor.

Chronic: Inhalation of finely divided powder may cause pulmonary fibrosis. Phosphine may cause anemia, bronchitis, gastrointestinal disturbances. Visual, speech and motor disturbances may result from continued exposure to very low concentrations.

### INGESTION:

Acute: POISON. May cause nausea, vomiting, abdominal pain and diarrhea.

Chronic: No chronic health hazards recorded.

### SKIN:

Acute: May cause irritation.

Chronic: No chronic health effects recorded.

### EYE:

Acute: May cause irritation.

Chronic: May cause visual disturbances.

TARGET ORGANS: May affect the respiratory and central nervous system.

CARCINOGENICITY: NTP? No IARC Monographs? No OSHA Regulated? No

### RECOMMENDED EXPOSURE LIMITS

See "Section II"

LD 50 / LC 50

No toxicity data recorded

### SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: May cause a red, dry, throat and coughing. Phosphine may cause thirst, chest pressure, shortness of breath, muscle pain, chills and stupor.

INGESTION: May cause nausea, vomiting, abdominal pain and diarrhea.

SKIN: May cause red, itching and burning.

EYE: May cause red, itching and watering.

### MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Pre-existing respiratory disorders.

### EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention immediately.

INGESTION: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention immediately. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention.

EYE: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention.

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## **SECTION 12. ECOLOGICAL INFORMATION**

N/A

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

### **WASTE DISPOSAL METHOD**

Dispose of in accordance with local, state and federal regulations.

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## **SECTION 14. TRANSPORT INFORMATION**

TSCA: No

Hazard Labeling:

STANNIC PHOSPHIDE

Shipping Classification:

UN Number: UN1433

UN Proper shipping name: Stannic phosphides

Transport hazard class(es)

Hazard Class: 4.3

Subsidiary risk: 6.1(PG1, II)

Packing group: I

Environmental hazards: No

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## **SECTION 15. REGULATORY INFORMATION**

The chemical(s) listed herein is not found on the Toxic Substance Control Act chemical substance inventory. This chemical may not be used for commercial purposes. This chemical may be used for research and development purposes only as defined at 40 CFR 710.2(y).

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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

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