

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (5N) 99.999% Zirconium Phosphide Powder

**Product Code:** ZR-P-05-P

**CAS Number:** 12037-72-8

**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

## SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Corrosive to metals(Category 1), H290

Acute toxicity, Oral(Category 3), H301

Acute toxicity, Inhalation(Category 4), H332

Skin corrosion(Category 1A), H314

Serious eye damage(Category 1), H318

Acute aquatic toxicity(Category 1), H400

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H290

May be corrosive to metals.

H301

Toxic if swallowed.

H314

Causes severe skin burns and eye damage.

H332

Harmful if inhaled.

H400

Very toxic to aquatic life.

Precautionary statement(s)

P234

Keep only in original container.

P260

Do not breathe dust or mist.

P264

Wash skin thoroughly after handling.

P270

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

P271

Use only outdoors or in a well-ventilated area.

P273

Avoid release to the environment.

P280

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

P301 + P310

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

P301 + P330 + P331

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353

IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338

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

P310

Immediately call a POISON CENTER or doctor/ physician.

P321

Specific treatment (see supplemental first aid instructions on this label).

P363

Wash contaminated clothing before reuse.

P390

Absorb spillage to prevent material damage.

P391

Collect spillage.

P405

Store locked up.

P406

Store in corrosive resistant stainless steel container with a resistant inner liner.

P501

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

Hazards not otherwise classified (HNOC) or not covered by GHS

Contact with acids liberates toxic gas.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY: Metal phosphide  
CAS NUMBER: 12037-72-8  
FORMULA: ZrP  
MOLECULAR WEIGHT: 122.19

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## SECTION 4. FIRST AID MEASURES

### 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 5. FIREFIGHTING MEASURES

FLASH PT: N.A. Method Used: Unknown  
EXPLOSIVE LIMITS: LEL: NE UEL: NE  
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, zirconium phosphide may emit toxic oxides of phosphorus. On contact with water, steam, moisture or alkali, it may slowly yield spontaneously flammable, phosphine gas.

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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

### HAZARD LABEL INFORMATION:

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

### PRECAUTIONS TO BE TAKEN IN HANDLING

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

### OTHER PRECAUTIONS

None

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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: ☐ Gas ☐ Liquid ☒ Solid

MELTING POINT: N.A.

BOILING POINT: N.A.

SPECIFIC GRAVITY (WATER = 1): 4.77

BULK DENSITY: No data.

VAPOR PRESSURE (VS. AIR OR MM HG): No data.

VAPOR DENSITY (VS. AIR = 1): No data.

EVAPORATION RATE (VS BUTYL ACETATE=1): No data.

SOLUBILITY IN WATER: No data.

PERCENT VOLATILE: N.A.  
CORROSION RATE: No data.  
APPEARANCE AND ODOR

Grey powder and pieces; no odor

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

STABILITY: Unstable [ X ] Stable [ ]  
CONDITIONS TO AVOID - INSTABILITY

Protect from moisture and water.  
INCOMPATIBILITY - MATERIALS TO AVOID

Water, steam, moisture

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

Oxides of phosphorus and phosphine  
HAZARDOUS POLYMERIZATION: Will occur [ ] Will not occur [ X ]  
CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

None

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

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.

TARGET ORGANS: May affect the skin, 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

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## **SECTION 12. ECOLOGICAL INFORMATION**

GENERAL NOTES

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

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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

DOT regulations:

Hazard class: 4.3

Identification number: UN2813

Packing group: III

Proper shipping name (technical name): Water-reactive solid, n.o.s. (Zirconium phosphide)

Land transport ADR/RID (cross-border)

ADR/RID class: 4.3 Substances which, in contact with water, emit flammable gases

Danger code (Kemler): 423

UN-Number: 2813

Description of goods: Water-reactive solid, n.o.s. (Zirconium phosphide)

Maritime transport IMDG:

IMDG Class: 4.3

UN Number: 2813

Packaging group: III

Proper shipping name: Water-reactive solid, n.o.s. (Zirconium phosphide)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 4.3

UN/ID Number: 2813

Packaging group: III

Proper shipping name: Water-reactive solid, n.o.s. (Zirconium phosphide)

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## SECTION 15. REGULATORY INFORMATION

CAS No. 7440-00-8 EINECS No. 2311093 EEC No. UN No. 2813 RTECS No. QO8575000

Hazard Indication FLAMMABLE SOLID ~ IRRITANT

Risk & Safety Phrases Highly flammable.

Irritating to eyes, respiratory system and skin.

Keep away from sources of ignition - No Smoking.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Take precautionary measures against static discharges.

Wear suitable protective clothing, gloves and eye/face protection.

TSCA Listed substance

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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

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