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.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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

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.

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.

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.

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

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATES: [ ] Gas [ ] Liquid [ X ] 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

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

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

SECTION 12. ECOLOGICAL INFORMATION

GENERAL NOTES
Do not allow material to be released to the environment without official permits.
SECTION 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

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

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)

SECTION 15. REGULATORY INFORMATION

CAS No. 7440-00-8 EINECS No. 2311093 EEC No. UN No. 2813 RTECS No. QQ8575000
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

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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