



CHINATUNGSTEN

PRODUCT IDENTIFICATION

3F, NO.25 WH Rd, 2# XIAMEN SOFTWARE PARK,
XIAMEN, FUJIAN, CHINA, 361008

| | |
|------------------|--------------|
| Trade Name: | Cerium |
| Synonym | Cerium Metal |
| Chemical Nature | Lanthanides |
| Formula: | Ce |
| CAS Number: | 7440-45-1 |
| Molecular Weight | 140.12 |

II. HAZARDOUS INGREDIENTS

Hazardous Components Cerium Metal

| | |
|------------|----------------------|
| %: | 0-100 |
| OSHA/PEL: | 15 mg/m ³ |
| ACGIH/TLV: | 10 mg/m ³ |
| Other: | 5 mg/m ³ |

HMIS Ratings Health 2 Flammability: 3 Reactivity 2 Protective Equipment: glasses, gloves, dust mask

III. PHYSICAL DATA

| | |
|---------------------------------|-----------------------------------|
| Boiling Point | 3257 to 3426 °C |
| Melting Point | 795 to 799 °C |
| Specific Gravity | 6.689 grams/cc |
| Vapor Density | N/A |
| % Volatiles | N/A |
| Solubility in H ₂ O: | Decomposes to form H ₂ |
| Appearance and Odor | Silver powder and pieces, no odor |
| Physical State | Solid |

IV. FIRE AND EXPLOSION HAZARDS DATA

| | |
|------------------|--------------------------|
| Flash Point | N/A |
| Method Used | Flammable solid |
| Flammable Limits | Upper: N/A Lower: N/A |

Extinguishing Media Use Class D or other metal extinguishing agent. DO NOT USE WATER.

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 & Explosion Hazard Strong reducing agent. Ignites spontaneously in air at 150-180 °F. Moderate explosion hazard in the form of dust when exposed to flame. Readily oxidizes in moist air at room temperature. Reacts with water and acids to form flammable hydrogen gas. The metal or its alloys spark with friction. May have an explosive reaction with zinc. May have a very exothermic reaction with bismuth or antimony. Ignites when heated with phosphorus and silicon.

V. HEALTH HAZARD INFORMATION

Effects of Exposure

The greatest exposures are likely to be during manufacturing of cerium. Exposed workers have experienced sensitivity to heat, itching and skin lesions. Large doses to experimental animals have caused writhing, ataxia (loss of muscle coordination), labored respiration, sedation, hypotension and death by cardiovascular collapse. The salts of cerium increase the blood coagulation rate. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Cerium is considered a rare earth metal. These metals are moderately to highly toxic. The symptoms of toxicity of the rare earth elements include writhing, ataxia, labored respiration, walking on the toes with arched back and sedation. The rare earth elements exhibit low toxicity by ingestion exposure. However, the intraperitoneal route is highly toxic while the subcutaneous route is poison to moderately toxic. The production of skin and lung granulomas after exposure to them requires extensive protection to prevent such exposure. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Acute Effects

Inhalation May cause irritation to the respiratory tract and mucous membrane. Dusts may cause asthma attacks and lung damage such as lung granulomas. Large doses may cause writhing, loss of muscle coordination, labored respiration, sedation, hypotension and cardiovascular collapse.

Ingestion: May cause gastrointestinal irritation.

Skin: May cause irritation, rashes and skin granulomas.

Eye: May cause irritation.

Chronic Effects

Inhalation Prolonged or repeated inhalation may cause writhing, loss of muscle coordination, labored respiration, sedation, hypotension and cardiovascular collapse.

Ingestion: May affect the coagulation rate of the blood.
Skin: May cause dermatitis, sensitivity to heat, itching and skin lesions.
Eye: No chronic health effects recorded.

Target Organs: May affect the respiratory system, blood and skin.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No
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.

INGESTION : Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. 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 if irritation persists.

EYES : Flush with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if irritation persists.

VI. REACTIVITY DATA

Stability: Unstable

Conditions To Avoid Instability: Air and moisture

Conditions to Avoid: Thin foils & powders in air, heat and flame.

Incompatibility (Material to Avoid): Strong acids, water, moisture, zinc, antimony, bismuth, carbon dioxide, halogens, phosphorus, silicon, strong oxidizing agents.

Hazardous Decomposition Products: Hydrogen gas

Hazardous Polymerization: Will not occur

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Wear appropriate respiratory and protective equipment specified in Section VIII. 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.

Waste Disposal Method: Dispose of in accordance with Local, State and Federal waste disposal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) NIOSH approved dust respirator.
Ventilation Use local exhaust to maintain concentration at or below the PEL, TLV. Handle in a controlled atmosphere, in an inert gas such as argon. General exhaust is not recommended
Protective Gloves Neoprene, PVC, Butyl gloves
Eye Protection Safety glasses
Other Protective Clothing or Equipment Protective gear suitable to prevent contamination.

IX. SPECIAL PRECAUTIONS

Precautions To Be Taken in Handling and Storage Store metal in inert gas or oil to prevent oxidation.
Other Precautions: Thin foils and finely divided metal can oxidize rapidly in air.
Work 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.

DOT Regulations

Hazard Class: 4.1
Identification Number UN1333
Packing Group II
Proper Shipping Name Cerium (slabs, ingots or rods)
Hazard Class: 4.3
Identification Number UN3078
Packing Group II
Proper Shipping Name Cerium (turnings or gritty powder)

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI shall not be held liable for any damages resulting from handling or from contact with the above product.