

# SDS

## Safety Data Sheet

per 29 CFR 1910.1200



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Creating Materials & Energy Solutions

U.S. DEPARTMENT OF ENERGY

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# Ytterbium

## SAFETY DATA SHEET

### 1 PRODUCT AND SUPPLIER IDENTIFICATION

**Product Name:** Ytterbium - pieces, ingot, rod, sheet, target  
**Formula:** Yb

**Supplier:** Ames Laboratory, US DOE  
Materials Preparation Center  
121 Metals Development  
Ames, IA 50010 USA

**Telephone:** 515-294-5236

**Fax:** 515-294-8727

**Email:** [mpc@ameslab.gov](mailto:mpc@ameslab.gov)

**Emergency:** 515-294-3483 (24 hour)

**Recommended Uses:** Scientific Research

### 2 HAZARDS IDENTIFICATION

**GHS Classification (29 CFR 1910.1200):** Not classified as hazardous

**GHS Label Elements:**

**Signal Word:** N/A

**Hazard Statements:** N/A

**Precautionary Statements:** N/A

### 3 COMPOSITION/INFORMATION ON INGREDIENTS

**Ingredient:** Ytterbium

**CAS#:** 7440-64-4

**%:** 100

**EC#:** 231-173-2

### 4 FIRST AID MEASURES

**General Measures:** Under normal handling and use, exposure to solid forms of this material present few health hazards. Subsequent operations such as grinding, melting or welding may create dusts or fumes which could be inhaled or contact skin or eyes.

**INHALATION:** Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

**INGESTION:** Rinse mouth with water. Do not 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 soap and water. Seek medical attention if symptoms persist.

**EYES:** Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

**Most Important Symptoms/Effects, Acute and Delayed:** See section 11 for more information.

**Indication of Immediate Medical Attention and Special Treatment:** No other relevant information available.

### 5 FIREFIGHTING MEASURES

**Extinguishing Media:** Use Class D dry powder extinguishing agent.

**Unsuitable Extinguishing Media:** Do not use water.

**Specific Hazards Arising from the Material:** Flammable in the form of dust when exposed to heat, spark or flame. May react with water under fire conditions liberating flammable hydrogen gas. May emit fumes of ytterbium oxide under fire conditions.

**Special Protective Equipment and Precautions for Firefighters:** Full face, self-contained breathing apparatus and full

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protective clothing to prevent contact with skin and eyes.

### 6 ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment, and Emergency Procedures:** Wear appropriate respiratory and protective equipment specified in section 8. Isolate spill area. Avoid dust formation. Avoid contact with skin and eyes. Avoid breathing dust or fume. Eliminate all sources of ignition.

**Methods and Materials for Containment and Cleaning Up:** Sweep or scoop spilled product and place in a closed container for further handling and disposal. Use only non-sparking tools and natural bristle brushes

**Environmental Precautions:** Do not allow to enter drains or to be released to the environment.

### 7 HANDLING AND STORAGE

**Precautions for Safe Handling:** Handle in an enclosed, controlled process, under dry protective gas such as argon when possible. Air and moisture sensitive. Use non-sparking tools. Protect from sources of ignition. Protect from water/moisture. Avoid contact with skin and eyes. Wash thoroughly before eating or smoking. See section 8 for information on personal protection equipment.

**Conditions for Safe Storage, Including Any Incompatibilities:** Ytterbium metal should be stored in tightly-closed containers under argon or mineral oil. Store in a cool, dry area. Protect from water/moisture. See section 10 for more information on incompatible materials.

### 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Exposure Limits:** Ytterbium

**OSHA/PEL:** No exposure limit established

**ACGIH/TLV:** No exposure limit established

**Appropriate Engineering Controls:** Handle in a humidity controlled atmosphere. Handle in an enclosed, controlled process when possible. Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

**Individual Protection Measures, Such as Personal Protective Equipment:**

**Respiratory Protection:** If permissible levels are exceeded, use NIOSH approved dust respirator.

**Eye Protection:** Safety glasses

**Skin Protection:** Wear impermeable gloves, protective work clothing as necessary.

### 9 PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:**

**Form:** Solid in various forms

**Color:** Silver gray metallic

**Odor:** Not determined

**Odor Threshold:** Not determined

**pH:** N/A

**Melting Point:** 819 °C

**Boiling Point:** 1196 °C

**Flash Point:** N/A

**Evaporation Rate:** N/A

**Flammability:** No data

**Upper Flammable Limit:** No data

**Lower Flammable Limit:** No data

**Vapor Pressure:** No data

**Vapor Density:** N/A

**Relative Density (Specific Gravity):** 6.966 g/cc

**Solubility in H<sub>2</sub>O:** Insoluble

**Partition Coefficient (n-octanol/water):** Not determined

**Autoignition Temperature:** No data

**Decomposition Temperature:** No data

**Viscosity:** N/A

### 10 STABILITY AND REACTIVITY

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**Reactivity:** No data

**Chemical Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** Flammable in the form of dust when exposed to heat, spark or flame. May react with water under fire conditions liberating flammable hydrogen gas. Contact with acids may evolve hydrogen gas.

**Conditions to Avoid:** Avoid creating or accumulating fines or dusts.

**Incompatible Materials:** Acids, acid chlorides, oxidizing agents, halogens, water/moisture, air.

**Hazardous Decomposition Products:** Ytterbium oxides, ytterbium hydroxides, hydrogen.

### **11 TOXICOLOGICAL INFORMATION**

**Likely Routes of Exposure:** Inhalation, skin, eyes. Product as shipped does not present an inhalation hazard; however subsequent operations may create dusts or fumes which could be inhaled.

**Symptoms of Exposure:** May cause irritation.

**Acute and Chronic Effects:** No data

**Acute Toxicity:** No data

**Carcinogenicity:** **NTP:** Not identified as carcinogenic **IARC:** Not identified as carcinogenic

To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

### **12 ECOLOGICAL INFORMATION**

**Ecotoxicity:** No data

**Persistence and Degradability:** No data

**Bioaccumulative Potential:** No data

**Mobility in Soil:** No data

**Other Adverse Effects:** Do not allow material to be released to the environment. No further relevant information available.

### **13 DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:**

**Product:** Dispose of in accordance with Federal, State and Local regulations.

**Packaging:** Dispose of in accordance with Federal, State and Local regulations.

### **14 TRANSPORT INFORMATION**

**DOT/ADR/IATA/IMDG Regulations:** Not regulated

**UN Number:** N/A

**UN Proper Shipping Name:** N/A

**Transport Hazard Class:** N/A

**Packing Group:** N/A

**Marine Pollutant:** No

**Special Precautions:** N/A

### **15 REGULATORY INFORMATION**

**TSCA Listed:** All components are listed.

**Regulation (EC) No 1272/2008 (CLP):** N/A

**Canada WHMIS Classification (CPR, SOR/88-66):** N/A

**HMIS Ratings: Health: 0 Flammability: 1 Physical: 1**

**NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 1**

**Chemical Safety Assessment:** A chemical safety assessment has not been carried out.

### **16 OTHER INFORMATION**

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 Materials Preparation Center, Ames Laboratory, and Iowa State University, shall not be held liable for any damages resulting from handling or from contact with the above product and make no warranties, expressed or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose or course of performance or usage of trade.

**Prepared by:** The Materials Preparation Center at Ames Laboratory

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