

Zirconium SAFETY DATA SHEET

Zirconium

1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Zirconium - pellets, wire, rod, foil, sheet, target

Formula: Zr

Supplier: Eagle Alloys Corporation
178 West Park Court
Talbott, TN 37877

Telephone: 423-586-8738

Fax: 423-586-7456

Email: sales@eaglealloys.com

24 HOUR EMERGENCY ASSISTANCE: CHEMTREC 800-424-9300

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: Zirconium

CAS#: 7440-67-7

%: 100

EC#: 231-176-9

4 FIRST AID MEASURES

General Measures: No special requirements.

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 develop or persist.

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

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation. 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 or dry table salt.

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Unsuitable Extinguishing Media: Do not use water, carbon dioxide or halocarbon extinguishing agents.

Specific Hazards Arising from the Material: This product does not present fire or explosion hazards as shipped. Fine turnings and dust from processing may be readily ignitable. May emit toxic metal oxide fumes under fire conditions.

Special Protective Equipment and Precautions for Firefighters: Full face, self-contained breathing apparatus and full protective clothing when necessary.

Additional Information: If metal fines ignite, allow the material to burn out. Control small fires by smothering with dry table salt or using a type D extinguisher. Separate burning material from larger mass, and allow it to burn out. Do not spray water on burning zirconium. Carbon dioxide is not effective in extinguishing burning zirconium either. If a fire starts in a mass of wet metal fines, an explosion may follow due to rapidly expanding gases. The explosive characteristic of such material is caused by the steam and hydrogen generated within the burning mass.

6 ACCIDENTAL RELEASE MEASURES

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

Methods and Materials for Containment and Cleaning Up: Avoid dust formation. Keep finely divided zirconium away from any source of ignition and cleaned up immediately. Sweep or scoop up. Place in properly labeled container for further handling and disposal.

Environmental Precautions: Do not allow to be released to the environment.

7 HANDLING AND STORAGE

Precautions for Safe Handling: This material is generally not considered hazardous in its solid form. However, if your process creates fines or dusts precautions must be taken. Machining of zirconium may result in fine turnings or chips. Any material with a dimension less than 0.0625" (1/16") or a cross section less than 0.0078" square (1/16 x 1/8), if present in any quantity, can be ignited and can sustain combustion. Keep away from any source of ignition. Avoid creating or accumulating dusts or fines. See section 8 for information on engineering controls and personal protection equipment.

Conditions for Safe Storage: Store in a cool, dry area. Store away from acids. See section 10 for more information on incompatible materials.

8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Zirconium

OSHA/PEL: 5 mg/m³

ACGIH/TLV: 5 mg/m³

Engineering Controls: 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 allow dusts to accumulate as they may present a serious fire hazard. 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.

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: Odorless

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Odor Threshold: Not determined
pH: N/A
Melting Point: 1852±2 °C
Boiling Point: 4377 °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): 6.49 g/cc
Solubility in H₂O: Insoluble
Partition Coefficient (n-octanol/water): Not determined
Autoignition Temperature: No data
Decomposition Temperature: No data
Viscosity: N/A

10 STABILITY AND REACTIVITY

Reactivity: No data

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Zirconium fines will burn when exposed to an ignition source. Dust dispersed in air may be explosive. Keep fine turnings completely dry, or very wet. If wet, the water content should be more than 25% by weight for maximum safety in handling. Severe explosions can result from ignition of zirconium powder or machining fines containing moisture in the concentration range of 5 to 10%.

Conditions to Avoid: Avoid creating or accumulating fines or dusts. Avoid all sources of ignition.

Incompatible Materials: Acids, oxidizing agents, fluorine, chlorine, bromine, iodine, halocarbons, carbon tetrachloride, carbon tetrafluoride, freons, nitryl-fluoride.

Hazardous Decomposition Products: Zirconium oxide fume.

11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin, eyes.

Symptoms of Exposure: May cause irritation if dusts or fumes are inhaled or swallowed. Fines/dusts may irritate skin and eyes.

Acute and Chronic Effects: Zirconium is generally considered to be physiologically inert.

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 without proper governmental permits. No further relevant information available.

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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

Shipping 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

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:** 0

NFPA Ratings: Health: 0 **Flammability:** 1 **Instability:** 0

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

16 OTHER INFORMATION

The information contained in this document is based on the state of our knowledge at the time of publication and is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Eagle Alloys Corporation makes no representation, warranty, or guarantee of any kind with respect to the information contained in this document or any use of the product based on this information. Eagle Alloys Corporation shall not be held liable for any damages resulting from handling or from contact with the above product. Users should satisfy themselves that they have all current data relevant to their particular use.

Prepared by: Eagle Alloys Corporation

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