

ZIRCONIUM
SAFETY DATA SHEET
DATE OF LAST REVISION: 06/29/15

Section 1: Identification

Product Name: Zirconium
CAS Number: 7440-67-7 / **EC Number:** 231-176-9
Company: Angstrom Sciences, Inc.
40 South Linden Street
Duquesne, PA 15110
For more information call: 412-469-8466
(Monday - Friday 9:00 AM -5:00 PM EST)

Section 2: HAZARD IDENTIFICATION

Signal Word: Danger



Hazard Statements: H228: Flammable solid

Precautionary Statements: P210: Keep away from heat/sparks/open flames/hot surfaces - No smoking.
P280: Wear protective gloves/protective clothing/eye protection/face protection
P240: Ground/bond container and receiving equipment
P241: Use explosion-proof electrical/ventilating/light/equipment
P370 + P378: In case of fire: use special powder for metal fires for extinction

HMIS Health Ratings (0-4):

Health: 1
Flammability: 3 (Powder Only)
Physical: 2

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Section 3: Composition/Information on Ingredients

Chemical characterization: Metal

Additional Names: N/A

CAS# Description: 7440-67-7

Percentage: 0-100 wt%

EC number: 231-176-9

Section 4: FIRST AID MEASURES

General Treatment: Seek medical attention if symptoms persist.

Special Treatment: None

Important Symptoms: None

Eye Contact: Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Skin Contact: Wash affected area with mild soap and water. Remove any contaminated clothing.

Inhalation: Remove to fresh air. If required, give artificial respiration. Seek medical advice.

Ingestion: Seek medical attention.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing Media: Do not use water for metal fires - use CO₂, sand, extinguishing powder

Flammability: Flammable solid

Special Fire Fighting Procedure: Use full-face, self contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

Unusual fire and explosion hazard: Do not spray water on burning zirconium. Carbon dioxide is not effective in extinguishing burning zirconium. If a fire starts in a mass of fine wet metal, the initial fire may be followed by an explosion. Therefore, when in doubt, personnel should retire and not attempt to extinguish the fire. The explosive characteristic of such material is caused by the steam and hydrogen generated within the burning mass. Spontaneously combustible in dry powder form. Flammable and explosive as dust or powder, also in the form of borings and shavings. Zirconium metal is a very dangerous fire hazard in the form of dust when exposed to heat, flame or by chemical reaction with oxidizing agents. May be an explosion hazard in the form of dust by chemical reaction with air, alkali hydroxides, alkali metal chromates, dichromates, molybdates, sulfates, tungstates, borax, ccl₄, copper oxide, lead, lead oxide, phosphorous, kclo₃, kno₃, nitryl fluoride. May be extremely sensitive to shock and static electricity may cause spontaneous ignition.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate respiratory and protective equipment specified in special protection information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust.

Environmental Precautions: Isolate runoff to prevent environmental pollution.

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Section 7: HANDLING AND STORAGE

Handling Precautions for safe handling: Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in Section 10.

Work/Hygienic Maintenance: 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.

Ventilation: Provide sufficient ventilation to maintain concentration at or below threshold limit.

Section 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Permissible Exposure Limits: 5 mg/m³ as Zr, long-term value

Threshold Limit Value: 5 mg/m³ as Zr, long-term value

10 mg/m³ as Zr, short-term value

Special Equipment: None

Respiratory Protection: Dust Respirator

Protective Gloves: Rubber Gloves

Eye Protection: Safety glasses or goggles

Body Protection: Protective work clothing. Wear close-toed shoes and long sleeves/pants.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Form: Powder, Granules, Pellets, Sputtering target, Custom parts

Color: Dark Grey

Odor: Odorless

Water Solubility: Insoluble

Boiling Point: 4377°C

Melting Point: 1852°C

Flash Point: N/A

Autoignition Temperature: N/A

Density: 6.52 g/cc

Molecular Weight: 91.224 g/mol

Section 10: STABILITY AND REACTIVITY

Reactivity: Oxidizing agents

Chemical Stability: Stable under recommended storage conditions

Incompatible Conditions: None

Hazardous Decomposition Products: Metal Oxide Fume

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Section 11: TOXICOLOGICAL INFORMATION

Potential Health Effects:

Eyes: May cause irritation

Skin: May cause irritation

Ingestion: May cause irritation to the gastrointestinal tract

Inhalation: May cause irritation to the respiratory tract, mucous membranes, nose, or throat

Chronic: May cause skin granuloma

Signs & Symptoms: N/A

Aggravated Medical Conditions: N/A

Median Lethal Dose: N/A

Carcinogen: N/A

Section 12: ECOLOGICAL INFORMATION

Aquatic Toxicity: Low

Persistence Bioaccumulation Toxicity: No

Very Persistent, Very Bioaccumulative: No

Notes: Do not allow material to be released to the environment without proper governmental permits.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, state, national, and international regulations

Section 14: TRANSPORT INFORMATION

Hazardous: Hazardous as powder only



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Hazard Class: 4.1 Flammable solids, self-reactive substances and solid desensitized explosives.
Packing Group: II
UN Number: UN1358
Proper Shipping Name: Zirconium powder

Section 15: REGULATORY INFORMATION

Sec 302 Extremely Hazardous: No
Sec 304 Reportable Quantities: N/A
Sec 313 Toxic Chemicals: No

Section 16: OTHER INFORMATION

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.