

**ZIRCONIUM BORIDE**  
**SAFETY DATA SHEET**  
DATE OF LAST REVISION: 06/30/15

**Section 1: Identification**

**Product Name:** Zirconium Boride  
**CAS Number:** 12045-64-6 / **EC Number:** 234-963-5  
**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:** Warning



**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 CO<sub>2</sub>, powder, or water spray for extinction

**HMIS Health Ratings (0-4):**

Health:	1
Flammability:	2 (powder)
Physical:	1

**ZIRCONIUM BORIDE  
SAFETY DATA SHEET**

**Section 3: Composition/Information on Ingredients**

**Chemical characterization:** Ceramic

**Additional Names:** N/A

**CAS# Description:** 12045-64-6

**Percentage:** 0-100 wt%

**EC number:** 234-963-5

**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:** No special restrictions - Use suitable extinguishing agent for surrounding material and type of fire. Fight larger fires with water spray or alcohol resistant foam.

**Flammability:** Flammable as powder

**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.

**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.

**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.

**ZIRCONIUM BORIDE**  
**SAFETY DATA SHEET**

**Section 8: EXPOSURE CONTROL/PERSONAL PROTECTION**

**Permissible Exposure Limits:** 5 mg/m<sup>3</sup> as Zr, long-term value  
**Threshold Limit Value:** 10 mg/m<sup>3</sup> as Zr, long-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:** Black  
**Odor:** Odorless  
**Water Solubility:** Insoluble  
**Boiling Point:** N/A  
**Melting Point:** 3000°C  
**Flash Point:** N/A  
**Autoignition Temperature:** N/A  
**Density:** 6.085 g/cc  
**Molecular Weight:** 112.85 g/mol

**Section 10: STABILITY AND REACTIVITY**

**Reactivity:** Oxidizing agents  
**Chemical Stability:** Stable under recommended storage conditions  
**Incompatible Conditions:** Oxidizing agents  
**Hazardous Decomposition Products:** Metal oxide fume, Boron oxide

**Section 11: TOXICOLOGICAL INFORMATION**

**Potential Health Effects:**  
**Eyes:** May cause irritation  
**Skin:** May cause irritation  
**Ingestion:** May cause irritation  
**Inhalation:** May cause irritation

**ZIRCONIUM BORIDE  
SAFETY DATA SHEET**

**Chronic:** N/A

**Signs & Symptoms:** N/A  
**Aggravated Medical Conditions:** N/A  
**Median Lethal Dose:** N/A  
**Carcinogen:** ACGIH A4: Not classifiable as a human carcinogen: Inadequate data  
EPA-I: Data are inadequate for an assessment of human carcinogenic potential

**Section 12: ECOLOGICAL INFORMATION**

**Aquatic Toxicity:** Low

**Persistent Bioaccumulation Toxicity:** No

**Very Persistent, Very Bioaccumulative:** No

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

Do not allow product to reach any water sources. Avoid transfer into the environment.

**Section 13: DISPOSAL CONSIDERATIONS**

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

**Section 14: TRANSPORT INFORMATION**

**Hazardous:** Hazardous for transportation as powder only



**Hazard Class:** 4.1 Flammable solids, self-reactive substances, and solid desensitized explosives.

**Packing Group:** III

**UN Number:** UN3178

**Proper Shipping Name:** Flammable solid, inorganic, n.o.s. (Zirconium boride)

**ZIRCONIUM BORIDE  
SAFETY DATA SHEET**

**Section 15: REGULATORY INFORMATION**

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

**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.