Material Safety Data Sheet (MSDS)

Zirconium Alloy

Revision Date: 02-10-2026

Version: 1.0

Section 1: Product Identification

• **Product Name:** Zirconium Alloy

• **Recommended Use:** Nuclear fuel cladding, chemical processing equipment, corrosion-resistant structural components

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Section 2: Hazards Identification

• **Classification (GHS):** Flammable liquids; Acute toxicity, Oral; Skin irritation; Eye irritation.

• **Signal Word:** Warning

• **Hazard Statements:**

- Harmful if swallowed

- Causes skin irritation and serious eye irritation

- Combustible liquid

- Keep away from heat/sparks/open flames. No smoking

- Wear protective gloves/eye protection

- IF ON SKIN or IN EYES: Rinse cautiously with water; seek medical advice if irritation persists

Section 3: Composition / Information on Ingredients

Section 4: First Aid Measures

• **Inhalation:** Remove to fresh air. If symptoms develop, seek medical attention.

• **Skin Contact:** Wash with plenty of soap and water. Remove contaminated clothing. Seek medical advice if irritation persists.

• **Eye Contact:** Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing. Seek medical attention if irritation persists.

• **Ingestion:** Rinse mouth. Do NOT induce vomiting. Seek medical advice if feeling unwell.

Section 5: Fire-Fighting Measures

• **Suitable Extinguishing Media:** Dry chemical, foam, carbon dioxide water spray.

• **Specific Hazards:** Combustible liquid; emits toxic fumes of carbon oxides under fire conditions.

• **Protective Equipment:** Firefighters should wear self-contained breathing apparatus and protective clothing.

Section 6: Accidental Release Measures

• **Personal Precautions:** Use personal protective equipment. Avoid breathing vapors. Ensure adequate ventilation. Eliminate ignition sources.

• **Environmental Precautions:** Prevent entry into drains and waterways.

• **Cleanup Methods:** Absorb with inert material. Collect in suitable container for disposal.

Section 7: Handling and Storage

• **Handling:** Avoid inhalation of vapors and contact with skin/eyes. Use with adequate ventilation. Keep away from ignition sources.

• **Storage:** Keep container tightly closed. Store in a cool, dry, well-ventilated place away from heat and oxidizing agents.

Section 8: Exposure Controls / Personal Protection

• **Exposure Limits:** ACGIH TLV 50 ppm 205 mg/m^3 TWA; OSHA PEL not established.

• **Engineering Controls:** Provide adequate ventilation and local exhaust if needed.

• **Personal Protective Equipment:** Chemical-resistant gloves, safety goggles, protective clothing. Respirator if ventilation is inadequate.

Section 9: Physical and Chemical Properties

• **Appearance:** Silvery-gray metal

• **Boiling Point:** 4409 °C

• **Solubility:** Insoluble in water

• **Molecular Weight:** 91.22 g/mol

Section 10: Stability and Reactivity

• **Stability:** Stable under normal conditions.

• **Incompatible Materials:** Strong oxidizing agents.

• **Hazardous Decomposition Products:** Carbon oxides under fire conditions.

Section 11: Toxicological Information

• **Routes of Exposure:** Inhalation, ingestion, skin and eye contact.

• **Acute Effects:** Harmful if swallowed; causes skin and eye irritation; may cause respiratory irritation.

• **Chronic Effects:** Prolonged or repeated exposure may cause dermatitis and liver/kidney effects.

Section 12: Ecological Information

• **Ecotoxicity:** May be harmful to aquatic life in high concentrations.

• **Persistence and Degradability:** Expected to be biodegradable.

• **Bioaccumulative Potential:** Low to moderate potential.

Section 13: Disposal Considerations

• Dispose of contents/container in accordance with local/regional/national regulations. Do not release into the environment.

Section 14: Transport Information

• **Proper Shipping Name:** Zirconium Alloy

Section 15: Regulatory Information

• Complies with Indian chemical safety regulations and listed under international chemical inventories.

• Classified as hazardous substance as per GHS.

Section 16: Other Information

- **Disclaimer:** The above information is believed to be correct but does not claim to be exhaustive. Users are responsible for verifying suitability under actual conditions of use. **Triveni chemicals** disclaim any liability for damage resulting from handling or contact.