Cerium

SAFETY DATA SHEET

1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Cerium – ingot, pieces, rod, foil, sheet, target
Formula: Ce

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
Emergency: Infotrac 800-535-5053 (US) or 352-323-3500 (24 hour)
Recommended Uses: Scientific Research

2 HAZARDS IDENTIFICATION

GHS Classification (29 CFR 1910.1200): Flammable solid, category 1.
GHS Label Elements:

Signal Word: Danger
Hazard Statements: H228 Flammable solid.
Precautionary Statements: P210 Keep away from heat/sparks/open flames/hot surfaces - No smoking, P231+P232 Handle under inert gas. Protect from moisture, P370+P378 In case of fire: Use Class D dry chemical extinguishing agent for extinction, P422 Store contents under inert gas.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient: Cerium
CAS#: 7440-45-1
%: 100
EC#: 231-154-9

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 produce potentially hazardous dust or fumes which can be inhaled or come in contact with the skin or eyes.
INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

INGESTION: Quickly wipe material from mouth and rinse with water. Do not induce vomiting. Seek medical attention.
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: 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.
Unsuitable Extinguishing Media: Do not use water.
Specific Hazards Arising from the Material: Cerium sparks with friction and will burn under fire conditions. May react with water under fire conditions liberating flammable hydrogen gas. May emit fumes of cerium oxide under fire conditions.
Special Protective Equipment and Precautions for Firefighters: Full face, self-contained breathing apparatus and full 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. Avoid contact with skin and eyes. Avoid breathing dust or fume. Eliminate all sources of ignition. Isolate spill area.
Methods and Materials for Containment and Cleaning Up: Sweep or scoop spilled product and place in a closed container for further handling and disposal. Do not use water for spill clean-up. Use only non-sparking tools and natural bristle brushes.
Environmental Precautions: Do not flush to sewer, stream, or other bodies of water. Do not allow to enter drains or to be released to the environment.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle under dry protective gas such as argon. Handle in an enclosed, controlled process. 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: Cerium metal should be stored in tightly-closed containers under argon or mineral oil. Keep away from sparks, heat and flame. Storage area should be free of combustibles and ignition sources. Do not store together with acids or oxidizers. Protect from water/moisture. See section 10 for more information on incompatible materials.

8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Cerium
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 under dry argon. Use local exhaust to maintain exposure at low levels. 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. 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. Prepare for the possibility of a fire. Keep extinguishing agents, tools for handling and protective clothing readily available.
Individual Protection Measures, Such as Personal Protective Equipment:
Respiratory Protection: Wear a NIOSH/MSHA approved respirator when high concentrations are present.

Eye Protection: Always wear approved chemical splash proof goggles.
Skin Protection: Rubber gloves, flame retardant protective work clothing.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
Form: Solid in various forms
Color: Gray metallic
Odor: Not determined
Odor Threshold: Not determined
pH: N/A
Melting Point: 798 °C
Boiling Point: 3443 °C
Flash Point: N/A
Evaporation Rate: N/A
Flammability: Flammable solid
Upper Flammable Limit: No data
Lower Flammable Limit: No data
Vapor Pressure: No data
Vapor Density: N/A
Relative Density (Specific Gravity): 6.77 g/cc
Solubility in H_2O: Decomposes
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: Cerium sparks with friction and will burn under fire conditions. May react with water under fire conditions liberating hydrogen gas. Contact with acids may evolve hydrogen gas.
Conditions to Avoid: Heat, sparks, flame. Exposure to water or moist air
Incompatible Materials: Water/moisture, air, strong acids, strong oxidizing agents, halogens.
Hazardous Decomposition Products: Cerium oxides, cerium hydroxides, hydrogen gas.

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:
UN Number: 4.1
UN Proper Shipping Name: Cerium (slabs, ingots or rods)
Transport Hazard Class: UN1333
Packing Group: II
Marine Pollutant: No
Special Precautions: Warning: Flammable solid.

15 REGULATORY INFORMATION

TSCA Listed: All components are listed.
Regulation (EC) No 1272/2008 (CLP): Flammable solid, category 1.
Canada WHMIS Classification (CPR, SOR/88-66): Class B, Division 4 - Flammable solid.
HMIS Ratings: **Health**: 1 **Flammability**: 3 **Physical**: 1
NFPA Ratings: **Health**: 1 **Flammability**: 3 **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.

Prepared by: The Materials Preparation Center at Ames Laboratory
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