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SAFETY DATA SHEET

Section 1- IDENTIFICATION		
COMPOSITION Ce		PRODUCT NAME Cerium
SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 800-424-9300 International: 001-703-527-3887

Section 2- HAZARD(S) IDENTIFICATION	
PHYSICAL HAZARDS: Flammable Solids: Category 2 (H261)	
HEALTH HAZARDS: Not classified	
Environmental Hazards: Not Classified	OSHA Defined Hazards: Not Classified
LABEL ELEMENTS: Signal Word: Danger	
	
<u>HAZARD STATEMENTS</u>	
<ul style="list-style-type: none"> -H228: Flammable solid -H261: In contact with water releases flammable gases. -H370: Causes damage to organs -H400: Very toxic to aquatic life -H410: Very toxic to aquatic life with long lasting effects 	
<u>PRECAUTIONARY STATEMENTS</u>	
<ul style="list-style-type: none"> -P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking -P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire -P231: Handle under inert gas -P232: Protect from moisture. -P240: Ground/bond container and receiving equipment -P241: Use explosion-proof electrical/ventilating/lighting equipment -P264: Wash face, hands, and any exposed skin thoroughly after handling. -P270: Do not eat, drink, or smoke when using this product -P273: Avoid release to the environment -P280: Wear protective gloves/protective clothing/eye protection/face protection. -P307+P311: If exposed: Cal a poison center/doctor -P321: Specific treatment (see this label) -P335+P334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages -P391: Collect spillage -P402: Store in a dry place. -P404: Store in a closed container. 	

-P405: Store locked up.
 -P501: Dispose of contents/container in accordance with local/regional/national/international regulations at an approved waste disposal plant
Hazards not otherwise classified (HNOC):
 -None known.

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Cerium	7440-45-1	140.116 g/mol

Section 4- FIRST AID MEASURES

GENERAL ADVICE: Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the physician in attendance.
INHALATION: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician if symptoms develop and/or persist.
SKIN CONTACT: Brush off loose particles. Immerse in cool water/wrap in wet bandages. Consult a physician if irritation develops and/or persists.
EYE CONTACT: Flush eyes with plenty of water, lifting upper and lower lids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and/or persists.
INGESTION: Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.
MOST IMPORTANT SYMPTOMS/EFFECTS: The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11.
INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: Provide general supportive measures and treat symptomatically

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media: Not available	Unsuitable Extinguishing Media: Water
Specific Hazards Arising from the Chemical: In contact with water releases flammable gas	
Protective Equipment & Precautions for Firefighters: As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.	
Firefighting Instructions/Specific Methods: In case of fire and/or explosion do not breath fumes. Move containers from fire area if you can do so without risk. Do not get water inside container. Water runoff can cause environmental damage. Use standard firefighting procedures and consider the hazards of other involved materials. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.	
General Fire Hazards: Flammable solid	

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection see section 8 of SDS.
Environmental Precautions: Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses, or onto the ground.
Methods for Containment & Clean Up: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop the

flow material if this is without risk. Collect spillage. Do not get water on spilled substance or inside containers. Prevent product from entering drains. Prevent entry into waterways, sewer, basements, or confined areas. For waste disposal, see Section 13 of SDS.

Section 7- HANDLING AND STORAGE

Handling: Keep away from any possible contact with water because of violent reaction and possible flash fire. Handle under inert gas. Do not handle, store, or open near an open flame, sources of heat, or sources of ignition. Protect material from direct sunlight. Do not smoke. All equipment used when handling the product must be grounded. Use explosion-proof equipment. Avoid release to the environment. Do not empty into drains.

Storage: Keep away from heat, sparks, and open flame. Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store in a dry place. Store in cool place. Never allow product to get in contact with water during storage. Keep in an area equipped with sprinklers.

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Occupational Exposure Limits/Components with Workplace Control Parameters: No exposure limit values noted for substance(s)

Biological Limit Values: No biological exposure limits noted for the ingredient(s)

Hygiene Measures: When using do not smoke. Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling and before eating, drinking and/or smoking. Wash hands before breaks and at the end of the workday. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

Control Parameters: Follow standard monitoring procedures

Personal Protective Equipment:

Eye/Face Protection: Safety glasses with side shields. Use equipment for eye protection tested and approved under appropriate standards such as NIOSH (US) or EN 166 (EU).

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Wear suitable protective clothing. The type of protective clothing equipment must be selected according to the concentration and amount of the dangerous substance and to the specific workplace.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment. Where protection from nuisance levels of dusts is desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor: No data available

Odor Threshold: No data available

pH: No data available

Melting Point/Range: 795°C (1,463°F)

Initial Boiling Point/Range: 3,443°C (6,229°F)

Flash Point: No data available

Evaporation Rate: No data available

Flammability (solid,gas): Flammable solid

Flammability Limits:

Upper: No data available

Lower: No data available

Explosive Limits:

Upper: No data available

Lower: No data available

Vapor Pressure: No data available
Vapor Density: No data available
Relative Density: No data available
Solubility (Water): No data available
Partition coefficient; n-octanol/water: No data available
Auto Ignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: No data available
Explosive Properties: No data available
Oxidizing Properties: No data available

Section 10- STABILITY AND REACTIVITY

Reactive Hazard: No data available

Stability: Risk of ignition. Stable under normal conditions.

Possibility of Hazardous Reactions: No data available.

Conditions to Avoid: Exposure to moisture. Contact with water liberates flammable gas. Heat, flames, and sparks. High temperatures.

Incompatible Materials: None known

Hazardous Decomposition Products: No data available

Section 11- TOXICOLOGICAL INFORMATION

Information on likely Routes of Exposure:

Inhalation: No data available

Skin Contact: No data available

Eye Contact: No data available

Ingestion: No data available

Symptoms Related to the Physical, Chemical & Toxicological Characteristics: Not available

Information on Toxicological Effects:

Acute Toxicity: No data available.

Skin Corrosion/Irritation: No data available

Serious Eye Damage/Eye Irritation: No data available

Respiratory or Skin Sensitization: No data available

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA.

Germ Cell Mutagenicity: No information available

Reproductive Toxicity: No information available

Development Toxicity: No information available

Specific Target Organ Toxicity – single exposure: Causes damage to organs

Specific Target Organ Toxicity – repeated exposure: No information available

Aspiration Hazard: No information available

Chronic Effects: No information available.

-To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Section 12- ECOLOGICAL INFORMATION

Toxicity: Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Persistence and Degradability: No information available

Bioaccumulation/Accumulation: No information available




Mobility in Soil: No information available

Other Adverse Effects: No information available.

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Collect and reclaim or dispose in sealed containers to a licensed disposal site. Dispose of contaminated packaging as unused product. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways, or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14- TRANSPORT INFORMATION

<p>DOT:</p> <p>UN-No: UN1333 Proper Shipping Name: Cerium, slabs, ingots, or rods Hazard Class: 4.1 Packing Group: II Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling. Special Provisions: IB8, IP2, IP4, N34 Packaging Exceptions: None Packaging Non-Bulk: 212 Packaging Bulk: 240</p>	
<p>IATA:</p> <p>UN-No: UN1333 Proper Shipping Name: Cerium, slabs, ingots, or rods Hazard Class: 4.1 Packing Group: II Environmental Hazards: No ERG Code: 3L Special Precautions for User: Not available Passenger and Cargo Aircraft: Allowed Cargo Aircraft Only: Allowed</p>	
<p>IMDG/IMO:</p> <p>UN-No: UN1333 Proper Shipping Name: Cerium, slabs, ingots, or rods Hazard Class: 4.1 Packing Group: II Environmental Hazards: Marine Pollutant: No EmS-No: F-G, S-P Special Precautions for User: Not available</p>	

Section 15- REGULATORY INFORMATION

US Federal Regulations: All components are on the US EPA TSCA Inventory List.

SARA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated

CERCLA Hazardous Substance List (40 CFR 302.4): Not listed

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed

SARA Hazard Categories:

Immediate Hazard: No

Delayed Hazard: No

Fire Hazard: Yes

Pressure Hazard: No

Reactive Hazard: No

SARA 302 Extremely Hazardous Substance: Not Listed

SARA 311/312 Hazardous Chemical: Yes

SARA 313 (TRI Reporting): This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated

Safe Drinking Water Act (SDWA): Not regulated

US California Controlled Substances. CA Dept of Justice (California Health & Safety Code Section 11100): Not Listed

US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

US Massachusetts Right-To-Know Substances: Cerium (CAS No. 7440-45-1)

US New Jersey Right-To-Know Substances: Cerium (CAS No. 7440-45-1)

US New Jersey Worker and Community Right-To-Know: Not regulated

US Pennsylvania Right-To-Know Hazardous Substances: Not regulated

US Pennsylvania Worker and Community Right-To-Know: Not listed

US Rhode Island Right-To-Know: Not regulated

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

The information in this SDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

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