

## MATERIAL SAFETY DATA SHEET

Date Printed: 10/03/2008

Date Updated: 01/31/2006

Version 1.5

---

Section 1 - Product and Company Information

---

Product Name	CESIUM
Product Number	14714
Brand	SIAL
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

---

Section 2 - Composition/Information on Ingredient

---

Substance Name	CAS #	SARA 313
CESIUM	7440-46-2	No

Formula	Cs
Synonyms	Cesium-133
RTECS Number:	FK9225000

---

Section 3 - Hazards Identification

---

## EMERGENCY OVERVIEW

Flammable (USA) Highly Flammable (EU). Corrosive.  
Reacts violently with water, liberating extremely flammable gases.  
Causes burns.

## HMIS RATING

HEALTH: 3  
FLAMMABILITY: 3  
REACTIVITY: 2  
SPECIAL HAZARD(S): Water reactive

## NFPA RATING

HEALTH: 3  
FLAMMABILITY: 3  
REACTIVITY: 2  
SPECIAL HAZARD(S): Water reactive

For additional information on toxicity, please refer to Section 11.

---

Section 4 - First Aid Measures

---

## ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

## INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

---

### Section 5 - Fire Fighting Measures

---

#### FLAMMABLE HAZARDS

Flammable Hazards: Yes

#### EXPLOSION HAZARDS

Material readily reacts with water generating flammable and/or explosive hydrogen gas

#### CONDITIONS OF FLAMMABILITY

Catches fire if exposed to air.

#### FLASH POINT

N/A

#### AUTOIGNITION TEMP

N/A

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Use approved class D extinguishers or smother with dry sand, dry ground limestone, or dry clay.  
Unsuitable: Do not use water.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Flammable solid. Emits toxic fumes under fire conditions.

---

### Section 6 - Accidental Release Measures

---

#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Avoid raising dust. Sweep up, place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

---

### Section 7 - Handling and Storage

---

#### HANDLING

User Exposure: Avoid all contact. Container should be opened only by a technically qualified person.

## STORAGE

Suitable: Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a dry area. Handle and store under argon.  
Incompatible Materials: Do not allow contact with water

## SPECIAL REQUIREMENTS

Handle and store under inert gas. Air sensitive.

---

## Section 8 - Exposure Controls / PPE

---

### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

### GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

---

## Section 9 - Physical/Chemical Properties

---

Appearance	Physical State: Solid Form: Ingots	
Property	Value	At Temperature or Pressure
Molecular Weight	132.91 AMU	
pH	N/A	
BP/BP Range	705 °C	760 mmHg
MP/MP Range	28.5 °C	
Freezing Point	N/A	
Vapor Pressure	1 mmHg	279 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	1.873 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	

Miscellaneous Data            N/A  
Solubility                    N/A

N/A = not available

---

## Section 10 - Stability and Reactivity

---

### STABILITY

Conditions to Avoid: Catches fire if exposed to air.  
Materials to Avoid: Avoid contact with acid., Phosphorus,  
Halogens, Alcohols, Oxygen Reacts violently with water.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Cesium/cesium oxides.  
Hazardous Decomposition Products Formed Upon Contact with Water:  
Reacts with water to liberate flammable and/or explosive gas.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

## Section 11 - Toxicological Information

---

### ROUTE OF EXPOSURE

Skin Contact: Causes burns.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes burns.  
Inhalation: May be harmful if inhaled. Material is extremely  
destructive to the tissue of the mucous membranes and upper  
respiratory tract.  
Ingestion: May be harmful if swallowed.

### SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of exposure may include burning sensation, coughing,  
wheezing, laryngitis, shortness of breath, headache, nausea, and  
vomiting. Can alter potassium channel activity. To the best of  
our knowledge, the chemical, physical, and toxicological  
properties have not been thoroughly investigated. Inhalation may  
result in spasm, inflammation and edema of the larynx and  
bronchi, chemical pneumonitis, and pulmonary edema. Material is  
extremely destructive to tissue of the mucous membranes and  
upper respiratory tract, eyes, and skin.

### TOXICITY DATA

Intraperitoneal  
Mouse  
1700 MG/KG  
LD50

---

## Section 12 - Ecological Information

---

No data available.

---

## Section 13 - Disposal Considerations

---

### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose  
of this material. Observe all federal, state, and local  
environmental regulations. Material in the elemental state should  
be recovered for reuse or recycling.

---

## Section 14 - Transport Information

---

DOT

Proper Shipping Name: Cesium [or] Caesium  
UN#: 1407  
Class: 4.3  
Packing Group: Packing Group I  
Hazard Label: Dangerous when wet.  
PIH: Not PIH

IATA

Proper Shipping Name: Caesium  
IATA UN Number: 1407  
Hazard Class: 4.3  
Packing Group: I  
Not Allowed - Aircraft: Cargo aircraft only. Not permitted on passenger aircraft.

---

Section 15 - Regulatory Information

---

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: F-C  
Indication of Danger: Highly Flammable. Corrosive.  
R: 11-14/15-34  
Risk Statements: Highly flammable. Reacts violently with water, liberating extremely flammable gases. Causes burns.  
S: 8-16-26-36/37/39-43-45  
Safety Statements: Keep container dry. Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of fire, never use water. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Flammable (USA) Highly Flammable (EU). Corrosive.  
Risk Statements: Reacts violently with water, liberating extremely flammable gases. Causes burns.  
Safety Statements: Keep container dry. Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of fire, never use water. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No  
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.  
DSL: No  
NDSL: Yes

---

Section 16 - Other Information

---

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

#### WARRANTY

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 information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.