



**SIGMA-ALDRICH**

**Material Safety Data Sheet**

Date Printed: 09/15/2008  
Date Updated: 02/06/2006  
Version 1.90

**Section 1 - Product and Company Information**

**Product Name** Cesium fluoride, BioUltra  
**Product Number** 20989  
**Brand** Fluka Chemical

**Company** Sigma-Aldrich  
**Street Address** 3050 Spruce Street  
**City, State, Zip, Country** 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	EC no	Annex I Index Number
CESIUM FLUORIDE	13400-13-0	No	236-487-3	

**Formula** CsF  
**Synonyms** Cesium monofluoride, Dicesium difluoride, Tricesium trifluoride

**Section 3 - Hazards Identification**

**Emergency Overview**  
Toxic.  
Toxic by inhalation, in contact with skin and if swallowed. Causes burns.  
Target organ(s): Bones.

**HMS Rating**  
Health: 3 Flammability: 0 Reactivity: 1

**NFPA Rating**  
Health: 3 Flammability: 0 Reactivity: 1

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 immediately.

**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**

**Autoignition Temp:** N/A  
**Extinguishing Media**  
**Suitable**  
Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.

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

**Section 6 - Accidental Release Measures**

**Procedure to be Followed in Case of Leak or Spill**  
Evacuate area.

**Procedure(s) of Personal Precaution(s)**  
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

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

**Section 7 - Handling and Storage**

**Handling**  
**User Exposure**  
Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

**Storage**  
**Suitable**  
Keep tightly closed.

**Special Requirements**  
Hygroscopic.

**Section 8 - Exposure Controls / PPE**

**Engineering Controls**  
Use only in a chemical fume hood. Safety shower and eye bath.

**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.

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**General Hygiene Measures**

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

**Exposure Limits, RTECS**

Country	Source	Type	Value
USA	ACGIH	TWA	2.5 MG(F)/M3
USA	MSHA Standard-air	TWA	2.5 MG(F)/M3
USA	OSHA	PEL	8H TWA 2.5 MG(F)/M3
USA	NIOSH	TWA	2.5 MG(F)/M3

**Section 9 - Physical/Chemical Properties****Appearance****Physical State**

Solid

**Molecular Weight** 151.9 AMU

**pH** 7.5 - 9.0

**BP/BP Range** 1,251 °C

**MP/MP Range** 682 °C

**Freezing Point** N/A

**Vapor Pressure** N/A

**Vapor Density** N/A

**Saturated Vapor Conc.** N/A

**SG/Density** 4.115 g/cm<sup>3</sup>

**Bulk Density** 20 kg/l

**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

**Partition Coefficient** N/A

**Decomposition Temp.** N/A

**Flash Point °F** N/A

**Flash Point °C** N/A

**Explosion Limits** N/A

**Flammability** N/A

**Autoignition Temp** N/A

**Solubility**

**Solubility in Water:** 3 M in H<sub>2</sub>O, 20°C, complete, colorless

N/A = not available

**Section 10 - Stability and Reactivity****Stability****Stable**

Stable.

**Conditions to Avoid**

Hygroscopic.

**Materials to Avoid**

Strong oxidizing agents, Acids

**Hazardous Decomposition Products**

**Hazardous Decomposition Products**  
Hydrogen fluoride, Cesium/cesium oxides

**Hazardous Polymerization**

**Hazardous Polymerization**

Will not occur.

**Section 11 - Toxicological Information****Route of Exposure****Skin Contact**

Causes burns.

**Skin Absorption**

Toxic if absorbed through skin.

**Eye Contact**

Causes burns.

**Inhalation**

Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Ingestion**

Toxic if swallowed.

**Target Organ(s) or System(s)**

Bones.

**Signs and Symptoms of Exposure**

Symptoms of fluoride overexposure may include salivation, nausea, vomiting, abdominal pain, fever, and labored breathing. Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Prolonged exposure to fluoride dusts, vapors, or mists results in perforation of the nasal septum. Chronic effects include excessive calcification of the bones, ligaments, and tendon. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

**RTECS Number:** FK965000

**Chronic Exposure - Carcinogen**

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

**ACGIH Carcinogen List**

*Rating*

A4

**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.

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

**Section 14 - Transport Information****DOT**

**Proper Shipping Name:** Corrosive solids, toxic, n.o.s.

**UN#:** 2923  
**Class:** 8  
**Packing Group:** Packing Group II  
**Hazard Label:** Corrosive  
**Hazard Label:** Toxic substances  
**PIH:** Not PIH

**IATA**

**Proper Shipping Name:** Corrosive solid, toxic, n.o.s.  
**IATA UN Number:** 2923  
**Hazard Class:** 8  
**Packing Group:** II

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**Section 15 - Regulatory Information**

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**EU Additional Classification**

**Symbol of Danger:** T

**Indication of Danger**

Toxic.

**Risk Statements** R: 23/24/25 34

Toxic by inhalation, in contact with skin and if swallowed. Causes burns.

**Safety Statements** S: 26 36/37/39 45

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 accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**US Classification and Label Text**

**Indication of Danger**

Toxic.

**Risk Statements**

Toxic by inhalation, in contact with skin and if swallowed. Causes burns.

**Safety Statements**

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 accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**US Statements**

Target organ(s): Bones.

**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

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**Section 16 - Other Information**

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**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. SigmaAldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice 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.

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