

## SAFETY DATA SHEET

### 1. SUBSTANCE AND SOURCE IDENTIFICATION

**Product Identifier**

**SRM Number:** 79a  
**SRM Name:** Fluorspar  
**Other Means of Identification:** Not applicable.

**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is intended primarily to be used for the assay of imported fluorspar for industrial applications. A unit of SRM 79a consists of one bottle containing approximately 120 g of fine acid-grade fluorspar powder.

**Company Information**

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 Standard Reference Materials Program  
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### 2. HAZARDS IDENTIFICATION

**Classification**

**Physical Hazard:** Not classified.  
**Health Hazard:** Carcinogen: Category 1  
 STOT, Repeat Exposure: Category 1.

**Label Elements**

**Symbol:**



**Signal Word:**  
DANGER

**Hazard Statement(s):**

H350 May cause cancer (lung) via inhalation.  
 H372 Causes damage to lungs through prolonged or repeat inhalation.

**Precautionary Statement(s):**

P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P260 Do not breathe dust.  
 P264 Wash hands thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P280 Wear eye protection, protective gloves and clothing.  
 P308+P313 If exposed or concerned: Get medical attention.  
 P405 Store locked up.  
 P501 Dispose of contents and container according to local regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** Fine high grade fluorspar powder

**Other Designations:** Fluorite (CaF<sub>2</sub>); calcium fluoride; liparite (fluorite); fluorspar; natural fluorite

**NOTE:** Components are listed in compliance with OSHA's 29 CFR 1910.1200.

| Hazardous Component(s)       | CAS Number | EC Number (EINECS) | Nominal Mass Concentration (%) |
|------------------------------|------------|--------------------|--------------------------------|
| Fluorspar (Calcium fluoride) | 14542-23-5 | 238-575-7          | 97.4                           |
| Silicon dioxide, quartz      | 14808-60-7 | 238-878-4          | >0.1                           |

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### 4. FIRST AID MEASURES

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#### Description of First Aid Measures

**Inhalation:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Seek immediate medical attention.

**Skin Contact:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Eye Contact:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Ingestion:** Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediate.

**Most Important Symptoms/Effects, Acute and Delayed:** Little acute toxicity, usually no treatment needed.

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek immediate medical attention.

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### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

#### Extinguishing Media

Suitable: Use extinguishing agents appropriate for surrounding fire.

Unsuitable: None listed.

**Specific Hazards Arising from the Chemical:** Not applicable.

**Special Protective Equipment and Precautions for Fire-Fighters:** Move container from fire area if it can be done without personal risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

**NFPA Ratings** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 1                  Fire = 0                  Reactivity = 0

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### 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection". Keep out of waters supplies and sewers.

**Methods and Materials for Containment and Clean up:** Collect spilled material in appropriate container for disposal. Avoid generating dust. Clean up residue with a high-efficiency particulate filter vacuum.

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### 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** Avoid generating dust. See Section 8, "Exposure Controls and Personal Protection".

**Storage and Incompatible Materials:** Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances (See Section 10, "Stability and Reactivity").

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

| Exposure Limits            |   |   |   |
|----------------------------|---|---|---|
| Components                 | OSHA (PEL)  | ACGIH (TLV)   | NIOSH (REL)   |
| Silica, crystalline quartz | TWA: 30/(SiO <sub>2</sub> + 2) mg/m <sup>3</sup><br>(total dust)<br>TWA: 10/(SiO <sub>2</sub> + 2) mg/m <sup>3</sup><br>(respirable fraction)<br>TWA: 250/(SiO <sub>2</sub> + 5) mppcf<br>(respirable fraction) | TWA: 0.025 mg/m <sup>3</sup><br>(respirable fraction) | TWA: 0.05 mg/m <sup>3</sup><br>(respirable dust)<br>IDLH: 50 mg/m <sup>3</sup><br>(respirable dust) |
| as F, related to Fluorides | TWA: 2.5 mg/m <sup>3</sup>  | TWA 2.5 mg/m <sup>3</sup>                             | TWA: No occupational exposure limits establish.   |

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection Measures:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye Protection:** Splash resistant safety goggles and emergency eyewash are recommended.

**Skin and Body Protection:** Chemical resistant clothing and gloves are recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|   |   |   |
|---|---|---|
| <b>Properties</b>                                       | <b>Fluorspar &gt;97 %</b>   | <b>Quartz &gt;0.1 %</b>   |
| <b>Molar Mass (g/mol)</b>                               | 78.08   | 60.09   |
| <b>Molecular Formula</b>                                | CaF <sub>2</sub>  | SiO <sub>2</sub>  |
| <b>Appearance (physical state, color, etc.)</b>         | white, hygroscopic fine powder  | not applicable  |
| <b>Odor</b>   | odorless  | odorless  |
| <b>Odor threshold</b>                                   | not available   | not available   |
| <b>pH</b>   | not available   | not available   |
| <b>Evaporation rate</b>                                 | not available   | not available   |
| <b>Melting point/freezing point</b>                     | 1423 °C (2593.4 °F)   | 1610 °C (2930 °F)   |
| <b>Relative Density as Specific Gravity (water = 1)</b> | 3.18 at 20 °C (solid)   | not applicable  |
| <b>Vapor Pressure</b>                                   | not available   | not applicable  |
| <b>Vapor Density (air = 1)</b>                          | not available   | not available   |
| <b>Viscosity</b>  | not applicable  | not applicable  |
| <b>Solubilities</b>                                     | soluble: 0.0017 % (26 °C) in water, ammonium salt solutions<br>slightly soluble: dilute mineral acids<br>insoluble: acetone | insoluble in water, acids and organic solvents;<br>soluble in hydrofluoric acid;<br>very slightly soluble in alkali, hot concentrated phosphoric acid |
| <b>Partition coefficient (n-octanol/water)</b>          | not available   | not available   |
| <b>Particle Size</b>                                    | 177 μ (80 mesh)   | 177 μ (80 mesh)   |
| <b>Thermal Stability Properties</b>                     |   |   |
| <b>Autoignition Temperature</b>                         | not applicable  | not applicable  |
| <b>Thermal Decomposition</b>                            | not available   | not available   |
| <b>Initial boiling point and boiling range</b>          | ≈2500 °C (≈4532 °F)   | not available   |
| <b>Explosive Limits, LEL (Volume %)</b>                 | not applicable  | not applicable  |
| <b>Explosive Limits, UEL (Volume %)</b>                 | not applicable  | not applicable  |
| <b>Flash Point</b>                                      | not applicable  | not applicable  |
| <b>Flammability (solid, gas)</b>                        | not applicable  | not applicable  |

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  Stable  Unstable

**Possible Hazardous Reactions:** Not applicable.

**Conditions to Avoid:** Avoid generating dust.

**Incompatible Materials:** Acids.

**Hazardous Decomposition:** Halogenated compounds.

**Hazardous Polymerization:**  Will Occur  Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**  Inhalation  Skin  Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** Little acute toxicity, usually no treatment needed.

### Potential Health Effects (Acute, Chronic, and Delayed)

**Inhalation:** Acute exposure to fluorspar dust may cause minor upper respiratory tract irritation; chronic exposure may cause loss of weight and appetite, anemia, and bone and teeth defects. Pulmonary lesions have been reported among person inhaling dust particulates. Prolonged or repeated exposure to mixtures containing respirable silica may cause cough, expectoration, dyspnea, wheezing, pharyngitis, chronic bronchitis, emphysema, and silicosis.

**Skin Contact:** Generated dust or powder exposure may result in mechanical irritation.

**Eye Contact:** Irritation and possible eye damage through mechanical abrasion. Chronic exposure may result in conjunctivitis.

**Ingestion:** Ingestion of this material is unlikely under normal conditions of use. Ingestion of fluorspar may result in gastrointestinal effects.

### Numerical Measures of Toxicity

**Acute Toxicity:** Not classified.

Fluorspar: Rat, Oral LD50: 4250 mg/kg

**Skin Corrosion/Irritation:** Not classified.

**Serious Eye Damage/Eye Irritation:** Not classified.

**Respiratory Sensitization:** No data available.

**Skin Sensitization:** No data available.

**Germ Cell Mutagenicity:** No data available.

**Carcinogenicity:** Category 1.

**Listed as a Carcinogen/Potential Carcinogen**  Yes  No

Fluorspar is not listed by IARC, NTP, or OSHA as a carcinogen.

Silica, crystalline quartz is listed as Group 1, *carcinogenic to humans* by IARC, *known human carcinogen* (respirable size) by NTP, and is not listed by OSHA as a designated carcinogen.

Mutagenic data:

Quartz: Human, 120 mg/L (24 h)

Tumorigenic data:

Quartz: Rat, Inhalation, TCLo: 50 mg/m<sup>3</sup> (6 h)

**Reproductive Toxicity:** Not classified.

**Specific Target Organ Toxicity, Single Exposure:** Not classified.

**Specific Target Organ Toxicity, Repeated Exposure:** Category 1, Lungs.

**Aspiration Hazard:** Not applicable.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** No ecotoxicity data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose in accordance with all applicable federal, state, and local regulations.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** Not regulated by DOT or IATA.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

|                 |     |
|-----------------|-----|
| ACUTE HEALTH:   | No  |
| CHRONIC HEALTH: | Yes |
| FIRE:           | No  |
| REACTIVE:       | No  |
| PRESSURE:       | No  |

**State Regulations:** California Proposition 65: Not listed.

**U.S. TSCA Inventory:** Calcium fluoride and quartz are listed.

**TSCA 12(b), Export Notification:** Not listed.

**Canadian Regulations:** WHMIS Information: Not provided for this material.

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## 16. OTHER INFORMATION

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**Issue Date:** 04 June 2015

**Sources:** ChemADVISOR, Inc., MSDS *Fluorspar*, 20 March 2015.

ChemADVISOR, Inc., MSDS *Quartz*, 20 March 2015.

CAMEO Chemicals, Office of Response and Restoration, NOAA's Ocean Service, National Oceanic and Atmospheric Administration, *Calcium Fluoride CAS# 7789-75-5, CAF*; available at <http://cameochemicals.noaa.gov/search/simple> (accessed Jun 2015).

Hazardous Substances Data Bank (HSDB), National Institutes of Health, Department of Health & Human Services, U.S. National Library of Medicine, *Calcium Fluoride CAS# 7789-75-5*; available at <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB> (accessed Jun 2015).

### Key of Acronyms:

|        |   |       |  |
|--------|---|-------|--|
| ACGIH  | American Conference of Governmental Industrial Hygienists             | NTP   | National Toxicology Program                      |
| CAS    | Chemical Abstracts Service  | OSHA  | Occupational Safety and Health Administration    |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act | PEL   | Permissible Exposure Limit                       |
| CFR    | Code of Federal Regulations   | RCRA  | Resource Conservation and Recovery Act           |
| DOT    | Department of Transportation  | REL   | Recommended Exposure Limit                       |
| EINECS | European Inventory of Existing Commercial Chemical Substances         | RQ    | Reportable Quantity                              |
| EPCRA  | Emergency Planning and Community Right-to-Know Act                    | RTECS | Registry of Toxic Effects of Chemical Substances |
| IARC   | International Agency for Research on Cancer                           | SARA  | Superfund Amendments and Reauthorization Act     |
| IATA   | International Air Transportation Agency                               | SCBA  | Self-Contained Breathing Apparatus               |
| IDLH   | Immediately Dangerous to Life and Health                              | SRM   | Standard Reference Material                      |
| LC50   | Lethal Concentration  | STEL  | Short Term Exposure Limit                        |
| LD50   | Median Lethal Dose or Lethal Dose, 50 %                               | TLV   | Threshold Limit Value                            |
| LEL    | Lower Explosive Limit   | TPQ   | Threshold Planning Quantity                      |
| MSDS   | Material Safety Data Sheet  | TSCA  | Toxic Substances Control Act                     |
| NFPA   | National Fire Protection Association                                  | TWA   | Time Weighted Average                            |
| NIOSH  | National Institute for Occupational Safety and Health                 | UEL   | Upper Explosive Limit                            |
| NIST   | National Institute of Standards and Technology                        | WHMIS | Workplace Hazardous Materials Information System |
| n.o.s. | Not Otherwise Specified   |       |  |

**Disclaimer:** Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail [srmmsds@nist.gov](mailto:srmmsds@nist.gov); or via the Internet at <http://www.nist.gov/srm>.