

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 1883a
SRM Name: Calcium Aluminate Cement
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended primarily for use in evaluating chemical methods of analysis and in the calibration of instrumental methods of analysis of cements and materials of similar matrix. A unit of SRM 1883a consists of four sealed vials, each containing at least 5 g of calcium aluminate cement ground to pass through a 75 µm (No. 200) sieve, and sealed individually in a foil pouch.

Company Information

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2. HAZARDS IDENTIFICATION

Classification

Physical Hazard:	Not classified.	
Health Hazard:	Acute Toxicity, Oral	Category 4
	Skin Corrosion/Irritation	Category 2
	Eye Damage/Irritation	Category 2A
	STOT, Single Exposure	Category 3 (respiratory irritant)

Label Elements**Symbol****Signal Word**

WARNING

Hazard Statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary Statement(s)

P261	Avoid breathing dust.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area
P280	Wear eye protection, protective gloves and clothing.
P301+P312	If swallowed: Call a doctor if you feel unwell.
P330	Rinse mouth.
P302+P352	If on skin: Wash with plenty of water.
P332+P313	If skin irritation occurs, get medical attention.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P312	Call a doctor if you feel unwell.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents and container according to local regulations.

Hazards Not Otherwise Classified: None.

Ingredients(s) with Unknown Acute Toxicity: None.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Calcium aluminate cement

Other Designations: Hydraulic cement; Ciment Fondu®; Secar® 71.

Components are listed in compliance with OSHA's 29 CFR 1910.1200. This cement may also contain trace amounts of oxides and other chemicals due to the starting materials and manufacturing process. See the NIST Certificate of Analysis for values of elements expressed as oxides.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Calcium Aluminate Cement	65997-16-2	266-045-5	100
Individual Components			
Aluminum oxide	1344-28-1	215-691-6	70
Calcium oxide	1305-78-8	215-138-9	29.5
Silicon dioxide	7631-86-9	231-545-4	0.24

4. FIRST AID MEASURES

Description of First Aid Measures

Inhalation: If adverse effects occur, remove to well-ventilated (uncontaminated) area. If breathing is difficult, qualified personnel may administer oxygen. If not breathing, qualified personnel should give artificial respiration. Seek immediate medical attention.

Skin Contact: Rinse affected skin with water for at least 15 minutes, and then wash thoroughly with soap or mild detergent and water. If skin irritation persists, seek medical aid and bring the container or label.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: If a large amount is swallowed, seek medical attention.

Most Important Symptoms/Effects, Acute and Delayed: Dust particles may cause irritation (eye, skin, and respiratory).

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

5. FIRE FIGHTING MEASURES

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

Extinguishing Media

Suitable: Use extinguishing agents appropriate to surrounding fire.

Unsuitable: None listed.

Specific Hazards Arising from the Chemical: Not applicable.

Special Protective Equipment and Precautions for Fire-Fighters: 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 = 0 Fire = 0 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Avoid generating dust. Collect in appropriate container for disposal.

7. HANDLING AND STORAGE

Safe Handling Precautions: Use suitable personal protection equipment (PPE). See Section 8, "Exposure Controls and Personal Protection".

Storage and Incompatible Materials: Store in a well-ventilated area. Samples should be used immediately after opening the Mylar bag and vial.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: No occupational exposure limits have been established for calcium aluminate cement. This material is a particulate matter and adequate inhalation/respiratory protection should be used to minimize exposure. OSHA Particulates Not Otherwise Regulated (PNOR) exposure limits apply.

OSHA (PEL): 15 mg/m³ (total dust)

OSHA (PEL): 5 mg/m³ (respirable fraction)

NIOSH (REL): 15 mg/m³ (total dust)

NIOSH (REL): 5 mg/m³ (respirable fraction)

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 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

Descriptive Properties:	Calcium Aluminate Cement
Molar Mass (g/mol)	not applicable
Molecular Formula	not applicable
Appearance (physical state, color, etc.)	white powder
Odor	odorless
Odor threshold	not available
pH	11 to 11.5 (wet cement)
Evaporation rate	0 %
Melting point/freezing point	not available
Relative Density as Specific Gravity (water = 1)	2.9 to 3.3
Density	not available
Vapor Pressure	not available
Vapor Density (air = 1)	not applicable
Viscosity	not applicable
Solubilities	water: negligible
Partition coefficient (n-octanol/water)	not applicable
Particle size	75 µm
Thermal Stability Properties	
Autoignition Temperature	not applicable
Thermal Decomposition	not applicable
Initial boiling point and boiling range	not applicable
Explosive Limits, LEL (Volume %)	not applicable
Explosive Limits, UEL (Volume %)	not applicable
Flash Point	not applicable
Flammability (solid, gas)	not applicable

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: Stable Unstable

Possible Hazardous Reactions: Not applicable.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: No data available.

Hazardous Decomposition: No data available.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: Inhalation Skin Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Eye, skin, and respiratory irritation. May aggravate respiratory disorders.

Potential Health Effects (Acute, Chronic, and Delayed)

Inhalation: Inhalation of calcium aluminate cement dust may result in respiratory irritation with sore throat, and coughing. Chronic exposure may result in irritation.

Skin Contact: Direct contact with wet calcium aluminate cement, combined with prolonged contact time and pressure may cause severe irritation. Chronic exposure may result in contact dermatitis.

Eye Contact: Cement dust may cause irritation, edema, hyperemia, and blurred vision. In addition, wet cement may cause a burning sensation, corneal edema indicated by seeing halos around lights, and injury to the conjunctiva. Chronic exposure may result in conjunctivitis.

Ingestion: Ingestion of large amounts of wet or dry cement are unlikely under normal conditions of use. Chronic exposure may result in irritation of the mucous membranes with possible gastrointestinal disturbances.

Numerical Measures of Toxicity

Acute toxicity: Category 4, Oral

Calcium aluminate cement: No data available.

Aluminum oxide: Rat, Oral LD50: 5000 mg/kg

Calcium oxide: Rat, Oral LD50: 500 mg/kg

Skin corrosion/irritation: Category 2

Exposure may cause irritation and dermatitis.

Serious eye damage/eye irritation: Category 2A

Exposure to calcium aluminate cement (dry or wet) may cause serious eye irritation.

Respiratory sensitization: No data available.

Skin sensitization: Not classified.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Not classified.

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

Calcium aluminate cement is not listed by OSHA, IARC, or NTP as a carcinogen or potential carcinogen.

Reproductive Toxicity: No data available.

Specific Target Organ Toxicity (STOT), Single Exposure: Category 3, Respiratory tract irritation.

May cause respiratory irritation.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration hazard: Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data

Calcium oxide:

Carp: *Cyprinus carpio* LC50 (96 h): 1070 mg/L [static]

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

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

15. REGULATORY INFORMATION

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:	Yes
CHRONIC HEALTH:	Yes
FIRE:	No
REACTIVE:	No
PRESSURE:	No

State Regulations

California Proposition 65: Not listed.

U.S. TSCA Inventory: Calcium aluminate cement is listed.

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

Canadian Regulations: WHMIS Information is not provided for this material.

16. OTHER INFORMATION

Issue Date: 12 June 2014

Sources: ChemADVISOR, MSDS *Cement, Alumina, Chemicals*, 21 March 2014.

ChemADVISOR, MSDS *Aluminum Oxide*, 21 March 2014.

ChemADVISOR, MSDS *Calcium Oxide*, 21 March 2014.

ChemADVISOR, MSDS *Silicon Dioxide*, 21 March 2014.

Kerneos Inc., MSDS *Calcium Aluminate Cement*, 09 October 2013 (reviewed).

Center for Disease Control (CDC) NIOSH Pocket Guide to Chemical Hazards, *Particulates not otherwise regulated*; available at <http://www.cdc.gov/niosh/npg/npgd0480.html> (accessed Jun 2014).

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	STOT	Specific Target Organ Toxicity
LD50	Median Lethal Dose or Lethal Dose, 50 %	STEL	Short Term Exposure Limit
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NFPA	National Fire Protection Association	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
n.o.s.	Not Otherwise Specified	WHMIS	Workplace Hazardous Materials Information System

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; or via the Internet at <http://www.nist.gov/srm>.