

## SAFETY DATA SHEET

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### 1. SUBSTANCE AND SOURCE IDENTIFICATION

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#### Product Identifier

**SRM Number:** 1884b  
**SRM Name:** Portland 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 the evaluation or calibration of methods for analysis of cements and materials of similar matrix. A unit of SRM 1884b consists of five sealed vials, each containing approximately 4.5 g of portland cement ground to pass through a 75  $\mu\text{m}$  (No. 200) sieve.

#### Company Information

National Institute of Standards and Technology  
Standard Reference Materials Program  
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1-800-424-9300 (North America)  
+1-703-527-3887 (International)

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### 2. HAZARDS IDENTIFICATION

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#### Classification

<b>Physical Hazard:</b>	Not classified.	
<b>Health Hazard:</b>	Skin Corrosion/ Irritation	Category 2
	Eye Damage/Irritation	Category 1
	STOT, Single Exposure	Category 3

#### Label Elements

##### Symbol



##### Signal Word

DANGER

##### Hazard Statement(s)

H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

### Precautionary Statement(s)

P261	Avoid breathing dust.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated room.
P280	Wear protective gloves and eye protection.
P302+P352	If on skin: Wash with plenty of water.
P332+P313	If skin irritation occurs: Get medical attention.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310	Immediately call a doctor.
P304	If inhaled: Remove person to fresh air and keep comfortable breathing.
P312	Call a doctor if you feel unwell.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in a 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.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** Portland cement

**Other Designations:** Hydraulic cement; cement (portland); silicate, portland cement; portland cement silicate.

Components are listed in compliance with OSHA's 29 CFR 1910.1200. Cement may contain trace amounts of oxides and other chemicals due to the starting materials and manufacturing process, including chromium compounds. This SDS is for portland cement with <0.1 % of quartz. Actual concentrations for constituents in SRM 1884b are listed in the NIST Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Portland cement	65997-15-1	266-043-4	>99.9
Silica, crystalline 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 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:** Inhalation of dust particles may cause irritation. Prolonged exposure to respirable silica particles can cause lung damage (silicosis) and cancer.

**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 to 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).

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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".

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

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## 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** Use suitable personal protection equipment (PPE) to prevent skin and eye contact and inhalation of generated dust. 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.

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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Exposure Limits			
Components	OSHA (PEL)	ACGIH (TLV)	NIOSH (REL)
Portland Cement	TWA: 15 mg/m <sup>3</sup> (total dust) TWA: 5 mg/m <sup>3</sup> (respirable fraction) TWA: 50 mppcf (<1 % crystalline silica)	TWA: 1 mg/m <sup>3</sup> (respirable fraction, particulate matter containing no asbestos and <1 % crystalline silica)	TWA: 10 mg/m <sup>3</sup> (total dust) TWA: 5 mg/m <sup>3</sup> (respirable dust) IDLH: 5000 mg/m <sup>3</sup>
Silica, crystalline quartz	TWA: 30/(%SiO <sub>2</sub> + 2) mg/m <sup>3</sup> (total dust) TWA: 10/(%SiO <sub>2</sub> + 2) mg/m <sup>3</sup> (respirable fraction) TWA: 250/(%SiO <sub>2</sub> + 5) (mppcf respirable fraction)	TWA: 0.025 mg/m <sup>3</sup> (respirable fraction)	TWA: 0.05 mg/m <sup>3</sup> (respirable dust) IDLH: 50 mg/m <sup>3</sup> (respirable dust)

**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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Descriptive Properties:

**Appearance (physical state, color, etc.):** white to gray powder  
**Molecular Formula:** not applicable

<b>Molar Mass (g/mol):</b>	not applicable
<b>Odor:</b>	odorless
<b>Odor threshold:</b>	not available
<b>pH:</b>	12 to 13 (wet cement)
<b>Evaporation rate:</b>	0 %
<b>Melting point/freezing point:</b>	not available
<b>Relative Density:</b>	3.15
<b>Vapor Pressure:</b>	not available
<b>Vapor Density:</b>	not applicable
<b>Viscosity:</b>	not applicable
<b>Solubility(ies):</b>	Water: 0.1 % to 1 %
<b>Partition coefficient (n-octanol/water):</b>	not applicable
<b>Particle Size</b>	75 µm
<b>Thermal Stability Properties:</b>	
<b>Autoignition Temperature:</b>	not applicable
<b>Thermal Decomposition</b>	not applicable
<b>Initial boiling point and boiling range:</b>	not applicable
<b>Explosive Limits, LEL:</b>	not applicable
<b>Explosive Limits, UEL:</b>	not applicable
<b>Flash Point:</b>	not applicable
<b>Flammability (solid, gas):</b>	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:** Miscellaneous decomposition products.

**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:** Respiratory irritation; eye and/or skin irritation.

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

**Inhalation:** Irritation, cough accompanied by phlegm. Prolonged exposure to mixed cement dusts may cause cough, expectoration, dyspnea, wheezing, pharyngitis, chronic bronchitis, emphysema, cement pneumoconiosis, and silicosis.

**Skin Contact:** Irritation (possibly severe) and dermatitis. Direct contact with wet cement, combined with prolonged contact time and pressure may cause ulcerations and possibly burns. Sensitivity to constituents of cement may induce allergic skin reactions (chromium compounds).

**Eye Contact:** Irritation, visual disturbances, eye damage. In addition, wet cement may cause a burning sensation, corneal edema indicated by seeing halos around lights, and injury to the conjunctiva.

**Ingestion:** Irritation (long-term) and possible gastroduodenal ulcers.

### Numerical Measures of Toxicity

**Acute Toxicity:** Not classified.

Portland cement: No data available.

Silica, crystalline quartz: Rat, Oral LD50: 500 mg/kg

**Skin Corrosion/Irritation:** Category 2, Skin irritation.

Exposure may cause irritation (rash, scaling, and cracking) and dermatitis. May cause burns in the presence of moisture.

**Eye Damage/Irritation:** Category 1, Eye irritation.



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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: Yes

CHRONIC HEALTH: No

FIRE: No

REACTIVE: No

PRESSURE: No

### State Regulations

California Proposition 65: Warning! This product contains a chemical (quartz) known to the state of California to cause cancer.

**U.S. TSCA Inventory:** Portland cement and silica, crystalline quartz are listed.

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

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

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## 16. OTHER INFORMATION

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**Issue Date:** 27 May 2025

**Sources:** ChemADVISOR, Inc., SDS *Portland Cement*, 12 December 2015.

United States Department of Labor Occupational Safety and Health Administration, *Preventing Skin Problems from Working with Portland Cement*, available at <https://www.osha.gov/sites/default/files/publications/OSHA-3351-portland-cement.pdf> (accessed May 2025).

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NIST	National Institute of Standards and Technology
ALI	Annual Limit on Intake	NRC	Nuclear Regulatory Commission
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CEN	European Committee for Standardization	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
CPSU	Coal Mine Dust Personal Sample Unit	REL	Recommended Exposure Limit
DOT	Department of Transportation	RM	Reference Material
EC50	Effective Concentration, 50 %	RQ	Reportable Quantity
EINECS	European Inventory of Existing Commercial Chemical Substances	RTECS	Registry of Toxic Effects of Chemical Substances
EPCRA	Emergency Planning and Community Right-to-Know Act	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	SCBA	Self-Contained Breathing Apparatus
IATA	International Air Transport Association	SDS	Safety Data Sheet
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
ISO	International Organization for Standardization	STEL	Short Term Exposure Limit
LC50	Lethal Concentration, 50 %	TDL <sub>o</sub>	Toxic Dose Low
LD50	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
MSHA	Mine Safety and Health Administration	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

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