

## SAFETY DATA SHEET

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### 1. SUBSTANCE AND SOURCE IDENTIFICATION

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**Product Identifier****SRM Number:** 688**SRM Name:** Basalt Rock**Other Means of Identification:** Not applicable.**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is a finely powdered basalt rock intended for use in evaluating the accuracy of analytical methods and instruments in the analysis of geological type material. A unit of SRM 688 consists of 60 g of powder.

**Company Information**

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### 2. HAZARDS IDENTIFICATION

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**Classification****Physical Hazard:** Not classified.**Health Hazard:** Not classified.**Label Elements****Symbol:** No Symbol/No Pictogram.**Signal Word:** No Signal Word.**Hazard Statement(s):** Not applicable.**Precautionary Statement(s):** Not applicable.**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:** Finely powdered basalt rock**Other Designations:** Basalt

Components are listed in compliance with OSHA's 29 CFR 1910.1200. Trace amounts of respirable silica (quartz and amorphous) and titanium dioxide, which have been reported to have mutagenic and/or carcinogenic effects, may be present in this material. Handle this material with care. For actual values, see the NIST Certificate.

Main Component	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Basalt Rock	not applicable	not applicable	100
<b>Component(s)</b>			
Silicon dioxide	7631-86-9	231-545-4	48.4
Aluminum oxide	1344-28-1	215-691-6	17.4
Calcium oxide	1305-78-8	215-138-9	12.2
Iron (III) oxide	1309-37-1	215-168-2	10.4
Iron (II) oxide	1345-25-1	215-721-8	7.6
Sodium oxide	1313-59-3	215-208-9	2.2
Titanium dioxide	13463-67-7	236-675-5	1.2

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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. Get immediate medical attention.

**Skin Contact:** Wash skin with soap and water for at least 15 minutes. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Eye Contact:** Flush eyes with plenty of water for at least 15 minutes. Get medical attention, if needed.

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

**Most Important Symptoms/Effects, Acute and Delayed:** Respiratory tract, skin, and eye irritation.

**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 water or extinguishing agents most appropriate for surround 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:** Avoid generating dust. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Collect spilled material in appropriate container for disposal. 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:** Use methods to minimize dust. See Section 8, "Exposure Controls and Personal Protection".

**Storage and Incompatible Materials:** Keep container tightly closed. Store in a cool, dry place. Keep separated from incompatible substances (See Section 10, "Stability and Reactivity").

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits			
Component(s)	OSHA (PEL)	ACGIH (TLV)	NIOSH (REL)
Silicon dioxide	20 mppcf TWA (80)/(% SiO <sub>2</sub> + 2) mg/m <sup>3</sup> TWA	No occupational limits established.	6 mg/m <sup>3</sup> TWA 3000 mg/m <sup>3</sup> IDLH
Aluminum oxide	15 mg/m <sup>3</sup> TWA (total dust) 5 mg/m <sup>3</sup> TWA (respirable fraction)	1 mg/m <sup>3</sup> TWA (respirable fraction, related to Aluminum insoluble compounds)	No occupational limits established.
Calcium oxide	5 mg/m <sup>3</sup> TWA	2 mg/m <sup>3</sup> TWA	2 mg/m <sup>3</sup> TWA 25 mg/m <sup>3</sup> IDLH
Iron (III) oxide	10 mg/m <sup>3</sup> TWA (fume) 15 mg/m <sup>3</sup> TWA (total dust) 5 mg/m <sup>3</sup> TWA (respirable fraction)	5 mg/m <sup>3</sup> TWA (respirable fraction)	5 mg/m <sup>3</sup> TWA (as Fe, dust and fume) 2500 mg/m <sup>3</sup> IDLH (as Fe, dust and fume)
Titanium dioxide	15 mg/m <sup>3</sup> TWA (total dust)	10 mg/m <sup>3</sup> TWA	5000 mg/m <sup>3</sup> IDLH

No occupational limits established for basalt rock, iron (II) oxide, and sodium oxide.

**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

Properties	Basalt rock
<b>Molar Mass (g/mol)</b>	varies
<b>Molecular Formula</b>	not available
<b>Appearance (physical state, color, etc.)</b>	powder
<b>Odor</b>	not available
<b>Odor threshold</b>	not available
<b>pH</b>	not available
<b>Evaporation rate (butyl acetate = 1)</b>	not available
<b>Melting point/freezing point</b>	not available
<b>Density</b>	not available
<b>Vapor Pressure</b>	not available
<b>Vapor Density (air = 1)</b>	not available
<b>Viscosity</b>	not available
<b>Solubilities</b>	insoluble in water
<b>Partition coefficient (n-octanol/water)</b>	not available
<b>Particle Size</b>	≤200 mesh

<b>Thermal Stability Properties</b>	<b>Basalt rock</b>
<b>Autoignition Temperature</b>	not available
<b>Thermal Decomposition</b>	not available
<b>Initial boiling point and boiling range</b>	not available
<b>Explosive Limits, LEL (Volume %)</b>	not available
<b>Explosive Limits, UEL (Volume %)</b>	not available
<b>Flash Point (Closed Cup)</b>	not available
<b>Flammability (solid, gas)</b>	not available

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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. Avoid heat, flames, sparks and other sources of ignition.

**Incompatible Materials:** Halogens, halo carbons, oxidizing materials, combustible materials, acids, metals, and metal salts.

**Hazardous Decomposition:** Miscellaneous decomposition products.

**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:** Respiratory tract, skin, and eye irritation.

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

**Inhalation:** Exposure may cause respiratory tract irritation.

**Skin Contact:** Exposure may cause drying of the skin, burns, and irritant dermatitis accompanied by pruritus.

**Eye Contact:** Dust may cause irritation accompanied by redness, pain, burns, and swelling of the conjunctiva.

**Ingestion:** Ingestion of this material may result in constipation, digestive disorders, and gastrointestinal irritation.

### Numerical Measures of Toxicity

**Acute Toxicity:** Classification not possible; particulate size ( $\leq 200$  mesh) above respirable range for Category 4, Inhalation.

#### Component(s)

Silicon dioxide	Rat, Oral LD50: >5000 mg/kg Rat, Inhalation LD50: >2.2 mg/mL (1 h) Rat, Dermal LD50: >2000 mg/kg
Aluminum oxide	Rat, Oral LD50: >5000 mg/kg
Calcium oxide	Rat, Oral LD50: 500 mg/kg
Iron (III) oxide	Rat, Oral LD50: >10 000 mg/kg
Iron (II) oxide	No data available.
Sodium oxide	No data available.
Titanium dioxide	Rat, Oral LD50: >10 000 mg/kg

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

Silicon dioxide: Rabbit, Eyes (mild): 25 mg (24 h).

**Serious Eye Damage/Eye Irritation:** Not classified; no data available.

**Respiratory Sensitization:** Not classified; no data available.

**Skin Sensitization:** Not classified; no data available.

**Germ Cell Mutagenicity:** Not classified; no data available.

**Carcinogenicity:** Classification not possible; particulate size ( $\leq 200$  mesh) above respirable range.

**Listed as a Carcinogen/Potential Carcinogen** \_\_\_\_\_ **Yes** \_\_\_\_\_ **X** **No**  
Basalt rock is not listed by IARC, NTP, or OSHA as a carcinogen.

**Note:** Silicon dioxide is listed by IARC as Category 3 (*not classifiable*) and it is not listed by NTP or OSHA as a carcinogen. Trace amounts of respirable silica (quartz and amorphous) and titanium dioxide may be present. Quartz is listed as Group 1 (*carcinogenic to humans*) by IARC, as a known human carcinogen (respirable size) by NTP, and is not listed by OSHA as a designated carcinogen. Titanium dioxide is listed by IARC as Group 2B (*possibly carcinogenic to humans*) and is not listed by NTP or OSHA as a carcinogen.

**Reproductive Toxicity:** Not classified; no data available.

**Specific Target Organ Toxicity, Single Exposure:** Not classified; no data available.

**Specific Target Organ Toxicity, Repeated Exposure:** Not classified; no data available.

**Aspiration hazard:** Not applicable.

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## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity Data

#### Component(s)

Silicon dioxide    Fish Toxicity: Zebrafish (*Brachydanio rerio*) LC50 (static): 5000 mg/L (96 h)  
                          Algae: Microalga (*Pseudokirchneriella subcapitata*) EC50: 440 mg/L IUCLID (72 h)  
                          Invertebrate: Water flea (*Ceriodaphnia dubia*) EC50: 7600 mg/L IUCLID (48 h)

Calcium oxide    Fish Toxicity: Common carp (*Cyprinus carpio*) LC<sub>50</sub> (static): 1070 mg/L (96 h)

No ecotoxicity data available for aluminum oxide, iron (II) oxide, iron (III) oxide, and titanium dioxide.

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

**Bioaccumulative Potential:** No bioaccumulation expected for calcium oxide or sodium dioxide.

**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 requirements.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** This material is 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 for this material.

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

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

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

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

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

ACUTE HEALTH:        No  
CHRONIC HEALTH:    No  
FIRE:                    No  
REACTIVE:            No  
PRESSURE:            No

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

**U.S. TSCA Inventory:** Aluminum oxide, silicon dioxide, calcium oxide, iron (II) oxide, iron (III) oxide, sodium oxide, and titanium dioxide 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:** 18 April 2014

**Sources:** ChemAdvisor, Inc., MSDS *Aluminum Oxide*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Silicon Dioxide*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Calcium Oxide*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Iron (II) Oxide*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Ferric Oxide Red*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Sodium Oxide*, 23 December 2013.  
ChemAdvisor, Inc., MSDS *Titanium Dioxide*, 23 December 2013.

### 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.

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>.