



# SAFETY DATA SHEET

MATERIAL: GROUND GRANULATED BLAST FURNACE SLAG

## Section 1 – Product Identification

### Product Identifier

**Product Name:** Ground Granulated Blast Furnace Slag

**Product Codes:** ProCem™

This SDS covers several products. Individual constituents will vary.

**Synonyms:** Slag cement, ground granulated blast furnace slag (GGBFS), granulated blast furnace slag (GBFS), Slag

**Product Form:** Solid / powder or granular

**Intended Use of Product:** Ground granulated blast furnace slag is used as an additive with portland cement in combination with water and aggregates to form concrete. Granulated blast furnace slag is used as a component in portland cement manufacture. It is also used as a component of other building and construction materials. Both forms may be used in the manufacture of blended cements.

### Name, Address and Telephone of Responsible Party

Holcim (US) Inc.  
24 Crosby Drive  
Bedford, MA 01730  
(888) 646-5246

### Emergency Contact Information:

CHEMTREC: 1-800-424-9300

## Section 2 – Hazards Identification

### Classification of the Substance or Mixture

#### Classification (GHS-US)

Eye Damage 1  
Skin Corrosion 1B  
Specific Target Organ Toxicity: Repeat Exposure 1  
Carcinogen 1A

#### Label Elements

##### Hazard Pictograms



##### Signal Word

Danger

##### Hazard Statements

Causes severe skin burns and eye damage  
May cause cancer (lungs).  
Causes damage to organs (lungs) through prolonged or repeated exposure.

##### Precautionary Statements

- Prevention** Do not breathe dust. Use only outdoors or in a well-ventilated area.  
Wear protective gloves/protective clothing/eye protection/face protection  
Wash thoroughly after handling. Do not eat, drink or smoke when using this product.  
Do not handle until all safety precautions have been read and understood.
- Response** **If inhaled:** Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor.  
**If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor.  
**If on skin:** Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse.  
**If swallowed:** Rinse mouth. Do NOT induce vomiting. Immediately call a poison center/doctor.
- Storage** Store locked up.
- Disposal** Dispose of contents/container in accordance with local/state/national regulations.

##### Other Hazards

Exposure may aggravate those with pre-existing eye, skin or respiratory conditions or illness.

### Section 3 – Composition/Information on Ingredients

Component/Ingredient	CAS #	Percent Present (Range)
Slags, ferrous metals, blast furnace	65996-69-2	95 - 100
Nuisance Dusts (Particulates not otherwise regulated)	None	< 1 - 5
Crystalline Silica (Quartz)	14808-60-7	0.1 - < 1

#### Other Components

The majority of components in Granulated Blast Furnace Slag are various glassy Metallic Silicates (Iron, Calcium, Magnesium, Aluminum, and Titanium Silicates), including: Dicalcium Silicate (Ca<sub>2</sub>SiO<sub>4</sub>) 14284-23-2, Merwinite (Ca<sub>3</sub>MgSi<sub>2</sub>O<sub>8</sub>) 13813-64-4, and Gehlenite (Ca<sub>2</sub>Al<sub>2</sub>SiO<sub>7</sub>) 1302-56-3. It may contain trace quantities of other hazardous materials, including trace amounts of crystalline silica. Crystalline silica has been classified by IARC and NTP as a known human carcinogen.

### Section 4 – First Aid Measures

#### Description of First Aid Measures

- Eyes** Rinse eyes and under lids cautiously with clean water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
- Skin** Remove contaminated clothing. Wash with plenty of water. If skin irritation occurs, get immediate medical advice/attention.
- Inhalation** Remove person to fresh air away from dust and keep comfortable for breathing. If coughing persists, obtain medical attention.
- Ingestion** Do not induce vomiting. If subject is conscious, rinse the mouth with water to remove any material and drink plenty of water to dilute any swallowed material. Do not give drink or attempt to force water to an unconscious person. Get medical advice/attention.

#### Important Symptoms and Effects (Acute and Delayed)

- Eyes** Causes serious eye irritation and may scratch eye surface due to particle abrasion. May cause chemical burns resulting in corneal damage.
- Skin** Causes skin irritation if exposed to moisture on skin creating redness, dryness and itching. Extended exposure to wet material will result in chemical burns to skin, possibly severe.
- Inhalation** May irritate nose and throat if dust is inhaled. Prolonged or repeated inhalation of respirable dust may lead to respiratory tract or lung damage.
- Ingestion** May cause irritation and burns of mouth, throat, stomach and digestive tract if swallowed.

#### Recommendations for Immediate Medical Care or Special Treatment

Seek immediate medical attention for inhalation of large quantities of dust or exposure of wet material over large areas of skin. Seek immediate medical attention if material comes into contact with eyes and cannot be immediately removed.

### Section 5 – Fire Fighting Measures

- General Fire Hazards** None. Material is not considered flammable or combustible.
- Extinguishing Media** Use water or water spray to extinguish any fires involving this material.
- Extinguishing Media to Avoid** None.
- Hazards of Combustion** None.
- Fire Fighting Recommendations** Firefighters should always wear full protective gear to fight any fire. Refer to Section 9 for flammability information.

### Section 6 – Accidental Release Measures

- Precautions** Avoid creating dust. Prevent material from entering sewers, drains, ditches or waterways.
- Personal Protection** Wear respiratory protection and protective eyewear/clothing to avoid eye or skin contact.
- Emergency Procedures** Ventilate area and avoid creating dust. Remove unnecessary persons from area.
- Containment Procedures** Barricade solid material to prevent additional spillage.
- Clean Up Procedures** Scoop or vacuum up spilled material while avoiding dust creation. Scoop up wet material and place in approved container. Allow wet material to harden before disposal.

## Section 7 – Handling and Storage

<b>Safe Handling Practices</b>	Avoid contact with skin or eyes. Avoid breathing dust. Use only in well ventilated areas. Wear appropriate personal protective equipment to prevent eye or skin contact and use respiratory protection equipment if dusty or in poorly ventilated areas.
<b>Safe Storage Measures</b>	Store in well-ventilated areas away from moisture and incompatible materials. If stored in containers, keep containers closed when not in use.
<b>Incompatible Materials</b>	Water/moisture exposure will cause material to generate heat. Keep away from aluminum metal, strong acids and oxidizers. May release hydrogen sulfide gas when wet or heated. Can react with water to form calcium hydroxide.

## Section 8 – Exposure Controls & Personal Protection

### Exposure Limits for Individual Components (T= Total Respirable, R=Respirable fraction, I=Inhalable-aerosol)

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Slags, ferrous metals, blast furnace	Not established	Not established	Not established
Nuisance Dusts (PNOR)	15 mg/m <sup>3</sup> (T); 5 mg/m <sup>3</sup> (R)	10 mg/m <sup>3</sup>	Not established
Crystalline Silica (Quartz)	10 mg/m <sup>3</sup> (R) /(% SiO <sub>2</sub> + 2) 30 mg/m <sup>3</sup> (T) /(% SiO <sub>2</sub> + 2)	0.025 mg/m <sup>3</sup> (R)	0.05 mg/m <sup>3</sup> (R)

### Exposure Controls

#### Engineering Controls

Use outdoors in well-ventilated areas; otherwise employ natural or mechanical ventilation to maintain exposure within applicable limits.

#### Personal Protection

Avoid contact with skin or eyes. Avoid creating or breathing dust.

##### Face and Eyes

Safety glasses with side shields or protective goggles should be worn while using this product. For extremely dusty conditions, non-vented goggles or goggles with indirect venting are recommended. Avoid contact lens wear when using this product.

##### Body

Long sleeved shirts and trousers should be worn while using this material. Wear water-proof boots. If working in dusty conditions, impervious over garments are recommended.

##### Respiratory

If exposure levels cannot be maintained below acceptable limits, suitable particulate-filtering facemasks or respirators approved by MSHA/NIOSH should be worn in accordance with the user's respiratory protection program and OSHA/MSHA guidelines.

##### Hands

Protective gloves with wrist/arm cuffs should be worn to avoid direct contact with skin.

## Section 9 – Physical and Chemical Properties

<b>Physical State</b>	Solid, granules or powder	<b>Specific Gravity</b>	3.1 – 3.2
<b>Appearance &amp; Color</b>	Tan/off-white powder	<b>Flash Point/Method</b>	None. Not flammable.
<b>Odor</b>	None	<b>Auto Ignition Temperature</b>	Not determined
<b>pH</b>	>8 - 10	<b>Lower Flammability Limit</b>	Not applicable
<b>Boiling Point</b>	Not applicable	<b>Upper Flammability Limit</b>	Not applicable
<b>Solubility (Water)</b>	Negligible (<1%)	<b>Octanol/H<sub>2</sub>O Coefficient</b>	Not determined
<b>Evaporation Rate</b>	Not applicable	<b>Viscosity</b>	Not applicable
<b>Melting Point</b>	Not determined	<b>Freezing Point</b>	Solid at room temperature
<b>Vapor Density</b>	Not applicable	<b>Explosion Risk: Static</b>	Not considered a hazard
<b>Vapor Pressure</b>	Not applicable	<b>Explosion Risk: Shock</b>	Not considered a hazard

## Section 10 – Stability and Reactivity

<b>Reactivity</b>	Reacts with water to create heat and calcium hydroxide.
<b>Chemical Stability</b>	Stable at standard temperature and pressures.
<b>Hazardous Reactions</b>	None. Hazardous polymerization will not occur.
<b>Conditions to Avoid</b>	Moisture or wetting will cause exothermic heating as product cures.
<b>Incompatible Materials</b>	Avoid contact with strong acids, oxidizers, aluminum metal and ammonium salts.
<b>Decomposition Hazards</b>	May release hydrogen sulfide gas when wet or heated. Can react with water to form calcium hydroxide.

## Section 11 – Toxicological Information

**Product: Ground granulated blast furnace slag**

<b>Acute Toxicity</b>	Not classified.
<b>LD50/LC50 Data</b>	Not classified.
<b>Skin Corrosion/Irritation</b>	Causes irritation or chemical burns if exposed to moisture on skin.
<b>Critical Eye Damage/Irritation</b>	Causes serious eye injury due to chemical burns or mechanical irritation.
<b>Respiratory or Skin Sensitization</b>	Not reported/no data available.
<b>Germ Cell Mutagenicity</b>	Not reported/no data available.
<b>Teratogenicity</b>	Not reported/no data available.
<b>Carcinogenicity</b>	Material contains trace amounts of crystalline silica, which may cause lung cancer through repeated or prolonged exposure to dust.
<b>Specific Organ Toxicity (Single Exposure)</b>	Not reported/no data available.
<b>Specific Organ Toxicity (Repeated Exposure)</b>	May cause damage/disease to lungs through repeated or prolonged exposure.
<b>Reproductive Toxicity</b>	Not reported/no data available.
<b>Aspiration Respiratory Hazard</b>	Not reported/no data available.
<b>Symptoms: Inhalation</b>	Coughing, sneezing, mucous discharge and dyspnea. Extended contact may lead to chemical burns.
<b>Symptoms: Skin Contact</b>	Redness and itching. Extended contact may lead to chemical burns.
<b>Symptoms: Eye Contact</b>	Redness and itching. Extended contact may lead to corneal abrasion/ulceration.
<b>Symptoms: Ingestion</b>	Irritation and chemical burns of mouth and throat.
<b>Other Toxicological Information</b>	No additional data available.

<b>Components</b>	<b>Toxicity</b>	<b>Carc: IARC</b>	<b>Carc: NTP</b>	<b>Carc: OSHA</b>
Slags, ferrous metals, blast furnace (refer to Section 16 for more information)	No data	Not listed	Not listed	Not listed
Nuisance Dusts (PNOR)	No data	Not listed	Not listed	Not listed
Crystalline Silica (Quartz) (refer to Section 16 for more information)	Oral LD50 Rat >22,500 mg/kg LC50 Carp >10,000 mg/L (72 hr)	Group 1	Known	Not listed

## Section 12 – Ecological Information

<b>General Ecotoxicity</b>	Not classified.
<b>Persistence and Degradability</b>	Not reported/no data available.
<b>Bioaccumulation Potential</b>	Not reported/no data available.
<b>Mobility in Soil to Groundwater</b>	Not reported/no data available.
<b>Environmental Fate</b>	Not reported/no data available.
<b>Other Environmental Precautions or Information</b>	Avoid release to the environment. Prevent material from entering sewers, drains, ditches or waterways.

## Section 13 – Disposal Considerations

<b>Disposal Methods</b>	Dispose of waste material in accordance with applicable federal, state, and local regulations.
<b>Special Considerations</b>	Avoid creation or breathing dust during disposal. Avoid contact with skin and eyes.
<b>Other Disposal Information</b>	Prevent material from entering sewers, drains, ditches or waterways.

## Section 14 – Transport Information

<b>Proper Shipping Name</b>	N/A – not regulated.
<b>Hazard Class</b>	N/A – not regulated.
<b>UN Shipping ID Number</b>	N/A – not regulated.
<b>Packing Group</b>	N/A – not regulated.
<b>Environmental/IMDG Codes</b>	N/A – not regulated.

## Section 15 – Regulatory Information

### Federal

This product contains one or more chemical components or ingredients that may require identification and/or reporting under SARA Section 302, SARA Section 311/312/313, CERCLA and/or TSCA. An examination of the components of this product should be conducted by a qualified environmental professional to determine if such identification or reporting is required by federal law.

- Components: Silica (Crystalline)

### State

This product contains one or more chemical components or ingredients that are included or listed on the hazardous substances lists for one or more of the following states: California, Maine, Minnesota, New Jersey, Pennsylvania and Rhode Island. An examination of the components of this product should be conducted by a qualified environmental or safety and health professional to determine the specific requirements for those states.

- Components: Silica (Crystalline)

The state of California requires the following statement (Proposition 65) in regards to this material:

- WARNING! This product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

## Section 16 – Other Information

**Date of last revision:** June 22, 2015

**Prepared and reviewed by:** Holcim (US) Inc. Occupational Safety & Health

### Additional information regarding cementitious materials:

Wet portland cement, wet ground granulated blast furnace slag and other wet cementitious materials can cause caustic burns to unprotected skin, sometimes referred to as cement burns. Cement burns may result in blisters, dead or hardened skin, or black or green skin. In severe cases, these burns may extend to the bone and cause disfiguring scars or disability.

Employees cannot rely on pain or discomfort to alert them to cement burns because cement burns may not cause immediate pain or discomfort. By the time an employee becomes aware of a cement burn, much damage has already been done. Accordingly, the safest method to use portland cement is to avoid contact with exposed skin completely. Cement burns can get worse even after skin contact with cement has ended. Any employee experiencing a cement burn is advised to see a health care professional immediately.

Skin contact with wet cementitious material can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Contact with wet cementitious materials can cause a non-allergic form of dermatitis (called irritant contact dermatitis) which is related to the caustic, abrasive, and drying properties of portland cement.

Employees who work with wet cementitious materials and experience skin problems, including seemingly minor ones, are advised to see a health care professional for evaluation and treatment. In cement-related dermatitis, early diagnosis and treatment can help prevent chronic skin problems.

### Additional information regarding crystalline silica:

The major concern is silicosis, caused by the inhalation and retention of respirable (extremely small) crystalline silica dust particles. Silicosis can exist in several forms. Chronic or ordinary silicosis (often referred to as simple silicosis) is the most common form of silicosis, and can occur after many years of exposure to relatively low concentrations of airborne respirable crystalline silica dust. Complicated silicosis or progressive massive fibrosis (PMF) may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease. Acute silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis can be fatal.

IARC: The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs."

NTP: The National Toxicology Program (NTP), in its Thirteenth Annual Report on Carcinogens, classified "silica, crystalline (respirable)" as a known human carcinogen.

OSHA: Crystalline silica (quartz) is not regulated as a human carcinogen by the Occupational Safety and Health Administration.

**Other important information:**

While the information provided in this document is believed to provide a useful summary of the hazards of ground granulated blast furnace slag, the information in this document cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

The data furnished in this document do not address hazards that may be posed by other materials when mixed with ground granulated blast furnace slag. Users should review other relevant safety data sheets before working with this product.

The information presented in the Safety Data Sheet is based on current knowledge and publications and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not be interpreted as guaranteeing any specific property of the product.

**SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY HOLCIM (US) INC., EXCEPT THAT THE PRODUCT SHALL CONFORM TO CONTRACTED SPECIFICATIONS.**

--END OF SAFETY DATA SHEET--