

Date Issued	February 2003
Datasheet	1.3 Revision
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## Material Safety Data Sheet

### Chemicals (Hazard Information and Packaging for Supply) Regulations 2002

# GROUND GRANULATED BLASTFURNACE SLAG

#### 1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

##### 1.1 Name

Ground Granulated Blastfurnace Slag (GGBS) is a finely ground off-white powder used as an ingredient in concrete, mortar and grout; it is stored on site in bulk silos and bags.

##### 1.2 Suppliers and Manufacturers

North East Slag Cement Ltd, Teesport, Grangetown, Middlesbrough, TS6 6UF  
Telephone: 01642 446100 Fax: 01642 467176

Frodingham Cement Co Ltd, Brigg Road Scunthorpe, North Lincolnshire DN16 1AW  
Telephone: 01724 282211 Fax: 01724 280338

Caledonian Slag Cement (supplier only)  
King George V Dock, Glasgow, G51 4SD  
Telephone: 0141 440 5200 Fax: 0141 440 5201

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

##### 2.1 Chemical Description

GGBS is a glass consisting principally of the oxides of calcium, silicon, aluminium and magnesium with low solubility in water giving a weak alkaline solution. The bulk density is between 1000 and 1300 kg/m<sup>3</sup>. The fineness is approximately 500m<sup>2</sup>/kg.

CAS Number 65996-69-2

##### 2.2 Hazardous Ingredients

The lime, calcium silicates and alkalis within the Ground Granulated Blastfurnace Slag are partially soluble and when mixed with water will give rise to a potentially hazardous alkaline solution.

##### 2.3 Classification and Risk Phrases

Irritant, Xi

R36/38 Irritating to eyes and skin.

#### HAZARDS IDENTIFICATION

GGBS is a fine powder of nuisance dust classification. Direct contact may irritate skin, eyes, respiratory system and the gastrointestinal tract.

When mixed with water the resultant liquid will be alkaline with a pH about 12. Alkaline solutions in contact with the skin tend to damage the nerve endings first before damaging the skin, therefore chemical burns can develop without pain being felt at the time.

GGBS may be hot when delivered in bulk.

#### 4. FIRST-AID MEASURES

##### 4.1 Eye Contact

Wash eyes immediately with plenty of clean water for at least 15 minutes and seek medical advice without delay.

##### 4.2 Skin Contact

Wash the affected area thoroughly with soap and water. If irritation, pain or other skin trouble occurs, seek medical advice. Clothing contaminated by wet concrete or mortar should be removed and washed thoroughly before use.

##### Ingestion

Do not induce vomiting. Wash out mouth with water and give patient plenty of water to drink. Seek medical advice if discomfort continues.

##### 4.4 Inhalation

If irritation occurs, move to fresh air. If nose or airways become inflamed seek medical advice.

#### 5. FIRE-FIGHTING MEASURES

GGBS is not flammable and will not facilitate combustion with other materials.

#### 6. ACCIDENTAL RELEASE MEASURES

##### 6.1 Personal Precautions

Refer to exposure controls/personal protection.

##### 6.2 Cleaning Up

Recover the spillage in a dry state by vacuuming, if possible, to minimise generation of airborne dust. The product can be slurried by the addition of water but will subsequently set as a hard material. The pH of run off water is likely to increase.

#### 7. HANDLING AND STORAGE

##### 7.1 Handling

When handling GGBS bags due regard should be paid to the risks outlined in the Manual Handling Operations Regulations 1992. Some bags may have a small amount of GGBS on the outer surface. Appropriate personal protective clothing should therefore be used whilst handling.

##### 7.2 Storage

Bags should be stacked in a safe and stable manner.

#### 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

##### 8.1 Occupational Exposure Standard (OES)

OES 8hr Time Weighted Average (TWA) 10mg/m<sup>3</sup> total inhalable dust 4mg/m<sup>3</sup> respirable dust.

##### 8.2 Engineering Measures

Where reasonably practicable dust exposure should be controlled by engineering methods.

##### 8.3 Personal Protective Equipment

##### 8.3.1 Respiratory Protection

Suitable respiratory protection should be worn to ensure that personal exposure is less than the OES.

##### 8.3.2 Hand and Skin Protection

Protective clothing should be worn which ensures that GGBS or any GGBS/water mixture eg. concrete or mortar, does not come into contact with the skin. In some circumstances such as when laying concrete, waterproof trousers and wellingtons may be necessary. Particular care should be taken to ensure that wet concrete does not enter the boots and persons do not kneel on the wet concrete so as to bring the wet concrete into contact with unprotected skin. Should wet mortar or wet concrete get inside boots, gloves or other protective clothing then this protective clothing should be immediately removed and the skin thoroughly washed as well as the protective clothing/footwear.

##### 8.3.3 Eye Protection

Dust-proof goggles should be worn wherever there is a risk of GGBS powder or any GGBS/water mixture entering the eye.

## 8.4 Environmental Exposure Controls

GGBS forms an alkaline solution when mixed with water. Any entry into controlled waters should be avoided. In addition, GGBS is classed as a nuisance dust and its entry into the atmosphere should be minimised.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Physical Data

Appearance	off-white powder
Mean particle size	5-30 micron
Relative density	2750-3000kg/m <sup>3</sup> of wet ggbs 11 - 13
pH	Not applicable
Odour	Not applicable
Boiling point/boiling range	Not applicable
Melting point/melting range	Not applicable
Flash point	Not applicable
Flammability	Non flammable
Explosive properties	None
Oxidising properties	None
Solubility	Not applicable

### 9.2 Other Data

Mainly a mixture of: CaO SiO<sub>2</sub> Al<sub>2</sub>O<sub>3</sub> MgO

Contains less than 1% crystalline silica.

Contains less than 1ppm water soluble chromium VI.

## 10. STABILITY AND REACTIVITY

Conditions contributing to chemical instability	: none
Hazardous decomposition products	: none
Special precautions	: none

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Short Term Effects

#### 11.1.1 Eye Contact

GGBS is an eye irritant. Mild exposures can cause soreness. Gross exposures or untreated mild exposures can lead to chemical burning and ulceration of the eye.

#### 11.1.2 Skin Contact

Prolonged contact with wet GGBS may cause alkali burns but this is virtually unknown in normal use. No connection has been established between GGBS and dermatitis but this possibility cannot be ruled out.

#### 11.1.3 Ingestion

The swallowing of small amounts of GGBS or any GGBS/water mixtures is unlikely to cause any significant reaction. Larger doses may result in irritation to the gastro intestinal tract.

#### 11.1.4 Inhalation

GGBS powder may cause inflammation of mucous membranes.

### 11.2 Chronic Effects

High repeated exposures in excess of the OES can be linked with rhinitis and coughing.

## 12. ECOLOGICAL INFORMATION

### 12.1 Aquatic Toxicity Rating

LC50 aquatic toxicity rating not determined. The addition of GGBS to water will, however, cause the pH to rise and may therefore be toxic to aquatic life in some circumstances.

### 12.2 Other Information

No other ecological effects foreseen.

## 13. DISPOSAL CONSIDERATIONS

Dispose of empty bags or surplus GGBS to a place authorised to accept waste in accordance with the Duty of Care requirements.

## 14. TRANSPORT INFORMATION

Classification for conveyance is not required.

## 15. REGULATORY INFORMATION

### 15.1 Substance Particulars

#### 15.1.1 Indication of Danger

Irritant, Xi

#### 15.1.2 Risk Phrases

R36/38 Irritating to eyes and skin.

#### 15.1.3 Safety Phrases

S25	Avoid contact with eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37	Wear suitable gloves.

### 15.2 Other Relevant Measures

Health & Safety at Work, etc Act 1974.

Control of Substances Hazardous to Health Regulations 2002.

### 15.3 Assessment of Risk

The information contained in this data sheet does not constitute the user's own assessment of workplace risk as required by other health and safety legislation.

## 16. OTHER INFORMATION

HSE Guidance Note EH40 (Occupational Exposure Limits).

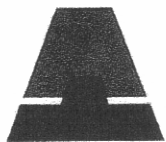
HSE Information Sheet CIS26 (rev. 2). Cement

Any authorised manual on First Aid by St Johns/St Andrews/Red Cross.

Manual Handling Operations Regulations 1992.

COSHH Regulations 2002.

Revised February 2003 to comply with CHIP 3 Regulations.



**Caledonian**  
SLAG CEMENT

King George V Dock Glasgow G51 4SD  
T: 0141 440 5200 F 0141 440 5201



**APPLEBY**  
GROUP LIMITED

Brigg Road, Scunthorpe, North Lincolnshire DN16 1AW  
T: 01724 282211 F: 01724 270435



**North East Slag Cement Ltd**

Teesport, Grangetown, Middlesbrough, TS6 6UF  
T: 01642 446100 F: 01642 467176