SAFETY DATA SHEET

GROUND GRANULATED BLASTFURNACE SLAG (GGBS)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identification
A fine off-white to light grey powder which is used as a cementitious additive.

Substance Ground Granulated Blastfurnace Slag (GGBS)
REACH Registration Number: 01-2119487456-25
EINECS: 266-002-0
CAS: 65996-69-2

Trade Name(s):
Ground Granulated Blastfurnace Slag (GGBS)

Identified uses of the substance or mixture
Used as a cementitious component in concrete, motor and grout.

Company Identification
Lafarge Cement Ltd
C/O Aggregate Industries, Bardon Hill, Coalville, Leicestershire, LE67 1TL

Emergency Contact Details
Telephone: 01530 510066
(Mon. to Fri. 8 am to 5 pm) ask for H&S Team
Email: health.safety.team@aggregate.com

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
Not classified as hazardous according to Regulation (EC) No. 1907/2006.

GGBS is a fine powder which can cause mechanical irritation to the eyes and respiratory system. When mixed with water the resultant liquid may become alkaline.

Label elements
The product does not need to be labelled in accordance with EC directives or respective national laws.
3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures
GGBS is a vitrified substance which is a byproduct of iron production in a blast furnace. It consists primarily of oxides of calcium, silicon, aluminium and magnesium. Contains less than 1% crystalline silica. Contains less than 2 ppm water soluble chromium VI.

4. FIRST AID MEASURES

Description of first aid measures

Inhalation
Remove to fresh air and allow person to rest. Seek medical advice if irritation persists.

Skin Contact
Remove any contaminated clothing. Wash with soap/cleanser and rinse with plenty of water.

Eye Contact
Do not rub eyes, as the material is abrasive and may scratch the surface of the eye. Immediately and thoroughly irrigate with water with eyelids open for approximately 15 minutes. Seek medical advice if irritation persists.

Ingestion
Rinse mouth and drink plenty of water.

5. FIREFIGHTING MEASURES

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

Special hazards arising in a fire
None, material does not combust and therefore will not release any combustion products.

Suitable/Unsuitable extinguishing media
Use media suitable for other any other materials present that may be involved in a fire.

Special Advice for fire fighters
None, general measures to fight fires are applicable.
6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**
Avoid breathing dusts and excessive physical contamination. Follow exposure controls such as protective equipment and environmental exposure controls as described under section 8 and follow advice for safe handling and storage under section 7.

**Environmental precautions**
Avoid dispersal of airborne dust. Entry into watercourses such as drainage system and bodies of water should be avoided so far as is possible.

**Methods and materials for containment and cleaning up**
If possible recover the spillage in a dry state by mechanical means such as vacuuming, to minimise generation of airborne dust. The product can be slurried by the addition of water.

7. HANDLING AND STORAGE

**Precautions for safe handling**
Follow recommendations for exposure control under section 8.

Bags may have small amounts of GGBS on the outer surface and appropriate personal protective clothing should therefore be used.

**Precautions for Safe Storage**
Bulk GGBS should be stored in silos that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination.

Packed products should be stacked in a stable manner.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace exposure limits (WELs)

It is recommended that the Dust WEL (EH40) be applied to GGBS as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>WEL (8Hr TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Inhalable Dust</td>
<td>10mg/m³</td>
</tr>
<tr>
<td>Respirable Dust</td>
<td>4mg/m³</td>
</tr>
</tbody>
</table>

It is recommended that occupational monitoring be completed to determine exposure.

Exposure controls

Appropriate engineering controls

Measures to reduce generation of dust and to avoid dust propagating in the environment such as de-dusting, exhaust ventilation and dry cleanup methods which do not cause airborne dispersion.

Individual Protection Measures such as personal protective equipment

Eye/face Protection

Eye protection in the form of safety goggles according EN166 is required whenever there is a risk of GGBS powder or any GGBS/water mixture entering the eye.

Hand Protection

Handle with watertight, wear-and alkali-resistant protective gloves according to EN345 class 3 (eg nitrile soaked cotton gloves with CE marking). Use skin care products (eg barrier creams) as appropriate. For the gloves, respect the maximum wearing time to avoid skin problems.

Gloves should be removed and hands thoroughly washed before handling or eating any food or drink.

Skin Protection

Overalls / Impervious clothing, selected according to the workplace conditions.

Respiratory Protection

Suitable dust masks should be worn in enclosed spaces where adequate ventilation is not provided.

The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (e.g. EN 149, EN 140, EN14387, EN 1827) or national standard.

The type, fit and comfort as well as the duration of the activity should also be considered when choosing RPE. The effectiveness of RPE relies on the individual’s competence and therefore a suitable policy for a respiratory protective device use including training & face fit testing of the workers should be in place.

Environmental exposure controls

Air

Environmental emission of GGBS particles into air has to be in accordance with local environmental regulations and the best available technology (BAT).

Water

Do not wash GGBS into drainage system such as the public sewer or storm drains.

Soil and terrestrial environment

No special control measures are necessary.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and chemical properties are as follows:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Off white to light grey powder with a particle size less than 30 micron (µm)</td>
</tr>
<tr>
<td>Odour</td>
<td>None or slight sulphur odour</td>
</tr>
<tr>
<td>pH</td>
<td>10 - 12</td>
</tr>
<tr>
<td>Boiling Point / Range</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting Point / Range</td>
<td>&gt;1000°C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Flammability</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Auto Flammability</td>
<td>Non-combustible solid</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>None</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>None</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Relative Density</td>
<td>1.8 to 2.4</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Slight - Less than 1 g/l</td>
</tr>
<tr>
<td>Fat Solubility</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
GGBS has a low reactivity and does not react under normal storage and use conditions.

Chemical stability
GGBS is chemically stable.

Conditions to avoid
GGBS should be stored enclosed such as a product bags or silos and avoid storing out in the open. If so to prevent wind blown dust it should be stored in a damp state.

Incompatible materials
GGBS has no known incompatible materials.

Hazardous decomposition products
None.

11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity
Not classified as dangerous.

Eye Damage
Long term contact with eyes can cause eye irritation and damage.

Skin corrosion/irritation
Long term contact with skin may cause mechanical skin irritation. No know evidence of skin sensitisation.

Respiratory sensitisation
No known evidence of respiratory tract or lung problems.

Ingestion
Not likely to cause long term problems.

12. ECOLOGICAL INFORMATION

Environmental Assessment
When used and disposed of as intended, no adverse environmental effects are foreseen.

Ecotoxicity
In large Quantities the addition of GGBS into water will cause the pH to rise and may reduce oxygen availability, which might be toxic to aquatic life in some circumstances.

Mobility
Not relevant.

Persistence and Degradability
Not relevant.

Bioaccumulative potential
Not relevant.

Results of PBT and vPvB assessment
Not relevant.
13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Product**
Uncontaminated spillages can be reused. Dispose of according to the local legislation. Avoid entry into the sewage water system.

**Contaminated packaging**
Completely empty the packaging and process it according to local legislation.

14. TRANSPORT INFORMATION

GBBS is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA,ADR/RID), therefore no classification is required.

No special precautions are needed apart from those mentioned under Section 8.

**UN number**
Not relevant

**UN proper shipping name**
Not relevant

**Transport hazard class(es)**
Not relevant

**Packing group**
Not relevant

**Environmental hazards**
Not relevant

**Special precautions for user**
Not relevant

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
Not relevant

15. REGULATORY INFORMATION

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

GBBS does not meet the requirements for classification as dangerous under the EU Dangerous Substances (67/584/EEC) Directive or the Classification, Labelling and Packaging of substances and mixtures (CLP) regulations (EC1272/2008).

GBBS is not classified as Dangerous by any UK national legislation.

**Chemical Safety Assessment**
No chemical safety assessment has been carried out for this mixture by the supplier.
16. OTHER INFORMATION

Training and Advice
In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

Recommended restrictions on use
Use in accordance with manufacturer's technical instructions.

Further Information
Contact the Aggregate Industries Health & Safety Team.

Key Data used to compile data sheet