Health and Safety Information Ground Granulated Blastfurnace Slag

(BS EN 15167-1)

IRRITANT

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

1.1 Identification of the substance/preparation

An odourless, finely ground off-white powder mainly insoluble in water.

This datasheet applies to the following products:

- Ground Granulated Blastfurnace Slag (GGBS)

1.2 Use of the substance/preparation

GGBS is a latent hydraulic binder normally mixed with cement and water for the production of concrete, mortars, grouts, etc.

1.3 Company identification

Lafarge Cement United Kingdom
Portland House
Bickenhill Lane
Birmingham B37 7BQ

Technical helpline: 0845 812 6232

Email: info@lafargecement.co.uk

1.4 Emergency telephone

Emergency telephone number available during office hours: Tel 0845 812 6232

Emergency telephone number available outside office hours: No

2. HAZARD IDENTIFICATION

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

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

2.1 Hazard characterisation

IRRITANT

R37/38 Irritating to respiratory system and skin

R41 Risk of serious damage to eyes

2.2 Primary route(s) of entry

Inhalation: Yes

Skin - eyes: Yes

Ingestion: No, except in accidental cases

2.3 Human health

Inhalation: GGBS powder may cause inflammation of mucous membranes.

Eyes: Mild exposures can cause soreness. Gross exposures or untreated mild exposures may cause serious and potentially irreversible injuries.

Skin: Current information suggests that there is no epidemiological evidence of a significant health risk associated with GGBS. However, when moist it is alkaline and prolonged or repeated contact can cause abrasion and irritant dermatitis.

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.

2.4 Environment

Under normal use, the product is not expected to be hazardous to the environment.

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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical composition

GGBS is a glass consisting principally of the non-crystalline oxides of calcium, silicon, aluminium and magnesium with sulfur compounds and small quantities of alkalis.

3.2 Components presenting a health hazard

Contains less than 0.1% respirable silica.

Substance	GGBS
EINECS	266-002-0
CAS	65996-69-2
Symbol (C&L)	 IRRITANT
R	R37 R38 R41

4. FIRST AID MEASURES

When contacting a physician, take this safety datasheet with you.

4.1 After significant accidental inhalation

Move person to fresh air. Dust in throat and nasal passages should clear spontaneously. If nose or airways become inflamed seek medical advice. Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms do not subside.

4.2 After contact with eyes

Do not rub eyes, as additional cornea damage is possible by mechanical stress. Remove any contact lenses and open the eyelid(s) widely to flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 45 minutes to remove all particles. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.

4.3 After skin contact

Wash the affected area thoroughly with soap and water. Remove contaminated clothing, footwear, watches, etc, and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.

4.4 After significant accidental ingestion

Do not induce vomiting. If person is conscious, wash out mouth with water and give plenty of water to drink. Seek medical advice if discomfort continues.

5. FIRE-FIGHTING MEASURES

5.1 Flashpoint and method

GGBS is non-combustible and nonexplosive and will not facilitate nor support combustion of other materials.

5.2 Extinguishing media

All types of extinguishing media are suitable.

5.3 Fire fighting equipment

GGBS poses no fire-related hazards. No need for specialist protective equipment for fire fighters.

5.4 Combustion products

None.

5.5 Flammable limits: Lower explosion limit LEL – Upper explosion limit UEL

Not applicable.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal protective measures

Wear protective equipment as described under Heading 8 and follow the advice for safe handling and use given under Heading 7.

Emergency procedures are not required.

6.2 Environment protection measures

Do not wash GGBS down sewage and drainage systems or into bodies of water (eg, streams).

6.3 Methods for cleaning up

Recover the spillage in a dry state if possible.

Dry GGBS: Use dry cleanup methods that do not cause airborne dispersion - eg:

- Vacuum cleaner (Industrial portable units, equipped with high efficiency particulate filters (HEPA filter) or equivalent technique).
- Wipe up the dust by mopping, wet brushing or water sprays or hoses (fine mist to avoid the dust becoming airborne) and remove slurry. If not possible, remove by slurrying with water (see Wet GGBS).

When wet cleaning or vacuum cleaning is not possible and only dry cleaning with brushes can be done, ensure that the workers wear appropriate personal protective equipment and prevent dust from spreading.

Avoid inhalation of GGBS and contact with skin. Place spilled materials into a container. Solidify before disposal as described under Heading 13.

Wet GGBS: Clean up wet GGBS and place in a container. Allow material to dry and solidify before disposal as described under Heading 13.

7. HANDLING AND STORAGE

Do not handle or store near food and beverages or smoking materials.

7.1 Handling

Follow the recommendations as given under Heading 8.

Avoid dust development:

- To clean up dry GGBS, see heading 6.3.

7.2 Storage

Bulk GGBS should be stored in silos that are waterproof, dry (internal condensation minimised), clean and protected from contamination.

Advice for storage together with other material:

- Do not store amongst ammonia containing material.

Engulfment hazard: To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains GGBS without taking the proper security measures. GGBS can build up or adhere to the walls of a confined space. The GGBS can release, collapse or fall unexpectedly.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure limit values (Workplace Exposure Limits (WEL))

WEL 8hr Time Weighted Average (TWA):

- Total inhalable dust 10mg/m^3
- Respirable dust 4mg/m^3

8.2 Exposure controls

8.2.1 Occupational exposure controls

General: Do not eat, drink or smoke when working with GGBS to avoid contact with skin or mouth. Immediately after working with GGBS or GGBS-containing materials, workers should wash or shower or use skin moisturisers. Remove contaminated clothing, footwear, watches, etc, and clean thoroughly before re-using them.

Respiratory protection: When a person is exposed to dust above exposure limits, use appropriate respiratory protection. It should be adapted to the dust level and conform to the relevant EN standard. Suitable respiratory protection should be worn to ensure that personal exposure is less than the WEL.

Eye protection: Wear approved glasses or safety goggles according to EN 166 when handling dry or wet GGBS to prevent contact with eyes.

Skin protection: Use impervious, abrasion and alkali resistant gloves (made of low soluble Cr (VI) containing material), internally lined with cotton, boots, closed long-sleeved protective clothing and additionally skin care products (including barrier creams) to protect the skin from prolonged contact with wet GGBS.

8.2.2 Environmental exposure controls

According to available technology.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Dry GGBS is a finely ground inorganic material of non essentially crystalline silicates and aluminosilicates.

9.2 Physical data

Colour: Off white

Odour: Odourless when dry but may give rise to sulphide odour when wet

Mean particle size: 5-30 µm

Solubility in water (T = 20°C): Slight (0.1-1.0 g/l)

Density: 2.75-3.00 g/cm^3

pH (T = 20°C in water): 11.0-13.0

Boiling point: > 1700°C

Melting point: > 1200°C

Vapour pressure, vapour density, evaporation rate, freezing point, viscosity: N/A.

10. STABILITY AND REACTIVITY

10.1 Stability

Dry GGBS is stable as long as they are stored properly (see Heading 7) and compatible with most other building materials.

10.2 Conditions to avoid

Humidity during storage may cause lump formation.

10.3 Materials to avoid

Storage with ammonia-containing material may lead to release of ammonia-fumes.

Contact with water or acid may liberate hydrogen sulphide.

10.4 Hazardous decomposition products

GGBSs will not decompose into other hazardous by-products and do not polymerise.

11. TOXICOLOGICAL INFORMATION

11.1 Acute effects

Eye contact: Direct contact with GGBS may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry GGBS or splashes of wet GGBS may cause effects ranging from moderate eye irritation (eg, conjunctivitis or blepharitis) to chemical burns, ulceration and blindness.

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.

Ingestion: The swallowing of small amounts of GGBS or any GGBS/water mixtures is unlikely to cause any significant reaction. Swallowing large quantities may cause irritation to the gastrointestinal tract.

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 Ecotoxicity

The product is not expected to be hazardous to the environment (LC50 aquatic toxicity not determined). The addition of large amounts of GGBS to water may, however, cause a rise in pH and may therefore be toxic to aquatic life under certain circumstances.

12.2 Mobility

Dry GGBS is not volatile but might become airborne during handling operations.

12.3 Persistence and degradability/Bio accumulative potential/Results of PBT assessment/Other adverse effects

Not relevant as GGBS is an inorganic material.

13. DISPOSAL CONSIDERATIONS

Dispose of surplus GGBS to a place authorised to accept builder's waste in accordance with the Duty of Care requirements. Keep out of reach of children.

14. TRANSPORT INFORMATION

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

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

15. REGULATORY INFORMATION

15.1 Classification and labelling of GGBS according to 1999/45/EC

IRRITANT

Risk phrases

R37/38 Irritating to respiratory system and skin

R41 Risk of serious damage to eyes

Safety phrases

S2 Keep out of reach of children

S22 Do not breathe dust

S24/25 Avoid contact with skin and eyes

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

16. OTHER INFORMATION

Abbreviations

- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transport Association
- ADR/RID: Agreement on the transport of dangerous goods by road/Regulations on the international transport of dangerous goods by rail
- LC50 Lethal Concentration where 50% of the test animals dies.
- OEL : Occupational Exposure Limit
- TWA: Time Weighted Averages

Guidance References

- Health & Safety at Work, etc. Act 1974
- Environmental Protection Act 1990
- HSE Guidance Note HSG205 Assessing and Managing Risks at Work from Skin Exposure to Chemical Agents
- HSE Guidance Note EH26 (Occupational Skin Diseases - Health and Safety Precautions)
- HSE Guidance Note EH40 (Workplace Exposure Limits)
- Any authorised manual on First Aid by St.John's/St. Andrews/ Red Cross
- Manual Handling Operations Regulations
- PORTLAND CEMENT DUST - criteria document for an occupational exposure limit. June 1994 (ISBN 07176 - 0763 - 1)

Prepared in accordance with The European Chemicals Agency (ECHA) Guidance on the compilation of safety data sheets - March 2010 and Regulation (EC) No 1907/2006 (REACH)

For further information

Technical helpline
Tel: 0845 812 6232
E-mail: info@lafargecement.co.uk

Customer services
Tel: 0845 812 6300
E-mail: customerservice@
lafargecement.co.uk

LAFARGE CEMENT UK
Portland House
Bickenhill Lane
Solihull, Birmingham
B37 7BQ
Tel. 0845 812 6400
Fax 0845 812 6200
www.lafargecement.co.uk