

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Ground Granulated Blastfurnace Slag (GGBS)

REACH Registration number: 01-2119487456-25

Substance	EINECS	CAS
Blastfurnace Slag	266-002-0	65996-69-2

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Constituent of standard cements (EN 197-1) and special binders, concrete preparation, road construction.

No specific uses are advised against.

1.3. Details of the supplier of the safety data sheet

Company name: Irish Cement Ltd.
Full address: Platin, Drogheda, Co. Louth
Telephone number: +353 41 987 6000

E-mail address of competent person responsible for the SDS: info@irishcement.ie

1.4. Emergency telephone number

Emergency telephone number: +353 41 987 6000

Hours of operation: Not available outside office hours.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1 According to Regulation (EC) No 1272/2008

This substance does not meet the requirements for classification as dangerous under both the EU Dangerous Substances (67/548/EEC) Directive and secondly according to the Classification, Labelling and Packaging of substances and mixtures (CLP) regulations (EC 1272/2008).

2.2. Label elements

N/A

2.3. Other hazards

GGBS is a fine powder, which can cause mechanical irritation to the eyes and respiration system. When mixed with water, the resultant liquid will gradually become alkaline with a pH up to 12. GGBS may be hot when delivered in bulk.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance related information:

Blast furnace slag is a by-product of iron manufacturing, via thermochemical reduction, in a blast furnace. Blast furnace slag is formed in a continuous process by melting lime (and/or dolomite), the waste from carbon sources and non-metallic components of iron load (e.g. iron ore, iron sintering). Blast furnace slag is generated at temperatures over 1500 °C. Blast furnace slag is quenched in water, which gives it hydraulic properties relating to its glassy structure. Granulated slag's structure depends on the temperature during quenching. The substance is mostly glassy.

Granulated blast furnace slag contains the following in different compositions: Calcium Oxides Aluminium Oxides Silicon Oxides Magnesium Oxides Sulphur Compound.

3.2. Mixtures

N/A

SECTION 4: First aid measures

4.1. Description of first aid measures

General notes

No personal protective equipment is needed for first aid responders.

In case of inhalation: Move affected person into fresh air. Seek medical advice if irritation persists.

In case of skin contact: Wash with soap and water.

In case of eye contact: Rinse the eyes with water with the eyelids open. Seek medical advice if irritation persists.

In case of ingestion: Seek medical advice if irritation persists. Rinse mouth and drink plenty of water.

4.2. Most important symptoms and effects, both acute and delayed

Slightly alkaline substance.

Risk of irritant dust formation.

Contact with the skin: Acute effects: Risk of irritation in case of prolonged contact with the skin. Must wear clothes suitable for dealing with alkaline products. Must wear gloves suitable for dealing with alkaline products.

Contact with the eyes: Acute effects: Risk of irritation and/or burns. Must wear safety goggles.

Inhalation: Acute effects: in case of dust inhalation, risk of irritation of respiratory tract, burning sensation, cough, sore throat, breathlessness.

Ingestion: Risk of irritation, burning sensation, abdominal pain.

4.3. Indication of any immediate medical attention and special treatment needed

When contacting a physician, take this SDS with you.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

The substance is not flammable. Appropriate extinguishing media are: water, gas and sand.

5.2. Special hazards arising from the substance or mixture

None

5.3. Advice for fire-fighters

GGBS poses no fire-related hazards.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear the protective equipment described in section 8 and follow the handling advice provided in section 7.

In general:

- Avoid dust inhalation.
- Avoid contact with the skin, eyes and mucous membranes.
- Wear protecting anti-dust masks and goggles.
- Wear appropriate gloves.

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Collect the spillage in a dry state if possible.

Pick up mechanically, avoid disturbing dust. Use dust reducing cleaning method.

6.4. Reference to other sections

See sections 8 and 13 for more details.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations as given under Section 8.

Measures to prevent aerosol and dust generation

Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

Measure to protect the environment

No particular measures.

7.1.2 Information on general occupational hygiene

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

In dusty environment, wear dust mask and protective goggles.

Use protective gloves to avoid skin contact.

7.2. Conditions for safe storage, including any incompatibilities

Bulk GGBS should be stored in air-tight silos.

7.3. Specific end use(s)

No additional information for the specific end uses (see section 1.2).

7.4. Control of soluble Cr (VI)

N/A

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Dust Respirable	-	8 hr limit value 3 mg/m ³	-	Short-term limit value 6 mg/m ³
Dust Inhalable	-	8 hr limit value 10 mg/m ³	-	Short-term limit value 20 mg/m ³

8.2. Exposure controls

8.2.1 Appropriate engineering controls

See section 7

8.2.2 Individual protection measures such as personal protection equipment

Eye/face protection



Wear approved glasses or safety goggles according to EN 166 to avoid contact with the eyes.

Skin protection



Protective clothing should be worn which ensures that GGBS or and GGBS/water mixture eg. concrete or mortar, does not come in contact with the skin.

Check the resistance to chemicals of the protective gloves together with the supplier of the gloves. Use only gloves conform to 89/686/EEC. Wear duration at permanent or occasional contact: gloves made of fabric coated with nitrile rubber Breakthrough time (maximal wear duration): > 480 min.

Respiratory protection



In case of high dust concentration: EN149 FFP2 filter.

Thermal hazards

Not applicable.

8.2.3 Environmental exposure controls

Environmental exposure control to be in accordance with the available technology and regulations for the emission of general dust particles.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

This information applies to the whole mixture.

- (a) Appearance: Granulated inorganic solid material. Where the material is ground the will be in the form of fine material.
- (b) Colour: Grey - Yellow
- (c) Odour: Odourless
- (d) pH: (T = 20°C in water, water-solid ratio 1:2): 9 -12.5
- (e) Melting point: 1100 °C – 1400 °C
- (f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point >1250°C
- (g) Flash point: Not applicable
- (h) Solubility(ies) in water (T = 20°C): very low (soluble fraction <1%) Value used for CSA 0.01 mg/l at 20°C.
- (i) Density: Approx. 2.4 – 3 g/cm³ (20°C)

9.2. Other information

Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity

Mixed with water, GGBS reacts slowly and forms a stable hardened material which does not react in ordinary environments. Mixed with water in the presence of cements (e.g. EN 197-1 cements) or hydrated lime, GGBS is more reactive and hardens relatively quickly.

10.2. Chemical stability

GGBS is stable as long as it is properly stored (see Section 7).

Contact with incompatible materials should be avoided. GGBS is alkaline and incompatible with acids, ammonium salts, aluminium or other non-noble metals. GGBS can dissolve in hydrofluoric acid, producing silicon tetrafluoride corrosive gas. GGBS can react with water resulting in silicates and calcium hydroxide. Slag silicates react to powerful oxidising agents such as fluorine; boron trifluoride, chlorine trifluoride, manganese trifluoride, oxygen difluoride.

10.3. Possibility of hazardous reactions

Cements do not cause hazardous reactions.

10.4. Conditions to avoid

Humid conditions during storage may cause lump formation and loss of product quality.

10.5. Incompatible materials

Acids, ammonium salts, aluminium or other non-noble metals.

10.6. Hazardous decomposition products

Emission of hazardous gas (H_2S) when the product is in contact with acids.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

The substance is not classified as dangerous in the sense of European Directive 67/548/EEC on Dangerous Substances and Regulation 1272/2008/EC on CLP.

Hazard type	Dose Indicator	Qualitative assessment
Acute toxicity - dermal		No acute skin toxicity
Acute toxicity- inhalation	LC ₅₀ (4hr) 5235 mg/m ³ . (tested substance GGBS) OECD Guideline 403, Wistar rat.	No acute toxicity by inhalation
Acute toxicity - oral	LC ₅₀ 2000 mg/kg bw. OECD Guideline 403, Wistar rat.	No acute oral toxicity
Skin corrosion/ irritation	OECD 404, New Zealand white rabbit.	Not irritant
Serious eye damage/irritation	OECD 405, New Zealand white rabbit.	Not irritant
Skin sensitisation	OECD 406, Dunkin-Hartley guinea pig	Not sensitizing
Toxicity by repeated dose: sub-acute / sub-chronic / chronic by inhalation	Research in progress NOAEC: 200 mg/m ³ (subacute: rat)	
mutagenicity	Reversed mutation tests, EU method B 13/14, Salmonella typhimurium. Maman cell gene mutation test, EU method B.17. Chinese hamster lung fibroblast (V79)	No mutagenic effect No mutagenic effect

Medical conditions aggravated by exposure

Exposure to GGBS dust may aggravate the symptoms of pre-existing illnesses, such as respiratory pathologies, emphysema, asthma, eye pathologies and skin pathologies.

SECTION 12: Ecological information

In normal use, GGBS does not pose a threat to the environment. However, the addition of high amounts of GGBS can cause a rise in pH and thus be harmful to aquatic organisms.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Do not dispose of into sewage systems or surface waters.

Dispose of discarded GGBS to a place authorised to accept Builder's waste.

SECTION 14: Transport information

GGBS is not covered by the international regulations on the transport of dangerous goods (IMDG, ADR/RID) and no classification is required. No special precautions are needed apart from those mentioned under Section 8.

14.1 UN number

Not relevant

14.2 UN proper shipping name

Not relevant

14.3 Transport hazard class(es)

Not relevant

14.4 Packing group

Not relevant

14.5 Environmental hazards

Not relevant

14.6 Special precautions for user

Not relevant

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not relevant

SECTION 15: Regulatory information

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

GGBS does not meet the dangerous substance classification criteria of the CLP Regulation CE 1272/2008 and its amendments.

Other EU regulations,

GGBS is not a:

- SEVESO substance
- substance that depletes the ozone layer
- persistent organic pollutant

15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information

16.1 Indication of changes

Version 1.

16.2 Abbreviations and acronyms

ADR/RID	European Agreements on the transport of Dangerous goods by Road/Railway
CAS	Chemical Abstracts Service, a division of the American Chemical Society
CLP	Classification, labelling and packaging of substances and mixtures (European Regulation N. 1272/2008)
EINECS	European Inventory of Existing Chemical Substances
IMDG	International maritime dangerous goods
FFP	Self-filtering anti-particle mask
GGBS	Ground granulated Blastfurnace Slag
LC ₅₀	Lethal concentration of a compound on air or water killing 50% of organisms under study in specific conditions
REACH	Regulation, Evaluation, Authorisation and Restriction of Chemicals (Regulation (EC) No.1908/2006)
NOAEC	No observed adverse effect concentration
SDS	Safety Data Sheet
OELV	Occupational exposure limit value

16.3 Training 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.

16.4 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.