



Ground Granulated Blastfurnace Slag, GGBS

Material Safety Data Sheet

Invicta's ground granulated blastfurnace slag, GGBS, is produced for use in ready-mixed concrete, concrete products and general construction.

1. Identification of the substance and of the company		
1.1 Product identifier		
General Trade name	Ground granulated blast furnace slag in accordance with BS EN 15167-1. Invicta Ground granulated blastfurnace slag, GGBS	
Substance	EC Number	CAS Number
Ground granulated blastfurnace slag	266-002-0	65996-69-2
1.2 Relevant Identified uses of the substance and uses advised against		
General uses	Ground granulated blastfurnace slag is used in concrete, mortar and grout as part of the cement to improve fresh and hardened properties. Ground granulated blastfurnace slag is used for building and construction work, such as ready-mixed concrete, mortars, renders and grouts, as well as precast concrete. The identified uses of ground granulated blast furnace slag cover dry products and the products in their workable fresh wet condition.	
1.3 Details of the supplier of the safety information sheet		
Supplier	Invicta	
Address	Invicta Terminal, Great Basin Road, Port of Sheerness, ME12 1RS 01795 418630	
Telephone	anna.ozyurek@invictasolutions.co.uk	
Email	info@invictasolutions.co.uk	
1.3 Emergency telephone number		
Emergency telephone	Available office hours: 01795 418630	

	Outside office hours 999.	
2. Hazards identification		
2.1 Classification of the mixture		
According to Regulation (EC) No 1272/2008 (CLP) Ground granulated blast furnace slag is not classified as hazardous.		
2.2. Label elements		
According to Regulation (EC) No 1272/2008 (CLP) there are no labelling requirements.		
2.3. Other hazards		
Alkaline when wet	Ground granulated blastfurnace slag is alkaline when moist. As a fine powder may cause skin irritation.	
3. Composition/information on ingredients		
3.1 Substances		
Ground granulated blastfurnace slag is a vitrified substance formed by quenching molten blastfurnace slag in an excess of water.		
Substance	EC No.	CAS No:
Slags, ferrous metal. Blast furnace	266-002-0	65996-69-2
3.2 Mixtures		
Not applicable.		
4 First aid measures		
4.1 Description of first aid measures		
General	No personal protective equipment is needed for first aid responders. Contaminated clothing should be removed.	
Eye contact	Do not rub eyes to avoid cornea damage by abrasion. Open the eyelid or eyelids widely and flush immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes. Ensure all particles are removed.	

Skin contact	For dry GGBS, remove and rinse with water. For wet GGBS, wash skin with plenty of water. Remove contaminated clothing or accessories, particularly items that are in direct contact with skin, e.g. socks, footwear, vests and watches. Wash, clean and dry thoroughly before re-using them. Seek medical treatment in all cases of skin irritation, that is any sign of redness or rash.
Inhalation	Move the person to fresh air and keep at rest in a position comfortable for breathing. Dust in throat and nasal passages should clear spontaneously. Seek medical attention if any irritation persists or develops, or if any discomfort, coughing or other symptoms persist.
Ingestion	Wash out mouth with water and provide plenty of water to drink.
4.2 Most important symptoms and effects, both acute and delayed	
Eyes	Eye contact with GGBS, or wet GGBS, may cause abrasive injury.
Skin	Sustained contact may have an irritating effect on skin.
Inhalation	May cause respiratory irritation. Repeated inhalation of dust of GGBS over a long period of time increases the risk of developing lung diseases.
Environment	GGBS is not detrimental to the environment.
4.3 Indication of any immediate medical attention and special treatment needed	
Other Information	When contacting a doctor/physician, take this MSDS or the product label with you.
5 Firefighting measures	
5.1 Extinguishing media	
GGBS is not flammable.	
5.2 Special hazards arising from the substance or mixture	
GGBS is non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.	
5.3 Advice for firefighters	

GGBS poses no fire-related hazards. General measures for a fire are applicable: Fire fighters should wear complete protective clothing including self-contained breathing apparatus.	
6 Accidental release measures	
6.1 Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.
For emergency responders	Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels.
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	
Dry GGBS	Use cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique) which do not cause airborne dispersion. Never use compressed air. Alternatively, wipe-up the dust by mopping, wet brushing or by using water sprays or hoses (fine mist to avoid that the dust becomes 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 the appropriate personal protective equipment and prevent dust from spreading. Avoid inhalation of GGBS and contact with skin. Place spilled materials into a container.
Wet GGBS	Clean up wet GGBS and place in a container. Allow material to dry and solidify before disposal.
6.4 Reference to other sections	
Other sections	Section 8 and 13
7 Handling and storage	
7.1 Precautions for safe handling	
Good practice	Like other dusts avoid making it airborne and where necessary wear dust mask and protective goggles.
Measures to prevent fire	Not applicable.

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.
Measures to protect the environment	Avoid release to the environment. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.
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	
Safe storage	GGBS should be stored in silos or flat stores that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination. Engulfment hazard: To prevent engulfment or suffocation, do not enter a confined space, such as a silo, flat store, bin, bulk truck, or other storage container or vessel that stores or contains cement 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. Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality. Bags should be stacked in a stable manner.
7.3 Specific end use(s)	
GGBS	No additional information for the specific end uses (see section 1.2).
8 Exposure controls/personal protection	
8.1 Control parameters	
Inhalable dust Respirable dust	The HSE WEL Long-term exposure limit is 10 mg/m³ (8-hr TWA reference period) The HSE WEL Long-term exposure limit is 4 mg/m³ (8-hr TWA reference period)
8.2 Exposure controls	
Operational measures	For plant operating within the store then air-conditioned dust free cab should be provided. When personnel are potentially exposed to dust then appropriate respiratory protection is to be used.

Respiratory protection	When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. 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, EN 14387, EN 1827) or national standard. The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.
Hand protection	Use gloves.
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 watertight, wear-and alkali-resistant protective gloves (e.g. nitrile soaked cotton gloves with CE marking) internally lined with cotton; boots; closed long-sleeved protective clothing as well as skin care products (e.g. barrier creams) to protect the skin from prolonged contact with wet GGBS.
Hygiene / Environmental	Remove contaminated clothing and wash skin thoroughly with soap and water after work. Wash hands after use.
Thermal Hazard	Not applicable.
Environmental exposure controls	Environmental exposure control for the emission of GGBS particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles. Air: Environmental exposure control for the emission of GGBS particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles. Water: Do not wash GGBS into sewage systems or into bodies of water. Soil and terrestrial environment: No special emission control measures are necessary for the exposure to the terrestrial environment.
9 Physical and chemical properties	
9.1 Information on basic physical and chemical properties	
Physical	Fine powder. Odourless. Specific surface area 300-500 m ² /kg.

Colour	Off-white.	
Odour	Odourless	
Particle density	BS EN 1097-6 Nominal 2900 Kg/m ³ .	
Bulk density	BS EN 1097-3 Nominal 1000 Kg/m ³ , 700 Kg/m ³ to 1400 Kg/m ³ .	
pH	In water at 20°C, water-solid ratio 1:2: 10-12	
Melting point	> 1250°C	
Flammability	Non-combustible solid which does not cause or contribute to fire through friction	
9.2 Other information – Not applicable		
10 Stability and reactivity		
10.1 Reactivity	Unreactive.	
10.2 Chemical stability	Dry GGBS is stable under all foreseeable conditions and compatible with all other building materials. GGBS should be kept dry.	
10.3 Possibility of hazardous reactions	GGBS does 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.	
10.6 Hazardous decomposition products	GGBS will not decompose into any hazardous products.	
11 Toxicological information		
11.1 Information on toxicological effects		
Hazard class	Cat./Effect	Reference
Acute toxicity - dermal	Not classified	ECHA
Acute toxicity inhalation	Not classified	ECHA
Acute toxicity - oral	Not classified	ECHA

Skin corrosion/irritation	Not irritating	ECHA
Serious eye damage/irritation	Not irritating	ECHA
Skin sensitisation	Not sensitising	ECHA
Respiratory sensitisation	Not sensitising	ECHA
Germ cell mutagenicity	Not classified	ECHA
Carcinogenicity	Not classified	ECHA
Reproductive toxicity	Not classified	ECHA
STOT-single exposure	Not classified as Specific Target Organ Toxicant, STOT, after single exposure	
STOT-repeated exposure	Not classified as Specific Target Organ Toxicant, STOT, after repeated exposure	
Aspiration hazard	Not applicable as GGBSs are not used as an aerosol.	

12 Ecological information

12.1 Toxicity	GGBS is not hazardous to the environment.		
OECD Test	Substance	Results	
Test No. 201: Freshwater Alga and Cyanobacteria, Growth Inhibition Test	GBS	IC10 (72 h) IC50 (72 h)	> 100 g/l > 100 g/l
Test No. 202: Daphnia sp. Acute Immobilisation Test	GBS	EC0 (48 h) EC50 (48 h)	> 1000 g/l > 1000 g/l
Test No. 203: Fish, Acute Toxicity Testing	GBS	LC0 (96 h) LC50 (96 h)	> 1000 g/l > 1000 g/l
Test No. 209: Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)	ABS	EC10 (3 h) EC50 (3 h) EC100 (3 h)	> 10 g/l > 10 g/l > 10 g/l

Test No. 211: Daphnia magna Reproduction Test	ABS	EC10 (21 d) EC20 (21 d) EC50 (21 d)	5 g/l 5 g/l 5 g/l
12.2 Persistence and degradability	Not relevant. GGBS not readily biodegaradable.		
12.3 Bioaccumulative potential	No evidence of bioaccumulation potential		
12.4 Mobility in soil	No data.		
12.5 Results of PBT and vPvB assessment	GGBS does not contain any bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) substances.		
12.6 Other adverse effects	No negative ecological effects are expected according to the present state of knowledge.		
13 Disposal considerations			
13.1 Waste treatment methods	Disposal of GGBS is under national regulations for non-hazardous waste where further special treatment methods are necessary. Waste codes / waste designation according to EWC: • 10 WASTES FROM THERMAL PROCESSES • 10 02 wastes from iron and steel industry • 10 02 01 wastes from the processing of slag • 10 02 02 unprocessed slags.		
14 Transport information GGBS is not covered by international regulation for the transport of dangerous good (IMDG, IATA, ADR/RID) so no classification required.			
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 MARPOL 73/78 and the IBC Code	Not relevant.
15 Regulatory information	
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	National regulatory information HSE Guidance Note EH40 (Workplace Exposure Limits). Any authorised manual on First Aid by St. John's/St. Andrew's/Red Cross. Manual Handling Operations Regulations Environmental Protection Act.
15.2 Chemical safety assessment	No additional regulatory requirements.
16 Other information	
16.1 Indication of changes	First release
16.2 Abbreviations and acronyms	
CAS	Chemical Abstracts Service
CLP	Classification, labelling and packaging (Regulation (EC) No 1272/2008)
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Commercial chemical Substances
EWC	European Waste Catalogue

16.3 Key literature references

<https://echa.europa.eu/registration-dossier/-/registered-dossier/16142/7/6/4>

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.

16.5 Standards and Regulations

BS EN 15167-1:2006 Ground granulated blast furnace slag for use in concrete, mortar and grout - Part 1: Definitions, specification and conformity criteria.

BS EN 1097-3:1998 Tests for mechanical and physical properties of aggregates - Determination of loose bulk density and voids

BS EN 1097-6:2022 Tests for mechanical and physical properties of aggregates - Determination of particle density and water absorption

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending **Regulation (EC) No 1907/2006** (Text with EEA relevance).