PRODUCT SAFETY DATA SHEET

This generic SDS is provided by MGS Ltd to give information to assist with material handling of the products listed which are conforming to Annex II of the REACH Regulation (EC) 1907/2006 as amended by Commission Regulation (EU) 453/2010), and with CLP Regulation (EC) 1272/2008.

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SECTION 1: Identification of the substance / mixture and of the company / undertaking	
1.1 Product Identifier	
Product Name:	**Bentonite / Cement Pellets**
Synonyms / Trade Name:	Bentonite / Cement Pellets
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Recommended Use:	Bulk backfilling of boreholes or as part of geotechnical instrumentation grouting to create individual response zones or mimic the surrounding soil conditions.
Restriction on Use:	There are no identified uses advised against within the usual scope of construction industry applications.
Physical Properties:	Powder – light grey / white fine
1.3 Details of the supplier of the Safety Data Sheet	
Name:	MGS Ltd
Address:	Rougham Industrial Estate, Bury St Edmunds, IP30 9ND
Country:	UK
Phone N°:	+44 1359 271167
E-mail:	info@mgs.co.uk
Website:	www.mgs.co.uk
1.4 Emergency telephone number	
Emergency telephone at the company	+44 7738 197 517
Available outside office hours:	Yes
Language of the phone service:	English
E-mail of competent person responsible	darren.portway@mgs.co.uk
National contact:	Darren Portway

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture



GHS05 GHS07

Signal Word: Danger

Contains Portland Cement, EC 266-43-4, CAS 65997-15-1

The powder is classified as a corrosive dust.

- Direct contact with the skin may cause irritation or an allergic reaction.
- Direct contact with the eyes may cause serious eye damage.
- Inhalation may cause irritation of the – avoid WEL limits.
- Ingestion may cause mild gastric irritation.

When mixed with water it produces a strongly alkaline suspension which if it comes into contact with the skin or eyes may cause serious burns and ulceration.

The product is not dangerous to the environment within its normal conditions of use.

Classification according to Directive 67/548/EEC:
Irritating to respiratory system and skin hazard category 2 (GHS07)
Risk of serious damage to eyes, hazard category 1(GHS05)
May cause sensitization by skin contact, hazard category 1 (GHS07)
When mixed with water may cause skin corrosion and serious eye damage category 1(GHS05)

2.2 Label elements

Hazard Statements	
H315	Irritating to respiratory system and skin – Hazard Category 2
H318	Risk of serious damage to eyes - Hazard Category 1
H317	May cause sensitization by skin contact - Hazard Category 2
H313	When mixed with water may be harmful in contact with skin- Hazard Category 1
Precautionary Statements	
P102	Keep out of reach of children.
P261	Avoid breathing dust.
P304+P340	If inhaled, remove person to fresh air and keep comfortable for breathing.
P342 + P361 + P315	If experiencing reparatory symptoms, take off immediately all contaminated clothing, get immediate medical advice or attention.
P280	Wear protective gloves, protective clothing, eye protection.
P302 + P338	If on skin, wash with plenty of soap and water.
P305 + P351 + P338	If eye irritation persists, seek medical attention.
P333 + P313	If skin irritation or rash occurs after washing, seek medical attention.

2.3 Other hazards

Exceeding the Workplace Exposure Limits (WEL) on a regular basis may increase the danger of lung diseases. Contamination of the eyes whether with the powder or wet slurry will if not washed immediately risk causing irreversible damage to the eyes.

Prolonged contact of the skin with the powder or wet slurry may cause burns and contact dermatitis.

The mixture does not contain any substances of very high concern (SVHCs)

SECTION 3: Composition / Information on Ingredients

3.1 Substances

Bentonite is a naturally occurring mineral classified as UVCB (Variable composition, Complex reaction products or biological materials) according to REACH & CLP Regulations. While being of Variable Composition, the purity of the product is 100 % w/w. The composition of the substance consists mainly in Smectite (Montmorillonite, CAS: 1318-93-0) together with some other accessory minerals such as alpha quartz, feldspar, mica and calcite.

OPC consists of complex Calcium Silicates, Aluminates, Ferro Aluminates and Sulphates, together with small amounts of alkalis Lime, Magnesia, and Chlorides. Also contains trace amounts of Chromium.

GGBS consists principally of oxides of calcium, silicon, aluminium and magnesium, with low solubility.

SECTION 4: First Aid Measures

4.1 Description of first aid measures

General advice

No known delayed effects. Consult a physician for all significant exposures.

Inhalation:	No special measures: move source of dust or move person to fresh air. If respiratory irritation persists or breathing becomes difficult seek medical attention immediately.
Skin Contact:	Wash affected area with soap and plenty of water. If necessary, seek medical advice.
Eye Contact:	Rinse eyes immediately with plenty of water. If irritation persists, seek medical advice.
Ingestion:	No special measure; clean mouth with water and drink afterwards plenty of water. If gastric upset occurs, seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

The acute symptoms would be pain in the eyes because of dust or wet slurry entry.
Follow first aid procedures outlined in 4.1

4.3 Indication of any immediate medical attention and special treatment needed

Follow the advice given in section 4.1.

SECTION 5: Fire Fighting Measures

5.1 Extinguishing media

Suitable extinguishing media:

The product is not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. By preference use a dry powder, foam or CO2 fire extinguisher to extinguish the surrounding fire as the mixture may become very slippery and hard to clean up when wet.

Unsuitable extinguishing media:

No restriction on the extinguishing media to be used in cases of fire in its vicinity – though it should be noted that the mixture may become slippery when wet.

5.2 Special hazards arising from the substance or mixture

The material is not flammable, and it does not support fire. No hazardous thermal decomposition products.

5.3 Advice for fire fighters

Avoid generation of dust. Use breathing apparatus.

Product on floor when wetted will become corrosive to skin and eyes and may become slippery and may present a significant slip hazard: wear anti-slip boots Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment, and emergency procedures

Refer to protection measures listed under sections 7 & 8.

6.1.1. For non-emergency personnel

Ensure adequate ventilation.
Keep dust levels to a minimum respect Workplace Exposure Limits (WEL)
Keep unprotected persons away.
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).
Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).
Try not to wet, and take care of wet product on floor, which becomes corrosive and may present a slip hazard.

6.1.2. For emergency responders

Ensure appropriate PPE is worn by all personnel
Keep dust levels to a minimum.
Ensure adequate ventilation.
Keep unprotected persons away.
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).
Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).
Try not to wet and take care of wet product on floor, which becomes corrosive to skin and eyes and may present a slip hazard.

6.2 Environmental precautions

No special requirement.
Contain the spillage. If product is released from trucks in roads, place signposts to divert traffic and remove the spill using vacuum cleaning systems, or shovel into bags – do not attempt to wash away.

The product must not be allowed into sewers or water courses.

6.3 Methods and material for containment and cleaning up

Avoid dust formation; avoid dry sweeping where possible.
Use vacuum suction unit, or shovel into bags.
Do not use water.

6.4 Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please refer to sections 8 and 13 of this safety data sheet.

SECTION 7: Handling & Storage

7.1 Precautions for safe handling

Protective measures

Keep dust levels to a minimum and Minimize dust generation.
Respect Workplace Exposure Limits (WEL)
Provide appropriate exhaust ventilation at places where airborne dust is generated. In case of insufficient ventilation, wear suitable respiratory protective equipment refer to section 8 of this safety data sheet. Handle packaged products carefully to prevent accidental bursting. If you require advice on safe handling techniques, please contact your supplier or check the Good Practice Guide referred to in section 16.

Measures to prevent fire

The product is not flammable. No special protective measures against fire required.
Advice on general occupational hygiene Keep dust levels to a minimum.
Minimize dust generation.
Keep dry.
General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

7.2 Conditions for safe storage, including any incompatibilities

Minimize airborne dust generation and prevent wind dispersal during loading and unloading. Keep containers closed and store packaged products so as to prevent accidental bursting.

Keep dry and do not use water for clean up as becomes corrosive to skin and eyes and slippery when wet.

7.3 Specific end use(s)

In construction or drilling and tunnelling projects for sealing applications where more strength is required than can be achieved with pure Bentonite alone. Used to seal off contaminated land, seal around pipes or tunnels, seal up bore holes, fill voids, protect pipes and cables in conduits or provide a more conductive medium for cable grouting.

SECTION 8: Exposure Controls / Personal Protection

8.1 Control parameters

8.1.1 Components with occupational exposure limits and/or biological occupational exposure limits requiring monitoring

Air limits values:
Maintain personal exposure below occupational exposure limit for inhalable and respirable dust as according to COSHH E40/ 2005 amended Oct 2007 (For data on EU TWA for dust see Appendix 1)

Substance	**Description**	**Inhalable Dust WEL – (Workplace Exposure Limit) 8 hr TWA (Time Weighted Average)**	**Respirable Dust Fraction ,7.1µ WEL – (Workplace Exposure Limit) 8 hr TWA (Time Weighted Average)**
Blend of Bentonite & Slag Cement	Nuisance dust	10mg/m3	4mg/m3
Crystaline Silica	Respirable Dust ,7.1µ		0.1mg/m3

For further information see "The occupational exposure limit for respirable crystalline silica in EU countries given in: http://www.crystallinesilica.eu/115-what-are-regulatory-measures-taken-eu-member-states

Biological limit values:

None

8.1.2 Recommended monitoring procedures

None

8.1.3 Occupational exposure limits and/or biological limits for air contaminants

Not applicable

8.1.4 DNEL/DMEL and PNEC values

Not available

8.2 Exposure controls

Engineering Controls:

Minimize airborne dust generation. Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below specified exposure limits. If user operations generate dust, fumes, or mist, use ventilation to keep exposure to airborne particles below the exposure limit. Apply organizational measures e.g. by isolating personnel from dusty areas. Remove and wash soiled clothing.

Eye / Face Protection:	Do not wear contact lenses. For dusty environments use tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.	
Respiratory Protection:	Use respiratory protection when engineering controls are not sufficient. FFP2 dust masks face fitted.	
Hand Protection:	For hands, appropriate protection (e.g. gloves, barrier cream) is recommended for workers who suffer from dermatitis or sensitive skin. Wash hands at the end of each work session.	
Skin Protection:	For skin, full clean overalls are recommended.	

Thermal hazards

The substance does not represent a thermal hazard, thus special consideration is not required.

Environmental exposure controls

All ventilation systems should be filtered before discharge to atmosphere. Avoid releasing to the environment. Contain the spillage.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance	Light grey/white fine powder 1-30µ
Odour	Odourless
Odour threshold	Not applicable
pH	12 – 13.5 (5% solids in water suspension) @ 20°C
Melting point	>450°C (study result, EU A.1 method)
Boiling point	Not applicable (solid with a melting point > 450°C)
Flash point	Not applicable (solid with a melting point > 450°C)
Evaporation rate	Not applicable (solid with a melting point > 450°C)
Flammability	Non-flammable (study result, Method 1 of the United Nations, Recommendations Of the Transport of Dangerous Goods, Manual of Tests and Criteria, fourth revised edition 2003)
Explosive limits	Non-explosive (explosive properties predicted in accordance with Regulation (EC) No 1272/2008, using Appendix 6, screening procedures, specified in the United Nations, Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, fourth revised edition 2003 (void of any chemical structures commonly associated with explosive properties)

Vapour pressure	Not applicable (solid with a melting point > 450°C)
Vapour density	Not applicable
Relative density	2.8 g/cm³ at 20°C
Bulk density	1 – 1.4 g/cm³
Solubility in water	<1.5 g/L at 20°C (study results, EU A.6 method)
Partition coefficient	Not applicable (inorganic substance)
Auto ignition temperature	No self-ignition temperature below 400 °C (study result, Method 4 of the United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Fourth revised edition, 2003)
Decomposition temperature	Not applicable
Viscosity	Not applicable (solid with a melting point > 450 °C)
Oxidising properties	No oxidizing properties predicted from the structure in accordance with Appendix 6 section 6 of the United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Fourth revised edition 2003

9.2 Other information

None.

SECTION 10: Stability and Reactivity

10.1 Reactivity

Reacts with water to form complex stable silicates.

10.2 Chemical stability

Chemically stable under normal conditions of use and storage.

10.3 Possibility of hazardous reactions

Uncontrolled use of aluminium powder in wet product should be avoided as hydrogen is produced.

10.4 Conditions to avoid

Minimize exposure to moisture during storage as will reduce product quality. May be slippery when wet.

10.5 Incompatible materials

Avoid storing together with materials that may be affected by alkaline dust.

10.6 Hazardous decomposition products

None.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Toxicity Endpoints	Outcome of the effects of the assessment
Acute Toxicity	Bentonite – Slag Cement blends are not acutely toxic. Eye Direct contact by large quantities of dry or wet product may cause effects ranging from moderate eye irritation up to chemical burns and blindness. Oral LD50 > 2000 mg/kg bw (OECD 420, rat) Dermal LD50>2500mg/kg (OECD 420, rabbit) Inhalation LC50 > 5,27 mg/L (OECD 436, rat) classification for acute toxicity is not warranted.
Irritation	Bentonite-Slag Cement blends are irritating to skin (OECD 420, rabbit). Bentonite-Slag Cement blends are irritating to eye (OECD 405, rabbit). Bentonite-Slag Cement blends may cause mild irritation of the intestinal gut
Sensitization	Bentonite –Slag Cement may be a skin sensitizer in accordance with the local lymph node assay (OECD 429, mouse)

STOT Single Exposure	No organ toxicity observed in acute tests
STOT Repeated Exposure – Oral	Not available
STOT Repeated Exposure – Inhalation	Animal and *in vitro* data indicate a difference between crystalline quartz and the quartz-content of Bentonite. A quantitative assessment based on the animal data is not possible as no relevant repeated-dose inhalation study is available.
Aspiration Hazard	No aspiration hazard envisaged
Mutagenicity	In vitro tests for Bentonite (OECD 471, 473 and 476) negative. Tests for OPC and Slag not available.
Carcinogenicity	No known effects
Toxicity for reproduction	No known effects

SECTION 12: Ecological Information

12.1 Toxicity

No specific adverse effects known with respect to the environment, (LC50 aquatic toxicity not determined) as powder blend forms an inorganic solid with low leachability, however, could cause a rise in PH in water and be toxic to aquatic life under certain conditions.

12.2 Persistence and degradability

Not relevant for inorganic substances.

12.3 Bio accumulative potential

Not relevant for inorganic substances.

12.4 Mobility in soil

Powder and set mixtures with water are almost insoluble and thus presents a low mobility in most soils.

12.5 Results of PBT and vPvB assessment

Not relevant as Bentonite-Slag Cement compounds are inorganic materials. After hardening they present no toxicity risks, so substance does not meet the criteria for classification as PBT or vPvB.

12.6 Other adverse effects

If accidentally released into residual water, the Bentonite-Slag Cement powder causes a slight rise in water PH. Reacted set cement compounds are stable and fix it components permanently and makes them insoluble.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

The residues/unused product can be disposed in landfills following national and local regulations. Dispose of waste in accordance with the European Directives 2008/98/EC. Dispose in such a way to avoid dust generation. Do not pour into drains or water courses. Set product should be disposed of as concrete waste.

Packaging disposal

No specific requirements. In all cases dust formation from residues in the packaging should be avoided and suitable protection be assured. Empty containers, -dispose of as unused product. The empty and clean containers are to be reused in conformity with regulations.

SECTION 14: Transportation Information

14.1 UN number

N/A

14.2 UN proper shipping name

N/A

14.3 Transport hazard class(es)

The material is not classified as dangerous in terms of transport regulations and no restrictions apply for land/sea/air transportation.

14.4 Packing group

N/A

14.5 Environmental hazards

The product must not be allowed into sewers or water courses.

14.6 Special precaution for user

Avoid dust spreading.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

N/A

SECTION 15: Regulatory Information

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

Bentonite – Other regulations

Bentonite is not a SEVESO substance (SEVESO III is the latest EU legislation that deals specifically with the control of onshore major accident hazards involving dangerous substances), it is not an ozone depleting substance and not a persistent organic pollutant.

National regulations: EH / COSH limits for Workplace Exposure Limits (WEL)

International legislation requirements:
The product (Bentonite) is not separately classified by the Occupational Health and Safety Administration (OSHA). The product has not been classified as a human carcinogen by OSHA, the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP).

OPC –Other regulations
The marketing and use of cement with regard to the content of soluble Cr VI
Regulations from 17 January 2005, regarding those cements which naturally contain more than 2 ppm of soluble hexavalent chromium (chromium (VI)) by dry weight of cement, relate to pure OPC and as the Bentonite-Slag Cement blends contain much reduced levels of OPC in the presence of a natural absorption agent (Bentonite), the regulations regarding storage are not proven to the best of our knowledge relevant.

National legislation/requirement
CONIAC Health Hazard Information Sheet No. 26 (CEMENT)
Health and Safety at Work etc Act 1974
Control of Substances Hazardous to Health (Regulations)
PORTLAND CEMENT DUST – criteria document for an occupational exposure limit. June 1994 (ISBN 07176 – 0763 – 1)
HSE Guidance Notes EH26 (Occupational Skin Diseases – Health and Safety Precautions)
HSE Guidance Note EH40 (Workplace Exposure Limits)

References

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Available from: http://www.hse.gov.uk/pubns/web/portlandcement.pdf
(2) Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).
(3) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002).

(4) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003

SECTION 16: Other Information

Depending on the handling and use, airborne respirable dust may be generated. Dust contains respirable crystalline silica. Prolonged and or massive inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Principal symptoms of silicosis are cough and breathlessness. Occupational exposure to respirable dust should be monitored and controlled. The product should be handled using methods and techniques that minimize or eliminate dust generation.

The product contains less than 1% w/w RCS (respirable crystalline silica) as determined by the SWERF method. The respirable crystalline silica content can be measured using the "Size-Weighted Respirable Fraction – SWERF" method. All details about the SWERF method are available at www.crystallinesilica.eu
Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

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