

Blast Furnace Slag

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

Issue date: 02/22/2021

Revision date: 02/22/2021

Version: 1.0



SECTION 1: Identification

1.1. Product identifier

Product form : Substance
Product name : Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Used as fill, or as cementation material for cement.

1.3. Supplier

Manufacturer

Algoma Steel Inc.
105 West Street, Sault Ste. Marie, ON P6A 7B4
(705) 945-2351

1.4. Emergency telephone number

Emergency number : 1-888-CAN-UTEC (226-8832), 613-996-6666

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification (GHS CA)

Skin Corr. 1 H314
Eye Dam. 1 H318
STOT SE 3 H335
STOT RE 1 H372
HHNOC 1
Comb. Dust

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms (GHS-CA) :



Signal word (GHS CA) :

Danger

Hazard statements (GHS-CA) :

H314 - Causes severe skin burns and eye damage.
H335 - May cause respiratory irritation.
H372 - Causes damage to organs through prolonged or repeated exposure.
Causes severe damage to the respiratory tract
May form combustible dust concentrations in air

Precautionary statements (GHS-CA) :

P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P312 - Call a POISON CENTER or doctor if you feel unwell.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTER or doctor.
P363 - Wash contaminated clothing before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

No additional information available

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

2.4. Unknown acute toxicity (GHS CA)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Name	Product identifier	%
Slags, ferrous metal, blast furnace	(CAS-No.) 65996-69-2	100

The following components comprise this Blast Furnace Slag product and were used for hazard determination:

Silica, amorphous	(CAS-No.) 7631-86-9	30 – 60
Calcium oxide	(CAS-No.) 1305-78-8	30 – 60
Magnesium oxide (MgO)	(CAS-No.) 1309-48-4	7 – 13
Aluminum oxide (Al ₂ O ₃)	(CAS-No.) 1344-28-1	7 – 13
Sulfur	(CAS-No.) 7704-34-9	0.5 – 5
Iron oxide (Fe ₂ O ₃)	(CAS-No.) 1309-37-1	0.5 – 5
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	0.1 – 1

Blast Furnace Slag is a nonmetallic byproduct from the production of iron. The Silicon Dioxide may contain trace amounts of crystalline silica. Slag may contain trace amounts of metallic chemicals present in the iron ore at less than 0.1 percent including: Iron oxide, manganese oxide, carbon, and zinc oxide.

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
- First-aid measures after skin contact : If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Heavy exposure to cement dust, wet concrete or associated water requires prompt attention. Quickly and gently blot or brush away excess cement. Immediately call a POISON CENTER or doctor.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- First-aid measures after ingestion : IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Immediately call a POISON CENTER or doctor.

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects after inhalation : Causes severe damage to the respiratory tract. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.
- Symptoms/effects after skin contact : Causes severe skin burns. Symptoms may include redness, pain, blisters. Glassy particles can cause damage to skin by mechanical abrasion. May cause an allergic skin reaction from trace amounts of sensitizing metals in lime.
- Symptoms/effects after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns. Glassy particles can cause damage to eye tissue by mechanical abrasion.
- Symptoms/effects after ingestion : May be harmful if swallowed. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. If aspiration into the lungs occurs during vomiting, severe lung damage may result.
- Chronic symptoms : Causes damage to organs through prolonged or repeated exposure.

4.3. Immediate medical attention and special treatment, if necessary

- Other medical advice or treatment : Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Unsuitable extinguishing media

- Unsuitable extinguishing media : Do not use water jet.

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

5.3. Specific hazards arising from the hazardous product

- Fire hazard : Combustible dust. Products of combustion may include, and are not limited to: oxides of carbon. Corrosive vapours.
- Explosion hazard : Airborne dust in sufficient concentrations when confined and exposed to a sufficient ignition source can explode.

5.4. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Move containers away from the fire area if this can be done without risk. Cool closed containers exposed to fire with water spray.
- Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Use only non-sparking tools.

6.2. Methods and materials for containment and cleaning up

- For containment : Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE). Do not touch spilled material.
- Methods for cleaning up : Dust and particulate matter should be vacuumed with a filtered vacuum or wet swept where vacuuming is not feasible. Do not use compressed air or dry sweeping as a means of cleaning.

6.3. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection"

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Do not get in eyes, on skin, or on clothing. Do not breathe dust. Do not swallow. Handle and open container with care. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Handling this product may result in electrostatic accumulation. Use proper grounding procedures. When using do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Good housekeeping is important to prevent accumulation of dust. The use of compressed air for cleaning clothing, equipment, etc, is not recommended. Avoid generating dust. Wear personal protective equipment.
- Hygiene measures : Take off immediately all contaminated clothing and wash it before reuse. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep out of the reach of children. Keep away from sources of ignition. Store in dust-tight, dry, labelled containers. Store in a well-ventilated place. Avoid any dust buildup by frequent cleaning and suitable construction of the storage area. Store locked up. Keep away from : Humidity. Moisture.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Calcium oxide (1305-78-8)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Calcium oxide
ACGIH OEL TWA	2 mg/m ³
Remark (ACGIH)	TLV® Basis: URT irr
Regulatory reference	ACGIH 2020

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

8.2. Appropriate engineering controls

- Appropriate engineering controls : Ensure good ventilation of the work station. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e, there is not leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.
- Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear suitable gloves resistant to chemical penetration. Waterproof and cut/abrasion-resistant rubber, such as heavyweight nitrile gloves.

Eye protection:

Wear eye/face protection. Contact lenses should not be worn.

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Brown / tan solid
- Colour : Brown / tan
- Odour : Not significant
- Odour threshold : No data available
- pH : 8 – 11 [ASTM D1293-95]
- Relative evaporation rate (butylacetate=1) : Not applicable
- Relative evaporation rate (ether=1) : Not applicable
- Melting point : ≈ 1426.7 °C (2600 °F)
- Freezing point : Not applicable
- Boiling point : Not applicable
- Flash point : Not applicable
- Auto-ignition temperature : Not applicable
- Decomposition temperature : Not determined
- Flammability (solid, gas) : Combustible Dust
- Vapour pressure : Not applicable
- Vapour pressure at 50 °C : Not applicable
- Relative density : 2 – 3 (Water = 1)
- Solubility : Water: Insoluble
- Partition coefficient n-octanol/water : Not determined
- Viscosity, kinematic : Not applicable
- Explosive limits : Not applicable

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

- Reactivity : No dangerous reactions known under normal conditions of use. May react with water to produce silicates and calcium hydroxide. Silicates may react with strong oxidizers.

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

Chemical stability	: Stable under normal conditions. May form combustible dust concentrations in air.
Possibility of hazardous reactions	: No dangerous reactions known under normal conditions of use. Aqueous solutions are highly alkaline and may corrode aluminum.
Conditions to avoid	: Extremely high temperatures. Moisture. Avoid dust formation. Incompatible materials.
Incompatible materials	: Strong acids (may react vigorously), ammonium salts, aluminum (aluminum powder and other alkali earth elements will react in the presence of water liberating extremely flammable hydrogen gas), water (reaction generates heat) and oxidizers.
Hazardous decomposition products	: May include, and are not limited to: oxides of carbon. Corrosive vapours. Hydrogen sulfide gas may be released from moist or wet slag when heated. Contact with water and moisture, generates corrosive calcium hydroxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified.
Acute toxicity (dermal)	: Not classified.
Acute toxicity (inhalation)	: Not classified.

Calcium oxide (1305-78-8)	
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: other:US Federal Register 38: 187, Part 1500, Section 41, 1973.

Sulfur (7704-34-9)	
LD50 oral rat	> 3000 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 9.23 mg/l/4h

Manganese oxide (MnO2) (1313-13-9)	
LD50 oral rat	9000 mg/kg
LC50 inhalation rat	> 1500 mg/m ³ (Exposure time: 4 h)
ATE CA (oral)	500 mg/kg bodyweight
ATE CA (Gases (except aerosol dispensers and lighters))	4500 ppmv/4h
ATE CA (vapours)	11 mg/l/4h
ATE CA (dust,mist)	1.5 mg/l/4h

Skin corrosion/irritation	: Causes severe skin burns. pH: 8 – 11 [ASTM D1293-95]
Serious eye damage/irritation	: Causes serious eye damage. pH: 8 – 11 [ASTM D1293-95]
Respiratory or skin sensitization	: Not classified.
Germ cell mutagenicity	: Not classified.
Carcinogenicity	: Not classified.
Reproductive toxicity	: Not classified.
STOT-single exposure	: May cause respiratory irritation.

Calcium oxide (1305-78-8)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Causes damage to organs through prolonged or repeated exposure.

Calcium oxide (1305-78-8)	
LOAEL (oral, rat, 90 days)	300 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.413 mg/l air Animal: rat, Animal sex: male, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

Manganese oxide (MnO2) (1313-13-9)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard	: Not classified.
Symptoms/effects after inhalation	: Causes severe damage to the respiratory tract. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

Symptoms/effects after skin contact	: Causes severe skin burns. Symptoms may include redness, pain, blisters. Glassy particles can cause damage to skin by mechanical abrasion. May cause an allergic skin reaction from trace amounts of sensitizing metals in lime.
Symptoms/effects after eye contact	: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns. Glassy particles can cause damage to eye tissue by mechanical abrasion.
Symptoms/effects after ingestion	: May be harmful if swallowed. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. If aspiration into the lungs occurs during vomiting, severe lung damage may result.
Chronic symptoms	: Causes damage to organs through prolonged or repeated exposure.
Other information	: Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May cause long-term adverse effects in the aquatic environment.

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)	
Partition coefficient n-octanol/water	Not determined
Calcium oxide (1305-78-8)	
LC50 - Fish [1]	1070 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [static])
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 96h - Algae [1]	1130.3 mg/l Test organisms (species): Navicula seminulum
NOEC chronic fish	100 mg/l Test organisms (species): other:Tilapia nilotica Duration: '46 d'
Sulfur (7704-34-9)	
LC50 - Fish [1]	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
LC50 - Fish [2]	< 14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
NOEC chronic fish	9.3 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri) Duration: '28 d'

12.2. Persistence and degradability

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)	
Partition coefficient n-octanol/water	Not determined
Bioaccumulative potential	Not established.
Calcium oxide (1305-78-8)	
BCF - Fish [1]	(no bioaccumulation)
Manganese oxide (MnO₂) (1313-13-9)	
BCF - Fish [1]	(no bioaccumulation expected)
Partition coefficient n-octanol/water	< 0 (at 20 °C)

12.4. Mobility in soil

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)	
Partition coefficient n-octanol/water	Not determined
Manganese oxide (MnO₂) (1313-13-9)	
Partition coefficient n-octanol/water	< 0 (at 20 °C)

12.5. Other adverse effects

Ozone : Not classified.
Other information : No other effects known.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

Blast Furnace Slag (Granulated Blast Furnace Slag, Air Cooled Blast Furnace Slag)

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

14.1. Basic shipping description

In accordance with TDG

Transportation of Dangerous Goods

Not regulated for transport

14.2. Transport information/DOT

No additional information available

14.3. Air and sea transport

No additional information available

SECTION 15: Regulatory information

15.1. National regulations

All components of this product are listed, or excluded from listing, on the Canadian DSL (Domestic Substances List) and NDSL (Non-Domestic Substances List) inventories.

15.2. International regulations

No additional information available

SECTION 16: Other information

Issue date : 02/22/2021

Revision date : 02/22/2021

Other information : Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

Prepared by : Nexreg Compliance Inc.

www.Nexreg.com



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