SAFETY DATA SHEET

1. Identification

Product identifier Synthetic Slag
Product form Mixture
Recommended use Steel ladle (synthetic slag conditioner). For Industrial Use Only

Manufacturer/Supplier information

Company name: FRC Global
Address: 1000 N. West St.
Suite 1200 #3008
Wilmington, DE 19801
Product Support/Technical Services
Phone: (514) 931-5711
Website www.FRCglobal.com

Emergency telephone number: Corporate Office: (514) 931-5711
Technical Services: (514) 931-5711
Contact E-Mail: LadleDr@FRCglobal.com

2. Hazard(s) identification

Hazard classification Not classified for physical or health hazards under GHS.
Hazard identification

Skin Irritation	Category 2
Eye Damage	Category 1
Carcinogenicity	Category 1A
Specific Target Organ Toxicity B Single exposure	Category 3
Specific Target Organ Toxicity B Repeated Exposure	Category 1

Label elements

Signal Word (GHS-US) Danger.
Hazard Statements (GHS-US)

H302:	Harmful if swallowed.
H318:	Causes serious eye damage.
H335:	May cause respiratory irritation.
H350:	May cause cancer through inhalation.
H372:	Causes damage to lungs through prolonged or repeated exposure by inhalation.

Precautionary Statements: (GHS-US)

P202:	Do not handle until all safety precautions have been read and understood.

	P233:	Keep the container tightly closed.
	P260:	Do not breathe dust.
	P264:	Wash hands, forearms, and face thoroughly after handling.
	P270:	Do not drink, eat, or smoke while using this product.
	P271:	Use only outdoors or in a well-ventilated area.
	P280:	Wear protective gloves/protective clothing/eye protection/face protection.
	P331:	DO NOT INDUCE VOMITING.
	P402:	Store in a dry place.
	P405:	Store locked up.
	P501:	Dispose of all contents/containers in accordance with local/provincial regulations.

Prevention Do not handle until all safety precautions have been read and understood. Keep the container tightly closed. Do not breathe dust. Wash hands, forearms, and face thoroughly after handling. Do not drink, eat, or smoke while using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response DO NOT INDUCE VOMITING. If concerned: Get medical advice/attention.

Storage Store in a dry place. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards No data available.

Unknown Acute Toxicity (GHS-US)

No data available

3. Composition/information on ingredients

Substance Not applicable

Mixture

Chemical Name	Common Name/Synonyms	CAS Number	% Weight
Calcium Oxide		1305-78-8	74 - 78%
Magnesium Oxide		1309-48-4	8 – 10%
Aluminum Oxide		1344-28-1	6 – 8%
Silica-Crystalline	Quartz	14808-60-7	3 – 6%

4. First-aid measures

General Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (have a product container or label at hand).

Inhalation Move the person to fresh air at once. Seek medical attention for discomfort or persistent coughing. If breathing has stopped, perform CPR.

Skin contact	Wash with soap and water. Consult physician if irritation continues.
Eye contact	Immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.
Ingestion	DO NOT INDUCE VOMITING. If conscious, have the person drink plenty of water. Seek medical attention immediately.

Most important symptoms/effects, acute and delayed

Irritation, Nausea, Headache, Shortness of Breath

Indication of immediate medical attention and special treatment needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have a product container and/or this Safety Data Sheet on hand for medical staff. Physicians should treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	Use foam or dry chemical fire extinguisher. Use appropriate extinguishing media for surrounding fire conditions.

Unsuitable extinguishing media

Water or halogenated compounds, except for large amounts of water may be used to deluge small quantities of this product.

Specific hazards arising from the substance or mixture

Inhalation, skin, or eye contact, can result in serious injury. This product reacts with water and can release heat sufficient to ignite combustible materials. This product is not considered to be an explosion hazard, although a reaction with water or other incompatible materials may rupture containers. When this product is wet, it can be very slippery and can result in a slip hazard.

Advice for Firefighters

Precautionary Measures	Exercise caution when fighting any chemical fire.
Firefighting Instructions	Use water spray or fog for cooling exposed containers. Remove containers from the fire area if this can be done safely. Do not breathe fumes from fires or vapors from decomposition.

Protection During Firefighting

Use NIOSH-approved respiratory protection/breathing apparatus.

Firefighting Instructions	Keep run-off water out of sewers and water sources.

6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Wear protective equipment. Avoid inhalation, and eye and skin contact. Avoid generating airborne dust.

Wear appropriate protective clothing as described in section 8. Ensure that air-handling systems are operational. Ensure adequate ventilation.

Methods and materials for containment and cleaning up

Keep in suitable closed containers for disposal. Wear protective eyewear, gloves, and clothing. Refer to Section 8. Always obey local regulations. 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 (i.e. clearing dust surfaces with compressed air). Collect solids in powder form using a vacuum with a HEPA filter. Evacuate personnel to a safe area.

Environmental precautions Prevent it from reaching drains, sewers, or waterways. Collect contaminated soil for characterization as per Section 13. Should not be released into the environment.

References to other sections See Section 8 for Exposure Controls and Personal Protection.
See Section 13 for Disposal Considerations.

7. Handling and storage

Precautions for safe handling Minimize dust generation and accumulation. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with eyes, skin, and clothing.

Conditions for safe storage, including any incompatibilities

Store away from incompatible materials. Protect from freezing and physical damage. Keep away from food and beverages. Provide ventilation for containers. Long-term storage in aluminum containers is not recommended as calcium oxide may corrode aluminum over a long period. Store in cool, dry conditions in well-sealed containers. Store with like hazards.

8. Exposure controls/personal protection

Control Parameters

Ingredient Name	*OSHA PEL (mg/m^3)*	*ACGIH-TLV (mg/m^3)*	*Ont. Reg. 833 TWAEV (mg/m^3)*
Calcium Oxide (CAS 1305-78-8)	5	2	2
Magnesium Oxide (CAS 1309-48-4)	15	10	10
Aluminum Oxide* (CAS 1344-28-1)	5 (fume) 10 (total) 5 (respirable)	5	5 (respirable)
Silica-Crystalline Quartz (CAS 14808-60-7)	30/(% silica +2) (total)	0.025 (respirable)	0.1

	10/(% silica +2) (respirable)

*PEL's for Particulates Not Otherwise Classified

Exposure Controls

Individual protection measures, such as personal protective equipment

Engineering controls	Use adequate general or local exhaust ventilation to maintain exposure below occupational exposure limits.
Eye/face protection	Safety glasses with side shields should be worn. In windy conditions, or if work activity generates elevated airborne dust levels, dustproof or chemical goggles are recommended. Contact lenses should not be worn.
Skin protection	When there is a risk of skin contact, wear appropriate clothing and gloves to prevent contact.
Respiratory protection	If exposure limits are exceeded, an approved Particulate Respirator, or supplied air respirator appropriate for the airborne concentrations should be used. Selection and use of the respiratory protective equipment must be in accordance with applicable regulations and good industrial hygiene practices.

Other Recommended Protection

An emergency eye wash fountain and shower are recommended.

9. Physical and chemical properties

Appearance	White or grayish-white material.
Odor	Odorless (Threshold: not applicable).
pH at 25 degrees C	12.45
Flash Point °C / °F	Not Applicable.
Flammability	Non-Flammable.
Vapor Pressure/Density	Non-Volatile.
Boiling Point and Range	5162°F (2850°C)
Melting/Freezing Point	4658°F (2570°C)
Relative Density	2.0-2.8
Evaporation Rate	Not Applicable.
Freezing Point, °C / °F	Not Applicable.
Solubility in Water	Neglible in water but reacts with water to form calcium hydroxide and magnesium hydroxide. Soluble in acids, glycerine, and sugar solutions.
Partition Coefficient	Not Applicable.
Auto Ignition Temperature	Not Available.
Decomposition Temperature	Not Available.
Viscosity	Not Applicable.

Other information No additional information is available.

10. Stability and reactivity

Reactivity Product reacts with water to form calcium hydroxide and magnesium hydroxide, releasing heat. Reacts with acids to form calcium salts, releasing heat. Reacts with carbon dioxide in the air to form calcium carbonate. See also Incompatibility below.

Chemical stability Under normal conditions of storage and use, hazardous reactions will not occur.

Possibility of hazardous reactions
See Reactivity above.

Conditions to avoid Avoid contact with water.

Incompatible materials Water (unless controlled process). Acids. Reactive fluoridated compounds. Reactive brominated compounds. Reactive powdered compounds. Reactive phosphorous compounds. Aluminum powder. Organic acid anhydrides. Nitro-organic compounds. Interhalogenated compounds.

Hazardous decomposition products
None.

11. Toxicological information

Information on likely routes of exposure

Inhalation This product can cause severe irritation of the respiratory system.

Skin contact Contact can cause severe irritation or burning of skin, especially in the presence of moisture.

Eye contact Contact can cause severe irritation or burning of the eyes, including permanent damage.

Ingestion This product can cause severe irritation or burning of the gastrointestinal tract if swallowed.

Chronic Health Effects This product contains trace amounts of crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica can cause silicosis, a serious lung disease.

Respiratory or Skin sensitization
This material is not known to cause sensitization.

Germ cell mutagenicity No data available.

Carcinogenicity This product is not listed as carcinogenic by OSHA, IARC, NTP, ACGIH, or the EU Directives. This product may contain trace amounts of crystalline silica quartz which is listed by IARC as a carcinogen to humans (Group 1) and known to be a human carcinogen by NTP (National Toxicology Program).

Reproductive Toxicity No data available.

Numerical Measures of Toxicity
Crystalline Silica: Oral Rate LD_{50} >22,500 mg/kg

12. Ecological information

Because of the elevated pH of this product, it might be expected to produce some ecotoxicity upon exposure to certain aquatic organisms and aquatic systems in high concentrations. This material shows no bioaccumulation effect or food chain concentration toxicity.

13. Disposal considerations

Waste Treatment Methods

Waste from Residues/Unused Products

This product does not meet the criteria of hazardous waste. Dispose in accordance with all federal, provincial, and/or local regulations. Do not dispose of waterways or sewage. Do not dispose of household garbage.

Deactivating Chemicals None required.

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

In accordance with the US DOT

UN Number UN1910.

UN Proper Shipping Name

Calcium Oxide.

Transport Hazard Class(es)

When transported by air only; Hazard Class 8-Corrosive.

Packing Group *When transported by air only:* Packing Group III

Environmental Hazards This material is alkaline and if released into water or moist soil will cause an increase in pH

Transport In Bulk (according to Annex II of Marpol 73/79 and the IBC Code

(Special precautions which a user needs to be aware of)
When being transported by air, quicklime is classified in the Department of Transportation (DOT) regulations as a hazardous material. (49 CFR 172.101). For aircraft transport only, Calcium Oxide is classified as Hazard Class 8-Corrosive, UN1910, Packing Group III. For passenger aircraft, the maximum net quantity allowed per container is 25kg. For cargo aircraft, the maximum net quantity allowed per container is 100kg. For quantities greater than 25kg up to and including 100kg, the container shall be labeled with CARGO AIRCRAFT ONLY. Because express carriers (ie, Federal Express, Airborne Express, and United Parcel Service) ship by air, quicklime presented to these carriers for shipment must be packaged, marked, and labeled in accordance with IATA requirements, and must be accompanied by the appropriate shipping documentation. Only personnel trained and certified under applicable DOT Hazardous Materials Regulations (contained in Title 49 of the Code of Federal Regulations)

may prepare any quicklime product for air transport. Quicklime is not classified as a hazardous material by DOT when transported by means other than by air.

15. Regulatory information

Safety, Health, and Environmental Regulations/Legislation Specific for the Substance or mixture

CERCLA Hazardous Substances

Not listed.

SARA Toxic Chemical (40 CFR 372.65)

Not listed.

SARA Section 302 Extremely Hazardous Substances (40 CFR 355)

Not listed.

SARA 311/312 Not listed.

SARA Section 313 Toxic Chemicals reporting requirements

None.

Threshold planning quantity (TPQ)

Not listed.

RCRA Hazardous Waste Classification (40 CFR 261)

Not classified.

EPA Toxic Substances Control Act (TSCA) Status

All of the components of this product are listed on the TSCA.

California Proposition 65

Airborne crystalline silica particulates of respirable size are known to the State of California to cause cancer.

NFPA Ratings

Health:	3
Fire:	0
Reactivity:	0

HMIS Ratings

Health:	3
Fire:	0
Personal Protection:	E

OSHA Specifically regulated substance (29 CFR 1910)

Not listed.

OSHA Air contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A)

Listed.

MSHA Not listed.

Canada DSL Listed.

Canadian WHMIS Classification

D2A, Materials causing other toxic effects.
E, Corrosive Material.

Canada SPR This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation of Canada and this SDS contains all the required information.

A Chemical Safety Assessment Has Been Carried Out

No Chemical Safety Assessment is available.

16. Other information, including date of preparation or last revision

Abbreviations and Acronyms

GHS	Globally Harmonized System of Classification and Labelling of Chemicals (International)
OSHA	Occupational Safety and Health Administration (US)
ACGIH	American Conference of Governmental Industrial Hygienists
WHMIS	Workplace Hazardous Materials Identification System (Canada)
OSHA PEL	(Permissible Exposure Limits) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A ("C") designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Short-Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday.
ACGIH TLV	Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted.
NIOSH	National Institute for Occupational Safety and Health
HMIS	Hazardous Materials Identification System (US)
TSCA	Toxic Substances Control Act
IARC	International Agency for Research on Cancer
CPR	Controlled Products Regulations
DSL	Domestic Substances List
NDSL	Non-Domestic Substances List
LC50	Lethal concentration, 50 percent

This information is supplied to be informative and to alert the user of the material. The ultimate compliance with federal, state, and/or local regulations concerning the use of this material, or compliance with respect to product liability, rests solely upon the purchaser thereof.

Prepared by: FRC Global
Date: February, 2021

DISCLAIMER: Reasonable care has been taken in the preparation of the information provided, and believed to be correct as of the issue date. However, FRC Global makes no representation or warranties and assumes no responsibility as to the completeness and accuracy thereof. Users must make their own determination as to the suitability of the product for their purpose before use. FRC Global will not be responsible for any damages of any nature directly or indirectly whatsoever resulting from the use of, reliance upon, or misuse of the information contained herein.

End of Safety Data Sheet