



SAFETY DATA SHEET

1. Identification

Product identifier Ladlemag®
Recommended use For Industrial Use Only, Refractory Sand
Recommended restrictions None.

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
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Technical Services: (514) 931-5711
Contact E-Mail: LadleDr@FRCglobal.com

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Not classified.
Environmental hazards Not classified.
OSHA-defined hazards Not classified.
Label elements
Hazard symbol None.
Signal word None.
Hazard statement The mixture does not meet the criteria for classification.
Precautionary statement
Prevention Observe good industrial hygiene practices.
Response Wash hands after handling.
Storage Store away from incompatible materials.
Disposal Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC) None known.
Supplemental information None.

3. Composition/information on ingredients

<i>Chemical Name</i>	<i>Common Name/Synonyms</i>	<i>CAS Number</i>	<i>%</i>
MgO	Magnesium Oxide	1309-48-4	*
SiO ₂	Amorphous Silica	112926-00-8	*
Fe ₂ O ₃	Iron (III) Oxide	1309-37-1	*
Al ₂ O ₃	Aluminum Oxide (Non-Fibrous)	1344-28-1	*

CaO	Calcium Oxide	1308-38-9	*
H ₃ BO ₃	Trihydroxidoboron	10043-35-3	*
Others			*

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

** Linked with magnesium in silicate form with less than 1 % free silica.

Common Name: Synthetic Olivine
CAS Number: RN 12 44 003-26-6
Chemical name of impurities, solvents, and/or additives: None

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Do not rub your eyes. Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Dust may irritate the respiratory tract, skin, and eyes.
Direct contact with the eyes may cause irritation.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep the victim under observation.

General information
If concerned: Get medical advice. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire-fighting measures

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

Unsuitable extinguishing media
Not available.

Specific hazards arising from the chemical
Not available.

Special protective equipment and precautions for firefighters
Not available.

6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures
Keep unnecessary personnel away. Keep people away from, and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA-approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be

contained. For personal protection, see Section 8 of the SDS.

Methods and materials for containment and cleaning up

Stop the flow of material if this is without risk. Collect dust using a vacuum cleaner equipped with a HEPA filter.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into a waste container. Avoid the generation of dust during clean-up. Following product recovery, flush the area with water.

Small Spills: Sweep up or vacuum up spillage and collect it in a suitable container for disposal. For waste disposal, see Section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses, or onto the ground.

7. Handling and storage

Precautions for safe handling

Keep the formation of airborne dust to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in the original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<i>Components</i>	<i>Type</i>	<i>Value</i>	<i>Form</i>
Iron Oxide (CAS 1309-37-1)		10 mg/m ³	Total dust.
Aluminum Oxide (Non-Fibrous) (CAS 1344-28-1)	TWA	15 mg/m ³ 5 mg/m ³	Respirable fraction. Total dust.
Trihydroxidoboron (CAS 10043-35-3)	STEL	6 mg/m ³	Inhalable fraction.
Calcium Oxide (CAS 1305-78-8)	PEL	5 mg/m ³	

US OSHA Table Z-3 (29 CFR 1910.1000)

<i>Components</i>	<i>Type</i>	<i>Value</i>	<i>Form</i>
Silicon Dioxide, Amorphous (CAS 112926-00-8)	TWA	0.8 mg/m ³ 20 mppcf	

Biological limit values

No biological exposure limits were noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation that may generate dust, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical-resistant gloves.

Other

Use of an impervious apron is recommended.

Respiratory protection

Use a NIOSH/MSHA-approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.



General Hygiene Considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state

Solid.

Form

Solid Powder.

Color

Varies from light to dark brown.

Odor

Not available.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

Not available.

Initial boiling point and boiling range

Not available.

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage, and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction is known under conditions of normal use.
Conditions to avoid	
Incompatible materials	Acids. Chlorine. Incompatibility is based strictly upon potential theoretical reactions between chemicals and may not be specific to industrial application exposure. Contact your sales representative for clarification.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	Dust may irritate the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical, and toxicological characteristics:	Dust may irritate the respiratory tract, skin, and eyes.
Information on toxicological effects	
Acute toxicity	

<i>Components</i>	<i>Species</i>	<i>Test Results</i>
Trihydroxidoboron (CAS 10045-35-3) <i>Acute</i> Inhalation LC50	Rat	> 0.002 mg/l, 4 hours

*Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation

Direct contact with the eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization

Not a respiratory sensitizer.

Skin sensitization

This product is not expected to cause skin sensitization.

Germ cell mutagenicity

No data is available to indicate product, or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive toxicity

This product is not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Trihydroxidoboron component of this product indicate adverse reproductive effects.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

Not an aspiration hazard.

Chronic effects

Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<i>Components</i>	<i>Species</i>	<i>Test Results</i>
Trihydroxidoboron (CAS 10045-35-3) <i>Aquatic</i> Fish LC50	Razorback Sucker (Xyrauchen Texanus)	> 100 mg/l, 96 hours

Persistence and degradability

No data is available on the degradability of this product.

Bio-accumulative potential

No data available.

Mobility in soil No data available.
Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions This product, in its present state, when discarded or disposed of, is not hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

Hazardous waste code Not applicable.

Waste from residues / unused products Not available.

Contaminated packaging Not available.

14. Transport information

DOT Not regulated as dangerous goods.
IATA Not regulated as dangerous goods.
IMDG Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. One or more components are not listed on TSCA. All chemical substances in this product are listed on the TSCA chemical substance inventory where required.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4) Not listed.

SARA 304 Emergency release notification Not regulated.

US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance Not listed.

SARA 311/312 Hazardous Chemical

Not listed.

SARA 313 (TRI reporting)

<i>Chemical Name</i>	<i>CAS number</i>	<i>% by wt.</i>
Aluminum Oxide (Non-Fibrous)	1344-28-1	*

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US Massachusetts RTK - Substance List

Aluminum Oxide (Non-Fibrous) (CAS 1344-28-1)

Magnesium Oxide (CAS 1309-48-4)

Calcium Oxide (CAS 1305-78-8)

US New Jersey Worker and Community Right-to-Know Act

Aluminum Oxide (Non-Fibrous) (CAS 1344-28-1)

Magnesium Oxide (CAS 1309-48-4)

Trihydroxidoboron (CAS 10043-35-3)

Calcium Oxide (CAS 1305-78-8)

US Pennsylvania Worker and Community Right-to-Know Law

Aluminum Oxide (Non-Fibrous) (CAS 1344-28-1)

Magnesium Oxide (CAS 1309-48-4)

Calcium Oxide (CAS 1305-78-8)

US Rhode Island RTK Aluminum Oxide (Non-Fibrous) (CAS 1344-28-1)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US California Proposition 65 - CRT: Listed date/Carcinogenic substance

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

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

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: October 2020

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End of Safety Data Sheet