

MATERIAL SAFETY DATA SHEET

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Section 1 – Product Name

Material Name: Resin Bonded Alumina-Silicon Carbide -Carbon Brick
Intended Use: Refractory Material
Product Name: LadleMax BSC
Brand Code: MIX7008

Section 2 – Composition and Information on Ingredients

| Ingredient | CAS No. | % Weight | OSHA PEL | ACGIH TLV | Sec. 313 |
|----------------------------|-----------------|----------|---|--|----------|
| Alumina | 1344-28-1 | 40-70 | 15 mg/ m ³ Total Dust 5 mg/m ³ Respirable | Withdrawn Al Metal & Insoluble Compounds 1 mg/m ³ Respirable | No |
| Crystalline Silica (Total) | Not Applicable | 0.5-1.5 | Not Applicable | Not Applicable | No |
| Cristobalite | 14464-46-1 | | 0.05mg/m ³ Respirable | 0.025 mg/m ³ Respirable | |
| Tridymite | 15468-32-3 | | 0.05mg/m ³ Respirable | Withdrawn | |
| Quartz | 14808-60-7 | | 0.1 mg/m ³ Respirable | 0.025 mg/m ³ Respirable | |
| Silicon Carbide | 409-21-2 | 7-13 | 15mg/ m ³ (Total) 5mg/ m ³ (Respirable) | 10mg/ m ³ | No |
| Graphite | 7782-42-5 | 5-10 | 15 mppcf (3) | 2.0 mg/ m ³ Respirable | No |
| Phenolic Resin | Not Established | 1-5 | Not Established | Not Established | No |
| Aluminum | 7429-90-5 | 1-5 | 15 mg/ m ³ Total Dust 5 mg/ m ³ Respirable | 10 mg/ m ³ | No |
| Carbon Black | 1333-86-4 | 0.5-1.5 | 3.5 mg/m ³ | 3.5 mg/m ³ | No |

Notes: (1) The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. (2) The TLV value is for particulate matter containing no asbestos and <1% crystalline silica. (3) Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

Section 3 – Hazards Identification

Emergency Overview: No unusual fire or spill hazard. Dusts may be irritating to skin, eyes and mucous membranes.

Primary Route(s) of Entry for Particulate: **Eye:** Yes **Skin:** Yes **Inhalation:** Yes (Cutting and tear out operations)

Ingestion: No

Potential Adverse Health Effects:

| | |
|----------------|--|
| Acute | Eye: Dusts of this product may be irritating |
| | Skin: Dusts of this product may cause irritation |
| | Inhalation: Dusts of this product may be irritating to respiratory tract. |
| Chronic | Eye: Dust of this product may cause reddening or swelling of the eye. |
| | Skin: Dusts of this product may cause a skin rash (dermatitis) |
| | Inhalation: Prolonged breathing of dust of this product in excess of the stated PEL or TLV may cause lung disease (Silicosis). According to the International Agency for Research on Cancer (IARC), there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite from occupational sources. Prolonged exposure to fumes generated from heat can lead to chronic poisoning which can cause central nervous system effects as well as liver and kidney damage. |

Carcinogenicity: Crystalline Silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (GROUP 1, IARC, NTP). Some carbon blacks may contain compounds which are carcinogenic and as organic extracts of these have been classified as possibly carcinogenic to humans.

California Proposition 65: This product contains crystalline silica and carbon black, chemicals known to the State of California to cause cancer.

Signs and Symptoms of Overexposure: Skin irritation can result from handling. Coughing can result from overexposure to dust.

Medical Conditions Generally Aggravated by Exposure to Particles: Pre-existing disease or other conditions of the lungs, skin, eyes and mucous membranes.

Section 4- First Aid Measures

Eye Contact: Flush product from eyes using large amounts of water. If irritation continues, seek medical attention.

Skin Contact: Wash product from skin using soap and water. If irritation continues, seek medical attention.

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Inhalation: If exposed to excessive levels of dusts or vapors during heating, remove victim to fresh air. Seek medical attention if coughing or other symptoms persist.

Ingestion: As shipped, product not likely to be ingested; but if it occurs, do not induce vomiting. Seek medical attention.

Section 5 – Fire Fighting Measure

Flash Point: Not Applicable

Flammable Limits: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Autoignition Temperature: Not Applicable

Extinguishing Media: As appropriate for surrounding fire.

Fire Fighting Instructions: As appropriate for surrounding fire.

Fire Fighting Equipment: Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus (SCBA) and full protective clothing (bunker gear) when fighting fires.

Hazardous Combustion Products: None

Flame Propagation or Burning Rate of Solid Material: Not Applicable

Flammability Classification (As defined by 29 CFR 1910.1200): Not Flammable

Section 6 – Accidental Release Measures

For brick products, spills are remedied by recovering and restacking the shapes. If dusts are generated during the spill, these should be collected by gently sweeping the material into a dustpan or collecting with a vacuum device. All personnel engaged in cleanup operations should adhere to the instructions outlined in Section 8 for personal protection. Disposal of wastes from cleanup operations should be carried out in accordance with the guidelines outlined in Section 13.

Section 7 – Handling and Storage

Handling: Avoid direct contact with product or dusts from product by wearing protective clothing, using approved respiratory protection and wearing gloves of the impermeable type.

Storage: The product should be stored in a dry location and away from sources of heat (furnaces, boilers, incinerators, etc.). Pallet protection such as shrink-wrap or stretch-wrap should be kept in place until the product is required for installation.

Section 8 – Exposure Control/Personal Protection

Engineering Controls: Process enclosures, local exhaust ventilation, or other engineering process controls may be necessary to keep any air contaminants associated with this product within their TLV's. This is particularly true if user operation generates dust, vapor, or mist.

Respiratory Protection: Since this product is a proprietary mixture of unique ingredients, it does not have an established limit for airborne concentration (PEL or TLV), which workers can routinely be exposed to without suffering adverse health effects. This MSDS is prepared to alert customers and other users to the various components of the product and their relative quantity and toxicity in the product as it is provided. The user must review his/her own circumstances and then determine what is required to establish a respiratory protection program that meets OSHA 1910.134 requirements. If workplace conditions warrant respiratory protection, use MSHA/NIOSH approved units as listed in the current 29 DFR 1910.134 for the existing conditions. Some type of respiratory protection is recommended for even the best conditions. Actual respirator selection should be made after consultation with a competent health and safety professional.

Eye Protection: Industrial type safety glasses offer some protection, goggles offer more.

Protective Gloves: As needed to prevent direct skin contact.

Other Protective Clothing or Equipment: Wear clothing designed to limit direct exposure to product or dusts, vapors, or mists associated with product. Steel toe boots are recommended for brick. If clothing becomes contaminated, it should be laundered before wearing again. Maintain good personal hygiene. Wash hands thoroughly before eating or drinking.

Section 9 – Physical and Chemical Properties

| | |
|--|---|
| Appearance: Brick/Shapes | Vapor Pressure (mm Hg): Not Applicable |
| Odor: Earthy odor | Vapor Density (Air=1): Not Applicable |
| Water Solubility: Insoluble | ph (10% solids): Not Applicable |
| Density (H₂O=1): 2.9 | Boiling Point (°C): Not Applicable |
| % Volatile (By Weight): 0 | Melting Point: Greater than 2000F |
| | Evaporation Rate: Not Applicable |

Section 10 – Stability and Reactivity

Chemical Stability: This product is stable under normal conditions for shipping, storage and installation.

Conditions to Avoid: None

Incompatible Material: May react with strong acids, such as hydrofluoric acid. Avoid contact between product and strong oxidizers.

Hazardous Decomposition: See Reactivity

Hazardous Polymerization: Not Applicable

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Reactivity: When heated, the product emits organic smoke (bakelite-novalac) of co-polymer.

Section 11 – Toxicological Information

| | LD₅₀ | CD₅₀ |
|--|-------------------------------|-------------------------------|
| Aluminum Oxide | No Data | No Data |
| Crystalline Silica: Cristobalite Tridymite Quartz | No Data No Data No Data | No Data No Data No Data |
| Silicon Carbide | No Data | No Data |
| Graphite | 12,600 mg/kg (oral-rat) | No Data |
| Phenolic Resin | No Data | No Data |
| Aluminum | No Data | No Data |
| Carbon Black | No Data | No Data |

Target Organs

| | |
|--|--|
| Aluminum Oxide | Eyes and respiratory |
| Crystalline Silica: Cristobalite Tridymite Quartz | Eyes, skin and respiratory Eyes, skin and respiratory Eyes, skin and respiratory |
| Silicon Carbide | Eyes and respiratory |
| Graphite | Respiratory and cardiovascular system |
| Phenolic Resin | No Data |
| Aluminum | No Data |
| Carbon Black | Eyes and respiratory |

Long Term Toxicity

| | |
|--|---|
| Aluminum Oxide | No Data |
| Crystalline Silica: Cristobalite Tridymite Quartz | Repeated and prolonged inhalation may cause lung disease (silicosis). Repeated and prolonged inhalation may cause lung disease (silicosis). Repeated and prolonged inhalation may cause lung disease (silicosis). |
| Silicon Carbide | Not Available |
| Graphite | Not Available |
| Phenolic Resin | Not Available |
| Aluminum | Repeated and prolonged inhalation may cause pulmonary fibrosis |
| Carbon Black | Repeated and prolonged inhalation may cause lung disease |

Short Term Toxicity

| | |
|--|---|
| Aluminum Oxide | No Data |
| Crystalline Silica: Cristobalite Tridymite Quartz | Repeated and prolonged inhalation may cause lung disease (silicosis). Repeated and prolonged inhalation may cause lung disease (silicosis). Repeated and prolonged inhalation may cause lung disease (silicosis). |
| Silicon Carbide | Not Available |
| Graphite | Irritant to eyes and mucous membrane |
| Phenolic Resin | Not Available |
| Aluminum | No Data |
| Carbon Black | No Data |

Section 12 – Ecotoxicological Information

Accidental Release: No information has been developed regarding the ecotoxicity or environmental fate of this product.

Section 13 – Disposal Considerations

Waste Disposal Method: The as-manufactured refractory or dust from this material is not considered a hazardous waste as defined by 40 CFR 261. However, used product (and dusts generated during maintenance and tear-out operations) may be contaminated with other hazardous substances from the particular application (for example, metals). Therefore, appropriate waste analysis may be necessary to determine proper disposal. A qualified environmental professional in accordance with applicable federal, state, and local regulations should determine waste characterization and disposal/treatment methods.

Section 14 – Transport Information

DOT (Department of Transportation) Classification under 49 CFR 172.101: Not Regulated

UN (United Nations) Number: Not Applicable

NA (North American) Number: Not Applicable

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| Section 15 – Regulatory Information |
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Resco Products, Inc. considers this product to be hazardous as defined by the OSHA Hazardous Communications Standard (29 CFR 1910.1200). Section 2 chemicals, which must be addressed, and the summary of regulatory and other lists upon which they appear are:

| Ingredient | CAS Number | Lists(S) |
|---------------------|-----------------|-----------------|
| Aluminum Oxide | 1344-28-1 | 1,2,3,4 |
| Crystalline Silica: | | |
| Cristobalite | 14464-46-1 | 1,2,3,4 |
| Tridymite | 15468-32-3 | 1,2,3,4 |
| Quartz | 14808-60-7 | 1,2,3,4 |
| Silicon Carbide | 409-21-2 | 1,2,4 |
| Graphite | 7782-42-5 | 1,2,3,4 |
| Phenolic Resin | Not Established | Not Established |
| Aluminum | 7429-90-5 | 1,2,3,4 |
| Carbon Black | 1333-86-4 | 1,2,3,4 |

The lists are as follows:

1. ACGIH TLV "Threshold Limit Values" (2010)
2. OSHA Air Contaminants – Permissible Exposure Limits
3. Canadian Domestic Substances List
4. EPA TSCA Chemical Inventory List

WHMIS Hazard Class (Canada): D2A

SARA Title III:

Section 302 Extremely Hazardous: None

Section 313 Toxic Chemicals: See Section 2

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| Section 16 – Other Information |
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This information and recommendations set forth herein are taken from sources believed to be accurate as of the date herein; however, Resco Products, Inc. makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.