

## MATERIAL SAFETY DATA SHEET

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### *Section 1 - Product Name*

**Material Name:** Resin Bonded Alumina Magnesia-Carbon Brick  
**Intended Use:** Refractory Material  
**Product Name:** LadleMax AMG HP  
**Brand Code:** MIX7024, MIX7024H, MIX7073

### *Section 2 - Composition And Information On Hazardous Ingredients*

<b>Ingredient</b>	<b>CAS No.</b>	<b>% Weight</b>	<b>OSHA PEL</b>	<b>ACGIH TLV</b>	<b>SEC313</b>
Alumina	1344-28-1	60-100	15mg/m <sup>3</sup> Total dust 5 mg/m <sup>3</sup> Respirable	Withdrawn Al Metal & Insoluble Compounds 1 mg/m <sup>3</sup> Respirable	No
Crystalline Silica Cristobalite Tridymite Quartz	Not Applicable 14464-46-1 15468-32-3 14808-60-7	0.5-1.5	Not Applicable 0.05mg/m <sup>3</sup> Respirable 0.05mg/m <sup>3</sup> Respirable 0.1mg/m <sup>3</sup> Respirable	Not Applicable 0.025 mg/m <sup>3</sup> Respirable Withdrawn 0.025 mg/m <sup>3</sup> Respirable	No
Magnesium Oxide	1309-48-4	5-10	15 mg/m <sup>3</sup> Total Particulate	10 mg/m <sup>3</sup> Inhalable	No
Graphite	7782-42-5	1-5	15 mppcf (1)	2 mg/m <sup>3</sup> Respirable	No
Phenolic Resin	--	1-5	Not Established	Not Established	No
Aluminum	7429-90-5	1-5	15 mg/m <sup>3</sup> Total dust 5 mg/m <sup>3</sup> Respirable	10 mg/m <sup>3</sup>	No
Carbon Black	1333-86-4	1-5	3.5 mg/m <sup>3</sup>	3.5 mg/m <sup>3</sup>	No

**Notes:** The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. (1) 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 (sawing and tear out operations)  
**Ingestion:** No

#### **Potential Adverse Health Effects:**

<b>Acute:</b>	Eye: Dusts of this product may be irritating.
	Skin: Dusts of this product may cause skin irritation.
	Inhalation: Dusts of this product may be irritating to respiratory tract.
<b>Chronic:</b>	Eye: Dusts 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.

**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.

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

**Section 5 - Fire Fighting Measures**

**Flash Point:** Not Applicable

**Flammable Limits:** Not Applicable

**LEL:** Not Applicable

**UEL:** Not Applicable

**Autoignition Temperature:** Not Applicable

**General Hazard:** Product will not burn, but does contain small quantities of chemicals which can generate toxic and/or irritating vapors when initially heated.

**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:** Product will not burn, but may generate hazardous combustion products (such as carbon monoxide or vapors of the constituents shown in Section 2) when subjected to fire conditions.

**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 dust pan 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 CFR 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**

<b>Appearance:</b> Brick/shape Black Color	<b>Vapor Pressure:</b> Not Applicable
<b>Odor:</b> Resin Odor	<b>Vapor Density:</b> Not Applicable
<b>Water Solubility:</b> Insoluble	<b>pH:</b> Not Determined
<b>Density (H<sub>2</sub>O = 1):</b> 2.7-3.0	<b>Boiling Point:</b> Not Applicable
<b>% Volatile (By Weight):</b> 7-22% @ 1800 <sup>o</sup> F	<b>Melting Point:</b> Greater than 2500F

**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

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strong oxidizers.

**Hazardous Decomposition or Combustion Products:** This product contains a synthetic resin, which upon application of heat, may release minute but detectable quantities of (1) toxic and irritating fumes including formaldehyde and ammonia, and/or (2) toxic gases such as the "monoaromatics" which include phenol and benzene. This situation is most likely to occur where conditions favor incomplete combustion and poor air handling practices are followed.

**Hazardous Polymerization:** Not Applicable

**Section 11 - Toxicological Information**

As shown in Section 2, this product contains a phenolic resin. The phenolic resin contains less than 1% free phenol after curing, which is part of the manufacturing process. Curing is achieved by heating the product in the range of 300-400 °F. This removes most of the volatile fraction of the resin. In addition to the free phenol, the cured resin contains a trace of formaldehyde (less than 0.1%).

**Incomplete Combustion Products:** The phenolic resin binder may undergo incomplete combustion when temperature is applied to this product. The intent of this note is as follows: (1) to apprise the customer/user of the potential for incomplete combustion, and (2) to advise that the chemical compounds produced by incomplete combustion in combination with poor air handling practices may exceed TLV's (threshold limit values) for specific air contaminants. The specific chemical compounds which may be produced include but are not limited to: carbon monoxide, ammonia, methane, formaldehyde, monoaromatics including phenol, benzene, PAH's and BaP's.

	<b>LD<sub>50</sub></b>	<b>LC<sub>50</sub></b>
Alumina	No Data	No Data
Crystalline Silica		
Cristobalite	No Data	No Data
Tridymite	No Data	No Data
Quartz	No Data	No Data
Magnesium Oxide	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**

Alumina	Respiratory
Crystalline Silica	
Cristobalite	Respiratory
Tridymite	Respiratory
Quartz	Respiratory
Magnesium Oxide	Eyes and respiratory system.
Graphite	Respiratory system and cardiovascular system.
Phenolic Resin	No Data
Aluminum	No Data
Carbon Black	Eyes and respiratory system.

**Long Term Toxicity**

Alumina	No Data
Crystalline Silica	
Cristobalite	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Tridymite	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Quartz	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Magnesium Oxide	Not Available
Graphite	Not Available
Phenolic Resin	Not Available
Aluminum	Repeated or prolonged inhalation may cause pulmonary fibrosis.
Carbon Black	Repeated or prolonged inhalation may cause lung disease.

**Short Term Toxicity**

Alumina	No Data
Crystalline Silica	
Cristobalite	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Tridymite	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Quartz	Repeated and prolonged inhalations may cause lung disease (Silicosis)
Magnesium Oxide	Not Available
Graphite	Irritant to eyes and mucous membranes
Phenolic Resin	Not Available
Aluminum	No Data

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Carbon Black	No Data
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**Section 12 - Ecological 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. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state, and local regulations.

**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

**Section 15 - Regulatory Information**

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:

<b>Ingredient</b>	<b>CAS NUMBER</b>	<b>LIST(S)</b>
Alumina	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
Magnesium Oxide	1309-48-4	1, 2, 3, 4
Graphite	7782-42-5	1, 2, 3, 4
Phenolic Resin	--	--
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):** D-2A

**SARA TITLE III:**

**Section 302 Extremely Hazardous Substances:** None

**Section 311/312 Hazardous Categories:** Irritant

**Section 313 Toxic Chemicals:** See Section 2

**Section 16 - Other Information**

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.