

MATERIAL SAFETY DATA SHEET

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Prepared By: Research & Development
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Section 1 – Product Name

Common Name: Refractory Mortar
Intended Use: Refractory Material
Product Name: N/R RFG Mortar
Brand Code: MIX1006

Section 2 – Composition and Information on Hazardous Ingredients

Ingredient	CAS No.	% Weight	OSHA PEL	ACGIH TLV	Sec. 313
Magnesium Oxide	1309-48-4	30-60	15 mg/m ³ Total Particulate	10 mg/m ³ Inhalable	No
Crystalline Silica (Total)	Not Applicable	1-5	Not Applicable	Not Applicable	No
Cristobalite	14464-46-1		0.05 mg/m ³ Respirable	0.025 mg/m ³ Respirable	
Tridymite	15468-32-3		0.05 mg/m ³ Respirable	Withdrawn	
Quartz	14808-60-7		0.1 mg/m ³ Respirable	0.025 mg/m ³ Respirable	
Chromium(III) Oxide	1308-38-9	10-30	0.5 mg/m ³ as Cr	0.5 mg/m ³	Yes
Iron Oxide	1309-37-1	7-13	10 mg/m ³ Fume	5 mg/m ³ Respirable	No
Alumina	1344-28-1	5-10	15 mg/m ³ Total Dust 5 mg/m ³ Respirable	Withdrawn Al Metal & Insoluble Compounds 1 mg/m ³ Respirable	No
Sodium Silicate	1344-09-8	5-10	Not Established (2)	Not Established (3)	No

Notes: (1) The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. (2) Particles not otherwise regulated-15mg/m³ total dust, and 5 mg/m³ respirable dust. (3) Particles not otherwise specified-ACGIH believes that biologically inert, insoluble, or poorly soluble particles may have adverse effects and recommends that airborne concentrations should be below 3 mg/m³ respirable particles and 10 mg/m³ inhalable particles.

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: **Eyes:** Yes **Skin:** Yes **Inhalation:** Yes **Ingestion:** No

Potential Adverse Health Effects:

Acute	Eye: Dusts of this product may be irritating.
	Skin: This product may be irritating to the skin.
	Inhalation: Dusts of this product may be irritating to respiratory tract.
Chronic	Eye: None known
	Skin: This product may be irritating to the skin.
	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.

Carcinogenicity: Crystalline Silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC Group 1, NTP).

California Proposition 65: This product contains crystalline silica, a chemical known to the State of California to cause cancer. This product contains chromite (Cr⁺³) which may in normal use, be converted chemically to a chromate (Cr⁺⁶) hexavalent chrome, a chemical known to the State of California to cause cancer.

Signs and Symptoms of Overexposure: 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, 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: Fire conditions may produce small amounts of hexavalent chromium and other oxidation products.

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

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 to 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.

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 associated with product. 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: Granular Mix	Vapor Pressure (mm Hg): Not Applicable
Odor: Earthy Odor	Vapor Density (Air=1): Not Applicable
Water Solubility: Slight	pH (10% solids): 1.5-2.5
Density (H₂O=1): 2.0	Boiling Point (°C): Not Applicable
% Volatile (By Weight): 0	Melting Point: Greater than 2000F

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: Fine active metals. Chromic oxide may react with alkali at high temperatures under oxidizing conditions.

Hazardous Decomposition: None

Hazardous Polymerization: Not Applicable

Reactivity: Chemically Setting

Section 11 – Toxicological Information

	LD ₅₀	CD ₅₀
Magnesium Oxide	No Data	No Data
Crystalline Silica		

Cristobalite	No Data	No Data
Tridymite	No Data	No Data
Quartz	No Data	No Data
Chromium (III) Oxide	No Data	No Data
Iron Oxide	5500 mg/kg (ipr-rat)	No Data
Alumina	No Data	No Data
Sodium Silicate	No Data	No Data
Target Organs		
Magnesium Oxide	Eyes and respiratory system	
Crystalline Silica		
Cristobalite	Respiratory	
Tridymite	Respiratory	
Quartz	Respiratory	
Chromium (III) Oxide	Eyes, Skin, and Mucous Membranes	
Iron Oxide	Respiratory system, lungs, eyes, and skin	
Alumina	Respiratory system	
Sodium Silicate	Not Available	
Long Term Toxicity		
Magnesium Oxide	Not Available	
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)	
Chromium (III) Oxide	Not Classified as a Carcinogen (ACGIH)	
Iron Oxide	Not Available	
Alumina	Not Available	
Sodium Silicate	Not Available	
Short Term Toxicity		
Magnesium Oxide	Not Available	
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)	
Chromium (III) Oxide	Irritant to Skin, Eyes, and Mucous Membranes	
Iron Oxide	Not Available	
Alumina	Irritant to skin, eyes, and mucous membranes	
Sodium Silicate	Not Available	

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. Wet material should be neutralized using Sodium Carbonate (or other acid neutralizing agent) then placed in container for disposal. 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). Chromite (Cr⁺³) may in normal use, be converted chemically to a chromate (Cr⁺⁶). Hexavalent chromium (Cr⁺⁶) is considered a hazardous material. 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

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:

Ingredient	CAS Number	List (s)
Magnesium Oxide	1309-48-4	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
Chromium (III) Oxide	1308-38-9	1,2,3,4
Iron Oxide	1309-37-1	1,2,3,4
Alumina	1344-28-1	1,2,3,4
Sodium Silicate	1344-09-8	1,2,4

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

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.