MATERIAL SAFETY DATA SHEET

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Telephone No: **610-292-3535**
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Section 1 - Product Name

Material Name: **Resin Bonded Magnesia-Carbon Brick (With Al)**
Intended Use: **Refractory Material**
Product Name: **Nuline R-20A**
Brand Code: **MIX3314**

Section 2 - Composition And Information On Ingredients

Ingredient	CAS No.	% Weight	OSHA PEL	ACGIH TLV	SEC 313
Magnesium Oxide	1309-48-4	60-88	15 mg/m^3 Fume total particulate	10 mg/m^3 Inhalable	No
Graphite	7782-42-5	10-30	15 mppcf (2)	2 mg/m^3 Respirable	No
Phenolic Resin	Not Available	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

Notes: (1) The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. (2) 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:

Acute:	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.
Chronic:	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 or repeated inhalation of dusts of this product in excess of the stated PEL or TLV may cause lung disease (pneumoconiosis).

Carnogenicity: None of the ingredients in Section 2 are listed by IARAC, NTP, or ACGIH as carcinogens or potential carcinogens.
Signs and Symptoms of Overexposure: Skin rash can result from handling. Coughing can result from overexposure to dust.
Medical Conditions Generally Aggravated by Exposure to Particles: Pre-existing diseases 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.
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

Appearance: Brick/Shapes, Black Color	**Vapor Pressure:** Not Applicable
Odor: Resin Odor	**Vapor Density:** Not Applicable
Water Solubility: Insoluble	**Boiling Point:** Not Applicable
Density ($H_2 0$ = 1): 2.8	**pH:** Not Determined
% Volatile (By Weight): 5-22% at 1800°F	**Melting Point:** Greater than 3000°F

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 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 that 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/use 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.

	LD_{50}	LC_{50}
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
Target Organs		
Magnesium Oxide	Eyes and respiratory system.	
Graphite	Respiratory system and cardiovascular system.	
Phenolic Resin	No Data	
Aluminum	No Data	
Long Term Toxicity		
Magnesium Oxide	Not Available	
Graphite	Not Available	
Phenolic Resin	Not Available	
Aluminum	Repeated or prolonged inhalation may cause pulmonary fibrosis.	
Short Term Toxicity		
Magnesium Oxide	Not Available	
Graphite	Irritant to eyes and mucous membranes	
Phenolic Resin	Not Available	
Aluminum	No Data	

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:

Ingredient	CAS NUMBER	LIST(S)
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

The lists are as follows:

1. ACGIH TLV "Threshold Limit Values" (2007)
2. OSHA Air Contaminants - Permissible Exposure Limits
3. Canadian Domestic Substances List
4. EPA TSCA Chemical Inventory List

WHMIS Hazard Class (Canada): D-2B

SARA TITLE III: 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.