

MATERIAL SAFETY DATA SHEET

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Section 1 – Product Name

Common Name: High Alumina Chemically Bonded Mortar
Intended Use: Refractory Material
Product Name: HiLo - AL
Brand Code: MIX0903

Section 2 – Composition and Information on Hazardous Ingredients

| <u>Ingredient</u> | <u>CAS No.</u> | <u>% Weight</u> | <u>OSHA PEL</u> | <u>ACGIH TLV</u> | <u>Sec. 313</u> |
|----------------------------|----------------|-----------------|--|---|-----------------|
| Alumina | 1344-28-1 | 40-70 | 15.0 mg/m ³ (Total) 5.0 mg/m ³ (Respirable) | 10.0 mg/m ³ | No |
| Crystalline Silica (Total) | Not Applicable | 0.1-1.0 | Not Applicable | Not Applicable | No |
| Cristobalite | 14464-46-1 | | 0.05 mg/m ³ (Respirable) | 0.05 mg/m ³ (Respirable) | |
| Tridymite | 15468-32-3 | | 0.05 mg/m ³ (Respirable) | 0.05 mg/m ³ (Respirable) | |
| Quartz | 14808-60-7 | | 0.1 mg/m ³ (Respirable) | 0.05 mg/m ³ (Respirable) | |
| Phosphoric Acid | 7664-38-2 | 5-10 | 1.0 mg/m ³ (TWA) 3.0 mg/m ³ (STEL) | 1.0 mg/m ³ (TWA) 3.0 mg/m ³ (STEL) | No |

Notes: (1) The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. "Not Established" means that no PEL or TLV has been assigned. (2) The TLV value for Alumina is for particulate matter containing no asbestos and <1% crystalline silica.

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:

Inhalation: Yes

Other: Yes

Skin: 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 (GROUP 1 IARC, NTP).

California Proposition 65: This product contains crystalline silica, 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 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**

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.**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 recommend 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 protection.**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:** Wet Slurry, White to Gray Color**Odor:** None**Water Solubility:** Slight**Density (H₂O=1):** 2.5-3.5**% Volatile (By Weight):** 1-5**Vapor Pressure (mm Hg):** Not Applicable**Vapor Density (Air=1):** Not Applicable**pH (10% solids):** 1.5-2.5**Boiling Point (°C):** Not Applicable**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.**Hazardous Decomposition or Combustion Products:** None**Hazardous Polymerization:** Not Applicable**Reactivity:** Chemically Setting

Section 11 – Toxicological Information

| | LD₅₀ | LC₅₀ |
|----------------------------|---|------------------------|
| Alumina | No Data | No Data |
| Crystalline Silica | | |
| Cristobalite | No Data | No Data |
| Tridymite | No Data | No Data |
| Quartz | No Data | No Data |
| Phosphoric Acid | No Data | No Data |
| Target Organs | | |
| Alumina | Respiratory | |
| Crystalline Silica | | |
| Cristobalite | Respiratory | |
| Tridymite | Respiratory | |
| Quartz | Respiratory | |
| Phosphoric Acid | Skin & Respiratory | |
| 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) | |
| Phosphoric Acid | Irritation to Skin and Respiratory organs | |
| 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) | |
| Phosphoric Acid | Irritation to Skin and Respiratory organs | |

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). 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) |
|--------------------|-------------------|-----------------|
| 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 |
| Phosphoric Acid | 7664-38-2 | 1,2,3,4 |

The lists are as follows:

1. ACGIH TLV "Threshold Limit Values" (1997)
2. OSHA Air Contaminants – Permissible Exposure Limits (1989)
3. Canadian Domestic Substances List

Product Name: HiLo - AL

Date: 05/11/05

4. EPA TSCA Chemical Inventory List (1992)

WHMIS Hazard Class (Canada): D2A

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.