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THIS MATERIAL SAFETY DATA SHEET . . .

. . . IS AN IMPORTANT SOURCE OF PRODUCT INFORMATION AND WORK PRACTICES ACCORDING TO THE OSHA HAZARD COMMUNICATION STANDARD, ALL WORKERS AND EMPLOYEES MUST HAVE ACCESS TO THE MSDS AND IF YOU DISTRIBUTE OR RESELL THESE PRODUCTS YOU MUST PROVIDE COPIES OF THE MSDS TO ALL YOUR CUSTOMERS WHO PURCHASE THESE PRODUCTS.

SAFETY DATASHEET

(Following Regulations (EC) No 1907/2006 & (EC) No 1272/2008)

SDS Number: 151-1

Date of first issue: 28 March 1995

Date of last revision: 22 October 2014

1-Identification of product: Product Group: IFB 23 lile, Insalcor, JM-20, JM-23, JM-26, JM-28, JM-30, JM-32, K-20, K-23, K-24, K-25, K-26, K-28, K-30, SR-90, SR-99, SR-99-LS, TC-23, TC-26, TJM-26, TJM-28,

INSULATING REFRACTORY BRICK

Chemical Name: ALUMINOSILICATE PRODUCT

Intended Use: High Temperature Thermal Insulation

Trade Names: Carboxite 8202, Firebrick 80, Insalcor JM-20, JM-23, JM-26, JM-28, JM-30, JM-32, K-20, K-23, K-24, K-25, K-26, K-28, K-30, K-3000, Kaomul 85 SR-90, SR-99, SR-99 LS Company

For Product Stewardship and Emergency Information: Hotline - 1-800-722-5681, Fax - 706-560-4054

For additional SDSs and to confirm this is the most current SDS for the product, visit our web page www.morganthermalceramics.com or send a request to MT.NorthAmerica@morganplc.com

2-Hazard Identification Emergency Overview

Respirable dust from these products may contain crystalline silica, which is known to cause respiratory disease. (See Section 11 for more information)

Chronic Effects: Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury (e.g. Silicosis, lung cancer).

Possible Health Effects: Target Organs: Eyes, skin, nose and/or throat Primary Entry Route: Inhalation

Acute effects: May cause temporary, mild mechanical irritation to the eyes, skin, nose and/or throat. Pre-existing skin and respiratory conditions may be aggravated by exposure.

Hazard Classification Info: Dust samples from these products have not been tested for their specific toxicity, but may contain more than 0.1% crystalline silica, for which the following apply: The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite from occupational sources as carcinogenic to humans (Group 1).

The Ninth Annual Report on Carcinogens (2000), prepared by the National Toxicology Program (NTP), classified silica, crystalline (respirable size), as a substance known to be a human carcinogen. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified crystalline silica (quartz) as "A2-Suspected Human Carcinogen." The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "silica, crystalline (airborne particles of respirable size)" as a chemical known to the State of California to cause cancer.

The Canadian Workplace Hazardous Materials Information System (WHMIS) - Crystalline silica [quartz and cristobalite] is classified as Class D2A - Materials Causing Other Toxic Effects.

The Hazardous Materials Identification System (HMIS) -

Health: O* Flammability: O Reactivity: 0 Personal Protection Index: X (Employer determined) (* denotes potential for chronic effects)

3-Composition/Information on Ingredients

COMPONENTS	CAS NUMBER	% BY WEIGHT
Ceramic Matrices (consist of glass, mullite and anorthite)	none	95-99%
Crystalline Silica	14808-60-7 or 14464-46-1	Up to 5

(See Section 8 "Exposure Controls I Personal Protection" for exposure guidelines)

4-First-aid Measures

4.1-Eyes: Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

4.2-Skin: Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.

4.3-Respiratory Tract: Remove affected person to dust free location. See Section 8 for additional measures to reduce or eliminate exposure.

4.4-Gastrointestinal: Unlikely route of exposure. If symptoms persist, seek medical attention.

5-Fire-fighting Measures

- 5.1-NFPA Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0
- 5.2-NFPA Unusual Hazards: None
- 5.3-Flammable Properties: None
- 5.4-Flash Point: None
- 5.5-Hazardous decomposition products: None
- 5.6-Unusual Fire and explosion hazard: None
- 5.7-Extinguishing media: Use extinguishing media suitable for type of surrounding fire

6-Accidental Release Measures: Avoid creating airborne dust. Follow routine housekeeping-procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator.

7-Handling and Storage

- 7.1-Handling: Limit the use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.
- 7.2-Storage: Store in original container in a dry area. Keep container closed when not in use. Product packaging may contain residue. Do not reuse.

8-Risk Management Measures/Exposures Controls/Personal Protection

EXPOSURE GUIDELINES			
MAJOR COMPONENT	OSHA PEL	ACGIH TLV	MANUFACTURER'S REG
Crystalline Silica	See below ⁽¹⁾	0.025 mg/m ³ (respirable dust)	NONE
<p>(1) Depending on the percentage and type(s) of silica in the mineral, the OSHA Permissible Exposure Limit (PEL) for respirable dust containing crystalline silica (8 HR TWA) is based on the formula listed in 29 CFR 1910.1000, "Air Contaminants" under Table Z-3, "Mineral Dust". For quartz containing mineral dust, the PEL = 10 mg/m³ / (% of silica + 2); for cristobalite or tridymite, the PEL = 5 mg/m³ / (% of silica + 2); for mixtures, the PEL = 10 mg/m³ / (% of quartz + 2 (% of cristobalite) + 2 (% of tridymite) + 2).</p> <p><u>OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL)</u> Industrial hygiene standards and occupational exposure limits vary between countries and local jurisdictions. Check which exposure levels apply to your facility and comply with local regulations. If no regulatory dust or other standards apply, a qualified industrial hygienist can assist with a specific workplace evaluation including recommendations for respiratory protection.</p>			

Engineering Controls: Use engineering controls, such as ventilation and dust collection devices, to reduce airborne particulate concentrations to the lowest attainable level.

PPE - Skin: Wear full body clothing, gloves, hat, and eye protection as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed work clothing home. If soiled work clothing must be taken home, employers should ensure employees are trained on the best practices to minimize or avoid non-work dust exposure (e.g., vacuum clothes before leaving the work area, wash work clothing separately, rinse washer before washing other household clothes, etc.).

PPE - Eye: Wear safety glasses with side shields or other forms of eye protection in compliance with appropriate OSHA standards to prevent eye irritation. The use of contact lenses is not recommended, unless used in conjunction with appropriate eye protection. Do not touch eyes with soiled body parts or materials. If possible, have eye-washing facilities readily available where eye irritation can occur.

PPE - Respiratory (general text): When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and/or dust concentrations using appropriate NIOSH analytical methods and select respiratory protection based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH-certified particulate respirators (42 CFR 84), in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

9-Physical and Chemical Properties

ODOR & APPEARANCE: Solid Brick or Block
 CHEMICAL FAMILY: Insulating Refractory Brick
 BOILING POINT: Not Applicable
 WATER SOLUBILITY (%): Not soluble in water
 MELTING POINT: 2750 °F to 3660°F (refer to specific product data sheets)
 SPECIFIC GRAVITY: Not applicable
 VAPOR PRESSURE: Not applicable
 pH: Not applicable
 VAPOR DENSITY (Air = 1): Not applicable
 % VOLATILE: Not applicable
 MOLECULAR FORMULA: Not applicable

10-Stability and Reactivity Incompatibilities

Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide
 Conditions to avoid: None
 Hazardous decomposition products: None
 Hazardous polymerization: Will not occur

11-Toxicological information

Dust samples from these products have not been tested. They may contain respirable crystalline silica.
 Epidemiology: No studies have been undertaken on humans exposed to these products in occupational environments.
 Crystalline silica: Exposure to crystalline silica can cause silicosis, and exacerbate pulmonary tuberculosis and bronchitis. IARC (Monograph vol. 68, 1997) concluded that "crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1)", and noted that "carcinogenicity in humans was not detected in all industrial circumstances studied" and "may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity".
 Toxicology: Crystalline silica -- Some samples of crystalline silica administered to rats by inhalation and intratracheal instillation have caused fibrosis and lung cancer. Mice and hamsters, similarly exposed, develop inflammatory disease including fibrosis but no lung cancer.

12-Ecological Information

Adverse effects of this material on the environment are not anticipated.

13-Disposal Considerations

13.1-Waste Management: To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.
 13.2-Disposal: If discarded in its purchased form, this product would not be a hazardous waste under Federal regulations (40 CFR 261) Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a hazardous waste. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

14-Transport Information: Hazard Class: Not Regulated United Nations (UN) Number: Not Applicable Labels: Not Applicable North America (NA) Number: Not Applicable Placards: Not Applicable Bill of Lading: Product Name INTERNATIONAL--Canadian TOG Hazard Class & PIN: Not regulated
 Not classified as dangerous goods under ADR (road), RID (train), IATA (air) or IMDG (ship).

15-Regulatory Information

UNITED STATES REGULATIONS
SARA Title III: This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.
OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.
TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory
California: "Silica, crystalline (airborne particles of respirable size)" is listed in Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986 as a chemical known to the State of California to cause cancer.
Other States: Crystalline silica products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.
INTERNATIONAL REGULATIONS
Canadian WHMIS: Class D-2A Materials Causing Other Toxic Effects
Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

16-Other Information

SARATITLE III HAZARD CATEGORIES

Acute Health: No Pressure Hazard: No Chronic Health: Yes Reactivity Hazard: No Fire Hazard: No

TECHNICAL DATASHEETS

114-3, 114-2

Revision Summary

Section 16: Disclaimer Updated

SOS Prepared By: MORGAN THERMAL CERAMICS ENVIRONMENTAL, HEALTH & SAFETY DEPARTMENT

Disclaimer

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Employers may use this SOS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this SOS. Therefore, given the summary nature of this document, Morgan Thermal Ceramics does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.