MATERIAL SAFETY DATA SHEET

MANUFACTURED BY: MT. SAVAGE SPECIALTY REFRACTORIES CO., INC.
736 WEST INGOMAR ROAD
INGOMAR, PA 15127

GENERAL PHONE: (412) 367-9100
PREPARED BY: Director of Technical Services
INFORMATION: (301) 264-3595
REVISION DATE: January 5, 2011

PRODUCT DETAILS

PRODUCT NAMES: HEATCRETE products (12 thru 28) including suffixes ES, ESC, GM, LI, AH, QF, T, TR and TM.
NOTE: For products with suffixes not listed see product specific MSDS.

COMMON NAME: Refractory Concrete
CAS NO: Mixture

PRODUCT COMPOSITION / HAZARDOUS INGREDIENTS

These products are composed of a blend of processed alumina-silicate earth minerals (including calcined and uncalcined clays and aggregates) that are bonded by a hydratable cement which when mixed with water forms a concrete similar to that used in commercial construction. Dust generated during manufacture, installation and tear-out may pose a respiratory hazard if exposure is sufficient.

See below for additional health hazard information.

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS NO.</th>
<th>WEIGHT %</th>
<th>OSHA / PEL</th>
<th>ACGIH TLV</th>
<th>CARCINOGEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica forms</td>
<td>as below</td>
<td></td>
<td>0.1 mg/M³ (resp)</td>
<td>0.1 mg/M³ (resp)</td>
<td>NTP – yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IARC – Group 1</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>5 – 15</td>
<td>0.05 mg/M³ (resp)</td>
<td>0.05 mg/M³ (resp)</td>
<td></td>
</tr>
<tr>
<td>Cristobalite</td>
<td>14464-46-1</td>
<td>0 – 5</td>
<td>0.05 mg/M³ (resp)</td>
<td>0.05 mg/M³ (resp)</td>
<td></td>
</tr>
<tr>
<td>Tridymite</td>
<td>15468-32-3</td>
<td>not detected</td>
<td>0.05 mg/M³ (resp)</td>
<td>0.05 mg/M³ (resp)</td>
<td></td>
</tr>
<tr>
<td>Calcium Aluminate Cement</td>
<td>65997-16-2</td>
<td>10 – 30</td>
<td>15 mg/M³ (total)</td>
<td>not found</td>
<td>no</td>
</tr>
</tbody>
</table>

PHYSICAL, CHEMICAL AND FIRE & EXPLOSION HAZARD INFORMATION

PHYSICAL PROPERTIES:
Appearance / Odor - Granular solid, brown to buff color, no distinct odor
Melting Point - Greater than 2000°F
Density (as shipped) - Specific gravity = 2.0 – 3.0 (water = 1)
Solubility - Negligible
pH - Slightly Basic

CHEMICAL REACTIVITY: - When combined with water – hardens in 1 to 8 hours with evolution of moderate heat
- No other known hazardous reactions, decomposition products or polymerization
PHYSICAL, CHEMICAL AND FIRE & EXPLOSION HAZARD INFORMATION (Continued)

FIRE & EXPLOSION: - Non-flammable; no applicable flash point
- Hardened concrete which has not been properly dried is subject to explosion upon rapid heating due to internal steam pressure

SAFE HANDLING PRACTICES AND EXPOSURE CONTROL MEASURES

- Care should be exercised to prevent generation of dust during handling, installation, use and tear-out. Avoid skin and eye contact and breathing of dust.
- Proper refractory practices must be followed for curing, dry-out and firing to service temperature.
- Wash skin and clothing with soap and water after contact with material.
- Appropriate control measures include dust prevention, dust containment and ventilation supplemented by the use of appropriate NIOSH approved respirators for the exposure conditions.
- Safety glasses, impervious gloves, boots and protective clothing should be used as needed.
- Clean-up of spills should be done in a way to minimize dust, including vacuuming and wet methods.

FIRST AID

- Respiratory Distress – Remove to fresh air. Give CPR and Oxygen if needed.
- Skin Irritation – Wash irritated areas gently with soap and water to avoid abrasion. Skin lotion may relieve irritation. If irritation is not relieved within several hours consult a physician.
- Eye Exposure – Flush eyes with water or eyewash solution for 15 minutes and get prompt medical attention if relief is not obtained immediately. DO NOT RUB EYES!!! Injury due to abrasion may result.

HEALTH HAZARDS

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>TYPE</th>
<th>ROUTE OF ENTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>dry skin, skin irritation, alkali burns and allergic dermatitis in hypersensitive individuals</td>
<td>acute/chronic</td>
<td>skin contact with product</td>
</tr>
<tr>
<td>toxicological information - none found</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eye irritation, eye abrasion</td>
<td>acute</td>
<td>eye contact with product</td>
</tr>
<tr>
<td><strong>Serious eye injury can occur due to abrasion from rubbing eyes!!</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>physical injury due to steam spalling or explosion of cured product</td>
<td>acute</td>
<td>improper dry-out</td>
</tr>
<tr>
<td>irritation or inflammation to the linings of the upper respiratory tract</td>
<td>acute</td>
<td>inhalation of dust</td>
</tr>
<tr>
<td>Over-exposure to crystalline silica over a period of years may lead to silicosis (a permanent and sometimes fatal lung disease) and possibly lung cancer. This product may aggravate existing respiratory conditions.</td>
<td>chronic</td>
<td>inhalation of dust</td>
</tr>
</tbody>
</table>
ENVIRONMENTAL AND REGULATORY INFORMATION

**DISPOSAL:** Dispose in accordance with federal, state and local regulations.
Dispose per 40 CFR 261 and 262.

**ECOLOGICAL INFORMATION:** This product is composed primarily of earth minerals and is not expected to have an ecotoxic effect other than that associated with the lime in the cement.

**TRANSPORTATION:** This product is not DOT classified.

**REGULATORY INFORMATION:**
- Canadian WHMIS – D2A
- OSHA 29 CFR 1910.1200 – considered hazardous
- EPCRA Section 302 (Extremely Hazardous Substances) – not listed
- CERCLA Section 304 (Title III) – not subject to reporting
- SARA 313 – not subject to reporting
- SARA Hazard Category – “Chronic Health Hazard”
- California Prop. 65 – “Contains crystalline silica, an ingredient known to cause cancer.”

This information is given in good faith. Suitability of the product for the application and installation conditions are critical to the safety of the product. These conditions are subject to the control of the user and all risks of use of the product are assumed by the user. For guidance on use in specific applications consult MT. SAVAGE SPECIALTY REFRACTORIES CO., INC.