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: October 25, 2011

PRODUCT DETAILS

PRODUCT NAMES: SUPER HEATCRETE products (28 thru 34) including suffixes A, C, F, GM, QF 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 and 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.

INGREDIENT	*CAS NO.*	*WEIGHT %*	*OSHA / PEL*	*ACGIH TLV*	*CARCINOGEN*
Crystalline Silica forms	as below				NTP – yes IARC – Group 1
Quartz	14808-60-7	1 – 10	0.1 mg/M^3 (resp)	0.1 mg/M^3 (resp)	
Cristobalite	14464-46-1	0 – 5	0.05 mg/M^3 (resp)	0.05 mg/M^3 (resp)	
Tridymite	15468-32-3	not detected	0.05 mg/M^3 (resp)	0.05 mg/M^3 (resp)	
Alumina (Aluminum Oxide)	1344-28-1	0 – 85	5 mg/M^3 (resp.)	10 mg/M^3 (total)	no
Calcium Aluminate Cement	65997-16-2	10 – 30	15 mg/M^3 (total)	not found	no

PHYSICAL, CHEMICAL AND FIRE & EXPLOSION HAZARD INFORMATION

PHYSICAL PROPERTIES:

Appearance / Odor	- Granular solid, buff to off white color, no distinct odor
Melting Point	- Greater than 2500°F
Density (as shipped)	- Specific gravity = 2.0 – 3.0 (water = 1)
Solubility	- Negligible
pH	- Slightly Basic

PHYSICAL, CHEMICAL AND FIRE & EXPLOSION HAZARD INFORMATION (Continued)

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

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

HAZARD	***TYPE***	***ROUTE OF ENTRY***
dry skin, skin irritation, alkali burns and allergic dermatitis in hypersensitive individuals	acute/chronic	skin contact with product
toxicological information - none found		
eye irritation, eye abrasion **Serious eye injury can occur due to abrasion from rubbing eyes!!**	acute	eye contact with product
physical injury due to steam spalling or explosion of cured product	acute	improper dry-out
irritation or inflammation to the linings of the upper respiratory tract	acute	inhalation of dust
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.	chronic	inhalation of dust

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.

PRODUCT

SUPER HEATCRETE 28-A

HIGH STRENGTH FIRECLAY CASTABLE
MEDIUM AGGREGATE

REFRACTORIES
TECHNICAL DATA

PHYSICAL PROPERTIES

Maximum Service Temperature	2800°F
ASTM C-401	Class D
Lbs. Required Dry Mix per Cu. Ft.	137 lbs.
% Water by Weight Required for Casting	9%
Bulk Density After Drying at 230°F	142 lbs./cu.ft.
Cold Crushing Strength	
After Drying at 230°F	4000 – 6000 psi
After Heating at 1500°F	3500 – 5500 psi
Modulus of Rupture	
After Drying at 230°F	1250 – 1900 psi
After Heating at 1500°F	600 – 900 psi
Permanent Linear Change	
After Drying at 230°F	Negligible
After Heating to 1500°F	0.0 to -0.2%
After Heating to 2700°F	0.0 to -1.5%
Abrasion Loss after 1500˚F	12 cc

CHEMICAL ANALYSIS

Silica	[SiO_2]	37.5%
Alumina	[Al_20_3]	55.1%
Iron Oxide	[Fe_2O_3]	0.7%
Titanium Oxide	[TiO_2]	1.4%
Lime	[CaO]	4.9%

THERMAL CONDUCTIVITY BTU/SQ.FT./HR./°F/IN.

At 500°F	7.8
At 1500°F	7.5
At 2500°F	7.9

NOTE: All data subject to reasonable deviation and should not be used for specification purposes.

0160