Thermal Ceramics

MATERIAL SAFETY DATA SHEET

MSDS No: 205	Date Prepared: 05/01/1987	Current Date: 4/12/2006 Last Revised: (04/10/2006)

1. PRODUCT AND COMPANY IDENTIFICATION

Material Name: Amorphous Silica Product
Common Name: Refractory Coating, Colloidal Silica
Intended Use: High temperature insulation coating
Trade Names: Kaowool® Rigidizer; Cer-Wool® Rigidizer

Manufacturer/Supplier:

Thermal Ceramics Inc.
P. O. Box 923; Dept. 300
Augusta, GA 30903-0923

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

For additional MSDSs and to confirm this is the most current MSDS for the product, visit our web page [*www.thermalceramics.com*]

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT & CAS NUMBER	% BY WEIGHT	OSHA PEL	ACGIH TLV
Silica, amorphous 7631-86-9	25 - 45	(80 mg/m^3 ÷ % SiO_2**) or 20 mppcf	10 mg/m^3
Ethylene glycol 107-21-1	<9*	Not established	100 mg/m^3 (ceiling limit) Aerosol only
Water 7732-18-5	50 - 85	Not established	Not established

NOTES:
* Disclosure of a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.
** % SiO_2 = percent of crystalline silica

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

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

** CAUTION **

• Dust/mist generated from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

Possible Health Effects:

Target Organs:	Eyes, skin, kidneys, liver, and respiratory system
Primary Entry Route:	Skin; Inhalation.
Acute effects:	May cause temporary lung irritation with cough, difficulty in breathing, shortness of breath, nausea, headache, or weakness. By ingestion, may cause severe, possibly irreversible, injury to the kidneys, acidosis.
Chronic effects:	NIOSH described recent evidence that ethylene glycol may have potential reproductive hazards. None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Signs and Symptoms of Overexposure:

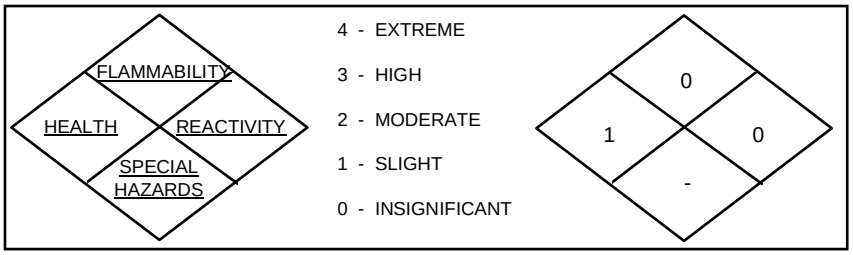
Eye Contact:	Mild irritation with discomfort, tearing, or blurring of vision
Skin Contact:	Mild irritation. Extensive and prolonged skin contact with ethylene glycol can result in absorption of toxic amounts.
Ingestion:	Symptoms related to kidney injury, acidosis, reduced urine volume
Inhalation:	Aggravated bronchial disorders

4. FIRST AID MEASURES

Eye Contact:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Skin Contact:	This compound is not likely to be hazardous by skin contact, but washing the skin with soap and water after use is advisable.
Ingestion:	No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, if symptoms occur, consult a physician.
Inhalation:	If large amounts are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**** If any of the symptoms persist, seek medical attention.**

5. FIRE FIGHTING MEASURES



NFPA Unusual Hazards:	None
Flash Point:	Non-combustible
Extinguishing Media:	Use extinguishing media appropriate to the surrounding fire.
Explosion Hazards:	None
Protective Equipment:	Wear NIOSH certified respirator together with other protective gear appropriate to the surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:	Flush with water to chemical sewer. The reportable quantity (RQ) for ethylene glycol is 5,000 lbs.

7. HANDLING AND STORAGE

Handling: Follow all MSDS/label precautions. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Avoid breathing aerosols and mists (also dust from dried-down product). Wash contaminated clothing before reuse and before "MATERIAL" dries.

Storage: Store in original factory container in a dry area. Keep container closed when not in use. Store at temperatures above 35°F to avoid irreversible precipitation of silica.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use sufficient ventilation to keep employee exposure below recommended limits.

Respiratory Protection: Where there is a potential for inhalation exposure to product dust, mist, or aerosols in excess of applicable exposure limits, wear NIOSH certified respiratory protection.

Protective Clothing: Have available and wear as appropriate: chemical splash goggles and rubber gloves.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear to opalescent, no odor		
Chemical Family:	Amorphous Silica		
Vapor Pressure:	24mm @ 77°F	Vapor Density:	Vapor is water
Boiling Point:	212°F	Specific Gravity Range:	1.1 - 1.4
Melting Point:	Not applicable	Volatile by Volume (%):	Less than 1%
Water Solubility (%):	100%	pH:	8.0 - 10.5

10. STABILITY AND REACTIVITY

Hazardous Polymerization: None

Chemical Incompatibilities: No known hazardous incompatibility, except with materials that react with water

Hazardous Decomposition Products: No known hazardous decomposition

11. TOXICOLOGICAL INFORMATION

Animal Data:

<u>- Colloidal Silica</u>

- Oral LD50: >10,000 mg/kg in rats

The compound is a slight skin irritant and a mild eye irritant. Toxic effects described in animals from single inhalation exposures include upper respiratory irritation, lung congestion, bronchitis, and emphysema. Repeated inhalation exposures at concentrations of 50 or 150 mg/m^3produced increased lung weights and lung changes. No progressive pulmonary fibrosis was seen, and the observed lung changes were reversible. No adverse effects were observed in this study at 10 mg/m^3. By ingestion, effects from single high doses include weight loss and irritation. Repeated ingestion exposures produced nonspecific effects such as weight loss and diarrhea. Effects observed in animals exposed by intratracheal instillation for one to two years included fibrosis of the lungs.

<u>- Ethylene Glycol</u>

- Skin absorption LD50: >20 mg/kg (~22 g/kg) in rabbits
- Oral LD50: 4,000 mg/kg in rats

The compound is a mild skin and mild eye irritant, and is untested for animal sensitization. Toxic effects described in animals from exposures by ingestion include kidney effects with oxalate crystal deposition and liver damage. By the inhalation route, lung changes and irritation of mucosal surfaces occurred in rats. When tested in animals, ethylene glycol demonstrated no carcinogenic or mutagenic activity. A slight effect on reproduction was seen in mice administered 2,000 mg/kg/day in their drinking water. In studies in which pregnant animals were administered very high doses of ethylene glycol, fetal and maternal toxicity were observed.

12. ECOLOGICAL INFORMATION

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

13. DISPOSAL INFORMATION

Waste Management: Comply with federal, state and local regulations.

RCRA: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

14. TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class:	Not applicable	United Nations (UN) Number:	Not applicable
Labels:	Not applicable	North America (NA) Number:	Not applicable
Placards:	Not applicable		
Bill of Lading:	Product name		

Shipping Information:

The current Kaowool® Rigidizer is not classified as DOT Hazardous Material.

Please note that ethylene glycol is a DOT hazardous material when shipped in quantities equal to or greater than 5,000 lbs. in a single package (49 CFR 172.101) and at concentrations greater than 10% (49 CFR 171.8 Hazardous Substance).

The maximum concentration of ethylene glycol in Kaowool® Rigidizer is less than 10%.

If tank car quantities of Kaowool® Rigidizer containing ethylene glycol at concentrations greater than 10% would be offered for sale, then the Proper Shipping Name would be:

Proper Shipping Name:	RQ, ENVIRONMENTAL HAZARDOUS SUBSTANCES, LIQUID N.O.S. (ETHYLENE GLYCOL)
Hazardous Class:	9
UN No.:	UN 3082
Packing Group:	III
Label:	CLASS 9
Reportable Quantity:	5,000 LB / 2,270 KG (ETHYLENE GLYCOL)

15. REGULATORY INFORMATION

United States Regulations:

SARA Title III: This product contains ethylene glycol which is reportable under Section 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. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

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

Precautionary Measures to be Taken After Service and Upon Removal:

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Users should

observe good industrial hygiene and work practices to reduce employees' exposure when handling after service products.

HMIS Hazard Rating:

HMIS Acute Health: 1*
HMIS Flammable: 0
HMIS Reactivity: 0
HMIS Personal Protective: None
*See Section 3 of the MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

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

* Potential reproductive health hazards from ethylene glycol.

DEFINITIONS:

ACGIH:	American Conference of Governmental Industrial Hygienists
ADR:	Carriage of Dangerous Goods by Road (International Regulation)
CAA:	Clean Air Act
CAS:	Chemical Abstracts Service
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
DSL:	Domestic Substances List
EPA:	Environmental Protection Agency
EU:	European Union
f/cc:	Fibers per cubic centimeter
HEPA:	High Efficiency Particulate Air
HMIS:	Hazardous Materials Identification System
IARC:	International Agency for Research on Cancer
IATA:	International Air Transport Association
IMDG:	International Maritime Dangerous Goods Code
mg/m³:	Milligrams per cubic meter of air
mmpcf:	Million particles per cubic meter
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
29 CFR 1910.134 & 1926.103:	OSHA Respiratory Protection Standards
29 CFR 1910.1200 & 1926.59:	OSHA Hazard Communication Standards
PEL:	Permissible Exposure Limit (OSHA)
PIN:	Product Identification Number
PNOC:	Particulates Not Otherwise Classified
PNOR:	Particulates Not Otherwise Regulated
PSP:	Product Stewardship Program
RCFC:	Refractory Ceramic Fibers Coalition
RCRA:	Resource Conservation and Recovery Act
REG:	Recommended Exposure Guideline (RCFC)
REL:	Recommended Exposure Limit (NIOSH)
RID:	Carriage of Dangerous Goods by Rail (International Regulations)
SARA:	Superfund Amendments and Reauthorization Act
SARA Title III:	Emergency Planning and Community Right to Know Act
SARA Section 302:	Extremely Hazardous Substances
SARA Section 304:	Emergency Release
SARA Section 311:	MSDS/List of Chemicals and Hazardous Inventory
SARA Section 312:	Emergency and Hazardous Inventory
SARA Section 313:	Toxic Chemicals and Release Reporting
STEL:	Short Term Exposure Limit
SVF:	Synthetic Vitreous Fiber
TDG:	Transportation of Dangerous Goods
TLV:	Threshold Limit Value (ACGIH)
TSCA:	Toxic Substances Control Act
TWA:	Time Weighted Average
WHMIS:	Workplace Hazardous Materials Information System (Canada)

Revision Summary:

Section 1: Product Cer-Wool® Rigidizer added.

MSDS Prepared By:

THERMAL CERAMICS ENVIRONMENTAL, HEALTH & SAFETY DEPARTMENT