



## MATERIAL SAFETY DATA SHEET

MSDS No: 141 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

### 1. PRODUCT AND COMPANY IDENTIFICATION

Material Name: Crystalline Silica Containing Product  
Common Name: Refractory Mortars, Cements  
Intended Use: High Temperature Thermal Insulation  
Trade Names: **Air-Set™ (Dry, Wet); Smooth-Set (Dry, Wet); High Temp: IFB (Dry, Wet); SR@-90 Dry; Mul-Set™ F (Dry, Wet); Unistik® A; K®-Bond (Dry, Wet) Mortars, Cements**

Manufacturer/Supplier: THERMAL CERAMICS INC.  
P.O. BOX 923; DEPT. 300  
AUGUSTA, GA 30903-0923  
Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053  
For additional MSDS's, call our automated FAXBACK: 800-329-7444

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT CAS NUMBER</u>	<u>PERCENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Crystalline silica - quartz 14808-60-7	Up to 20	0.1 mg/m <sup>3</sup> (respirable)	0.1 mg/m <sup>3</sup> (respirable)
Crystalline silica - cristobalite 14464-46-1	Up to 18	0.05 mg/m <sup>3</sup> (respirable)	0.05 mg/m <sup>3</sup> (respirable)
Aluminum silicate 1302-76-7	Up to 52	15 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup> (respirable)	Not Established
Aluminum oxide 1344-28-1	Up to 50	15 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup> (respirable)	10 mg/m <sup>3</sup>
Silica, amorphous 7631-86-9	Up to 40	(80 mg/m <sup>3</sup> + % SiO <sub>2</sub> **) or 20 mppcf	10 mg/m <sup>3</sup>
Kaolin 1332-58-7	Up to 27	15 mg/m <sup>3</sup>	2 mg/m <sup>3</sup> (respirable)
Borate, tetra, sodium salt, decahydrate 1303-96-4	0 to 2	Not Established	5 mg/m <sup>3</sup>
Water 7732-18-5	0 to 11	Not Established	Not Established

**NOTES:**

\*\* % SiO<sub>2</sub> = percent of crystalline silica  
(See Section 8 for Personal Protection Guidelines.)

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

**\*\* WARNING \*\***

- Cancer hazard by inhalation. [SEE BELOW]
- Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

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## Possible Health Effects

**Target Organs:** Eyes, skin, and respiratory system.  
**Primary Entry Route:** Inhalation  
**Acute effects:** Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.  
**Chronic effects:** Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury (silicosis). [See Section 11 of this MSDS for more information.]

## Hazard Classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the **National Toxicology Program (NTP)**, classified silica, crystalline (respirable size), as a substance which may reasonably be anticipated to be a carcinogen.

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). This IARC Classification was based on a relatively large number of epidemiological studies that together provide sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica.

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 material known to the State of California to cause cancer.

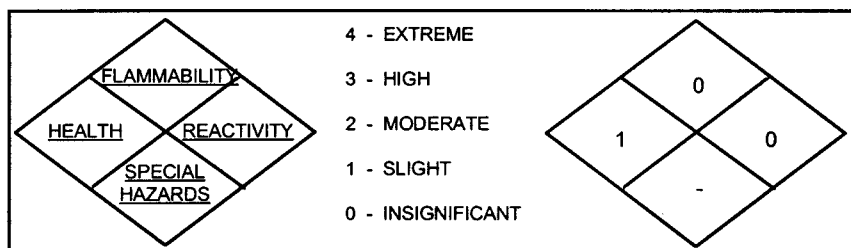
## Signs and Symptoms of Overexposure:

**Eye Contact:** Physical irritation, laceration.  
**Skin Contact:** Physical irritation.  
**Ingestion:** May cause temporary irritation to the gastrointestinal tract.  
**Inhalation:** Decline in pulmonary function and abnormal chest x-ray.

## 4. FIRST AID MEASURES

**Eye Contact:** Flush with large amounts of water for at least 15 minutes. Do not rub eyes.  
**Skin Contact:** Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.  
**Ingestion:** Do not induce vomiting; drink plenty of water.  
**Inhalation:** Remove affected person to clean fresh air.  
**\*\* If any of the symptoms persist, seek medical attention immediately.**

## 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 approved respirator together with other protective gear appropriate to the surrounding fire.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill/Leak Procedures:** 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. Avoid clean-up procedures that could result in water pollution.

## 7. HANDLING AND STORAGE

**Handling:** Limit 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.

**Storage:** This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

**Respiratory Protection:** 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 the 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 respirators, 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.

### Recommended Respiratory Protection When Handling Crystalline Silica Products

**• AS PRODUCED AND AFTER SERVICE**

<u>CONCENTRATION</u>	<u>RESPIRATOR</u>
Up to PEL . . . . .	Disposable particulate respirator (N, R, or P, 95 rated) or half mask air purifying respirator with high efficiency (P100) filter cartridges.
> 1 to 10 times PEL . . . . .	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
> 10 to 50 times PEL . . . . .	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
> 50 times PEL . . . . .	Full facepiece positive pressure supplied air respirator.

**NOTE:** For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

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Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Concrete like material		
Chemical Family:	Aluminum Silicate		
Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Boiling Point:	Not applicable	Specific Gravity Range:	Not applicable
Melting Point:	Up to 3200°F (depending on product)	Volatile by Volume (%):	Not applicable
Water Solubility (%):	Not soluble in water	pH:	Not applicable

## 10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

Hazardous Decomposition Products: None

## 11. TOXICOLOGICAL INFORMATION

Epidemiology: - Crystalline silica  
Results of several epidemiology studies have indicated that diseases which may be caused by the uncontrolled inhalation of crystalline silica include silicosis, pulmonary tuberculosis or industrial bronchitis. In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; Vol. 68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

Toxicology: - Crystalline silica  
There is sufficient evidence of carcinogenicity of respirable silica in experimental animals (IARC Monograph; Vol. 42; 1987 and IARC Monograph; Vol. 68; 1997). Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer; however, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies.

## 12. ECOLOGICAL INFORMATION

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

## 13. DISPOSAL INFORMATION

Waste Management: To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

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

## 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. 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)].

California: Listed as "Silica, crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: 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

### ***Precautionary Measures to be Taken After Service and Upon Removal:***

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Therefore, the content of crystalline silica may be higher than originally stated in Section 2. 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: To be supplied by user depending upon use

\*See Section 3 of the MSDS for possible chronic health effects.

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## SARA Title III Hazard Categories:

<b>Acute Health:</b>	Yes	<b>Pressure Hazard:</b>	No
<b>Chronic Health:</b>	Yes	<b>Reactivity Hazard:</b>	No
<b>Fire Hazard:</b>	No		

## Definitions:

**ACGIH:** American Conference of Governmental Industrial Hygienists  
**CAS:** Chemical Abstracts Service Registry Number  
**EPA:** Environmental Protection Agency  
**f/cc:** Fibers per cubic centimeter  
**HEPA:** High Efficiency Particulate Air  
**HMIS:** Hazardous Materials Identification System  
**mg/m3 :** Milligrams per cubic meter of air  
**mppcf:** Million particles per cubic meter  
**MSHA:** Mine Safety and Health Administration  
**NFPA:** National Fire Protection Association  
**NIOSH:** National Institute for Occupational Safety and Health  
**OSHA:** Occupational Safety and Health Administration  
**RCRA:** Resource Conservation and Recovery Act  
**SARA:** Superfund Amendments and Reauthorization Act  
**Title III:** Emergency Planning and Community Right to Know Act  
**...Section 302:** Extremely Hazardous Substances  
**...Section 304:** Emergency Release  
**...Section 311:** MSDS/List of Chemicals  
**...Section 312:** Emergency and Hazardous Inventory  
**...Section 313:** Toxic Chemicals Release Reporting  
**STEL:** Short-Term Exposure Limit  
**TCLP:** Toxicity Characteristics Leaching Procedures (EPA)  
**TLV:** Threshold Limit Values (ACGIH)  
**TSCA:** Toxic Substance Control Act  
**WHMIS:** Workplace Hazardous Materials Information System (Canada)  
**29 CFR 1910.134 & 1926.103:** OSHA Respiratory Protection Standard  
**29 CFR 1910.1200 & 1926.59:** OSHA Hazard Communications Standard

**Revisions:** Replaces revision 03/23/98. Revised Respiratory Protection in Section 8 with updated information.  
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Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

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## PRODUCT SAFETY INFORMATION

### CRYSTALLINE SILICA CONTAINING PRODUCT (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)

#### WARNING:

- This product contains crystalline silica, which has been identified by the International Agency for Research on Cancer (IARC) as a known carcinogen to humans.

*Avoid breathing particulates and dust*

#### RISKS:

- Cancer hazard by inhalation.
- May cause silicosis (lung disease) by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract (nose, throat and lungs).

#### PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- Wash work clothing separately and rinse washing machine after use.

#### FIRST AID MEASURES:

- Eyes:** Flush with Water.  
**Skin:** Wash with soap and warm water.  
**Ingestion:** Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.  
**Inhalation:** Remove to fresh clean air.

*If any of the above irritations persists, seek medical attention immediately.*

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC.  
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Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No: 2-0895 (Rev. 08/99)