

Ergon Armor      **Revision Number:**      6.000  
**Issue Date:**                      01/18/12

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product name:**            **TUFCHEM® SILICATE CONCRETE      ID(s):**  
**FOUNDATION GRADE FILLER - PP**

**Product type:**            Filler part of a two-part inorganic acid      **Region:**            United States  
resistant polymer concrete mixture.

**Company address:**      Ergon Armor  
Corrosion Engineering  
300 Stevens Drive, Suite 310  
Lester, PA 19113

**Contact information:**  
Telephone: 601.933.3540  
Emergency: Call CHEMTREC at 800.424.9300  
Internet: www.Ergon.com

**2. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

**Physical state:** Solid, powder  
**Color:** Light tan to gray  
**Odor:** None

**HMIS:**  
HEALTH:                      3\*  
FLAMMABILITY:            0  
PHYSICAL HAZARD:      0  
Personal Protection:      See MSDS section 8  
0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe  
\* = Chronic Health Hazard

**WARNING! CANCER HAZARD. CONTAINS CRYSTALLINE SILICA, WHICH CAN CAUSE CANCER.**

Repeated and prolonged inhalation of respirable particles can cause lung cancer and delayed lung damage (silicosis). MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.

**Relevant routes of exposure:**      Inhalation, skin and eye contact.

**Potential Health Effects**

**Inhalation:**      Repeated and prolonged inhalation of Quartz may cause silicosis, a disabling lung disease. Symptoms include: cough, shortness of breath, wheezing and impairment of lung function, possibly progressive. Short term extremely heavy exposure can result in acute silicosis. The disease is rapidly progressive with diffuse pulmonary involvement, which may develop within months of initial exposure. Individuals with acute silicosis may suffer an abrupt onset of violent coughing, labored breathing and weight loss. Death has been known to occur within one to two years. Severe or repeated exposure to Sodium Silicofluoride may cause kidney damage and bone effects including joint pain, tooth erosion and discoloration. Acute overexposure to Kaolin dusts may cause upper respiratory tract irritation. Long-term inhalation of Kaolin dusts may cause progressive fibrosis of the lungs leading to impaired lung function and pneumoconiosis, a benign lung change.

**Skin contact:**      Sodium Silicofluoride is slightly irritating to the skin, based on single exposure animal tests. Contact with skin of Kaolin may cause irritation from mechanical abrasion.

**TUFCEM SILICATE CONCRETE FOUNDATION GRADE FILLER - PP**  
**MATERIAL SAFETY DATA SHEET**

**Eye contact:** Sodium Silicofluoride is severely irritating to the eyes, based on single exposure animal tests. Contact with eyes to excessive dust levels of Kaolin may cause irritation from mechanical abrasion.

**Ingestion:** Not a likely source of entry. Quartz and Kaolin have a low order of toxicity. Sodium Silicofluoride is anticipated to be moderately toxic if swallowed, based on single exposure animal tests.

**Existing conditions aggravated by exposure:** Lung conditions, kidney disease.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**See Section 11 for additional toxicological information.**

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Hazardous components	CAS-No.	%
Quartz	14808-60-7	70 - 90
Sodium Silicofluoride	16893-85-9	5 - 15
Kaolin	1332-58-7	1 - 10

**4. FIRST AID MEASURES**

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Skin contact:** Immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye contact:** Immediately flush with plenty of water. Get medical attention if irritation persists.

**Ingestion:** Induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

**5. FIRE FIGHTING MEASURES**

**Flash point:** NA

**Autoignition temperature:** NA

**Flammable/Explosive limits - lower:** NA

**Flammable/Explosive limits - upper:** NA

**Extinguishing media:** Use extinguishing media appropriate to surrounding fire conditions.

**Special firefighting procedures:** Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

**Unusual fire or explosion hazards:** Avoid breathing fumes from fire-exposed material.

**Hazardous combustion products:** NA

**6. ACCIDENTAL RELEASE MEASURES**

**Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.**

**TUFCEM SILICATE CONCRETE FOUNDATION GRADE FILLER - PP**  
**MATERIAL SAFETY DATA SHEET**

**Environmental precautions:** Avoid creating dust in handling, transfer or clean up. Ensure adequate ventilation at all times.

**Clean-up methods:** Contain spill. Sweep or scoop up and remove to suitable container. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

**7. HANDLING AND STORAGE**

**Handling:** Avoid formation of dust clouds. Do not breathe dust. Keep container closed. Use only with adequate ventilation. Do not get in eyes, on skin or clothing. Wash thoroughly after handling.

**Storage:** Store in a dry, cool, well-ventilated place. Avoid excessive heat. Store out of direct sunlight.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a hazard assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Quartz	0.025 mg/m <sup>3</sup> , TLV-TWA (respirable particle), A2 – Suspected Human Carcinogen	10 mg/m <sup>3</sup> /(% SiO <sub>2</sub> +2), PEL-TWA (respirable dust)	None	NIOSH: 0.05 mg/m <sup>3</sup> (REL – respirable dust)
Sodium Silicofluoride	2.5 mg/mg <sup>3</sup> TLV-TWA (Fluoride, as F)	2.5 mg/mg <sup>3</sup> TWA (Fluoride, as F)	None	
Kaolin	2 mg/mg <sup>3</sup> , TLV-TWA (respirable particle)	5 mg/mg <sup>3</sup> PEL-TWA (respirable dust)	None	NIOSH: 15 mg/mg <sup>3</sup> PEL TWA (total dust)

**Engineering controls:** Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (listed above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

**Respiratory protection:** Avoid breathing dust. When airborne exposure limits are exceeded (see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

**Eye/face protection:** Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

**Skin protection:** Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b>	Solid, powder
<b>Color:</b>	Light tan to gray
<b>Odor:</b>	None
<b>Odor threshold:</b>	NA
<b>pH:</b>	NA
<b>Vapor pressure:</b>	Nil
<b>Boiling point/range:</b>	NE
<b>Melting point/ range:</b>	NA
<b>Specific gravity:</b>	NA
<b>Vapor density:</b>	NA
<b>Flash point:</b>	NA
<b>Flammable/Explosive limits - lower:</b>	NA
<b>Flammable/Explosive limits - upper:</b>	NA
<b>Autoignition temperature:</b>	NA
<b>Evaporation rate:</b>	NA
<b>Solubility in water:</b>	Slightly soluble
<b>Partition coefficient (n-octanol/water):</b>	NA
<b>VOC content:</b>	None

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	This material is chemically stable under normal and anticipated storage and handling conditions.
<b>Hazardous polymerization:</b>	Not known to occur.
<b>Hazardous decomposition products:</b>	None known
<b>Incompatibility:</b>	Hydrofluoric acid will dissolve quartz to form the corrosive gas silicon tetrafluoride.
<b>Conditions to avoid:</b>	NA

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Information

Data available for this material and/or its components are summarized below:

#### General Product Information:

No information available for the product.

#### Component Data:

##### Quartz

##### LD50/LC50:

LC50 (Oral): 1,300 mg/kg

##### CHRONIC:

**TUFCEM SILICATE CONCRETE FOUNDATION GRADE FILLER - PP**  
**MATERIAL SAFETY DATA SHEET**

Chronic inhalation of crystalline silica may cause a progressive pneumoconiosis (silicosis), a form of disabling lung disease (pulmonary fibrosis). Data from animal (rats, guinea pigs, rabbits, monkeys) studies on crystalline forms of silica, using inhalation as well as intratracheal routes of exposure confirm the capacity of free crystalline silica to induce a fibrinogenic response in lungs similar to that seen in man. In addition, experiments in animals have confirmed human experience that the presence of crystalline silica in the lung increased susceptibility to tuberculosis and other lung infections. Crystalline silica is classified as "carcinogenic to humans" by the International Agency for Research on Cancer (IARC) and respirable forms of crystalline silica are listed as substances that "may be reasonably anticipated to be carcinogens" by the National Toxicology Program (NTP). IARC studies involved occupational exposure.

**EPIDEMIOLOGY:**

Epidemiology studies cited by IARC give indications of increased risk for lung cancer from inhaled crystalline silica (quartz) resulting from occupational exposure. Studies involving heavy industrial exposure to silica in granite and foundry workers, brick factories and sandblasting found increased levels of protein and enzymes in urine, which is indicative of kidney damage.

**CARCINOGENICITY (see cancer lists below):**

Crystalline silica inhaled in the form of quartz is classified as "carcinogenic to humans" by the International Agency for Research on Cancer (IARC), and respirable forms of crystalline silica are listed as substances that "may reasonably be anticipated to be carcinogens" by the National Toxicology Program (NTP). The IARC listing is based on the determination that there is sufficient evidence in humans for carcinogenicity of inhaled crystalline silica in the form of quartz from occupational exposures.

**Sodium Silicofluoride**

**LD50/LC50:**

Single exposure studies indicate that this material is moderately toxic to rats if swallowed (LD50 125 mg/kg). Accidental poisonings with amounts as little as one-half teaspoon have resulted in death with symptoms including gastrointestinal irritation, nausea, diarrhea, weakness, and cardiac and respiratory failure.

**MUTAGENICITY:**

This material produced no genetic changes in standard tests using bacterial and animal cells.

**Kaolin**

**LD50/LC50:**

Single exposure studies indicate that this material is practically non-toxic to rats if swallowed (LD50 148,000 mg/kg). This material is widely used as a caking agent in certain foods. Therapeutic administration of this material has shown

**CHRONIC:**

Studies of workers who are chronically exposed to clay in mining, bagging and loading operations show that the only organ affected is the lung. Chronic inhalation of dusts of this material produces a benign pneumoconiosis with a small proportion of exposed workers progressing to complicated pneumoconiosis with fibrotic changes in the lung. The benign disease does not show any decrease in the respiratory function, but the complicated form results in obstruction and respiratory impairment. A large study which examined the majority of mine workers in the United States handling low-silicate material concluded that this material alone can result in pneumoconiosis and is not dependent upon the presence of crystalline silica. Findings of skin irritation has not been reported in literature.

**Cancer Lists**

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen
Quartz	Known Carcinogen	Group 1, Carcinogenic to	Yes
Sodium Silicofluoride	No	No	No
Kaolin	No	No	No

**Health Effects**

Hazardous components	Health Effects / Target Organs
Quartz	Pneumoconiosis (Silicosis) (HE10) / Eyes, respiratory system
Sodium Silicofluoride	Irritation, toxicity, corrosive effects / Eyes, skin, respiratory system, digestive system, central nervous system, kidneys, bones, joints, teeth

Kaolin	Nuisance particulates accumulation in lungs (Kaolinosis) (HE19) Cumulative lung damage (HE10) / Respiratory system, stomach
--------	---

**12. ECOLOGICAL INFORMATION**

**Ecotoxicological Information**

Data available for this material and/or its components are summarized below:

**General Product Information:**

No information available for the product.

**Component Data:**

**Sodium Silicofluoride**

This material is slightly toxic to bluegill sunfish (LC50 65 mg/l)

**Kaolin**

This material is generally non-toxic to aquatic organisms. It is not water soluble but can be suspended in water. It was tested for aquatic toxicity with a variety of aquatic organisms and the lowest LC50 was 3,000 mg/l.

**13. DISPOSAL CONSIDERATIONS**

**Information provided is for unused product only.**

**Recommended method of disposal:**

Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Note: Chemical additions to, processing of, or otherwise altering this material may render information in this document to be incomplete, inaccurate or otherwise inappropriate for waste management purposes. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Dispose of in an approved landfill if allowed locally. Dispose of in a permitted waste management facility if landfill is not practical.

**Disposal Regulatory Requirements:**

It is the responsibility of the waste generator to determine if the waste meets the definition of a hazardous waste as promulgated at 40 CFR Part 261 subpart C. No EPA Waste Numbers are applicable for this product's components.

**14. TRANSPORT INFORMATION**

**U.S. Department of Transportation Ground (49 CFR):**

Proper shipping name: Not regulated

**15. REGULATORY INFORMATION**

**United States Regulatory Information**

**TSCA 8 (b) Inventory Status:** All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

**SARA 311/312** Acute health hazard  
 Chronic health hazard

**Applicable component data listed below:**

**TSCA 12(b) Export Notification:** None Listed  
**CERCLA/SARA Section 302 EHS:** None Listed  
**Section 304 EHS RQ** None Listed  
**CLCRA RQ** None Listed

