

MATERIAL SAFETY DATA SHEET

Product: Ceramacast 646
Revision Date: 2/12/2009

1. MATERIAL IDENTIFICATION

Product Name: Ceramacast 646

Product Description: Tan Odorless Powder
Product Use: High Temperature Potting Compound

Manufacturer: Aremco Products, Inc.
707-B Executive Blvd.
Valley Cottage, NY 10989

Telephone: 845-268-0039
Emergency Phone: 845-268-0039 or Infotrac (24/7) 800-535-5053

2. COMPOSITION

Ingredient	CAS #	ACGIH TLV (mg/m ³)	OSHA PEL (mg/m ³)
Zirconium Oxide ¹	1314-23-4	5	10
Zirconium Silicate (Zircon) ²	14940-68-2	10	5
Calcium Aluminate	12046-68-1	10	10
Quartz, Crystalline Silica (trace level)	14808-60-7	0.1	0.1
Silicon Dioxide, Amorphous	7631-86-9	10	N/E
Titanium Dioxide	13463-67-7	10	10
Aluminum Oxide	1344-28-1	10	15
Aluminum Silicate	1302-76-7	15	N/E
Ferrous Oxide	1345-25-1	1	N/E
Rutile	1317-80-2	N/E	N/E
Calcium Oxide	1305-78-8	2	5

¹ This material contains very low levels of Naturally Occurring Radioactive Material (NORM).

² This ingredient contains 0.0028-0.028% Uranium and 0.0085-0.015% Thorium and Crystalline Silica, which exists in complex mineralogical phase within Zircon.

3. HAZARDS IDENTIFICATION

Emergency Overview: Tan, odorless powder. May cause moderate irritation to eyes, skin, and digestive tract.

Eye Contact: May cause abrasion to the eyes.

Skin Contact: May cause moderate irritation to the skin.

Ingestion Acute: May cause irritation to mouth, esophagus, and stomach.

Inhalation Acute: Excessive short-term airborne dust may cause irritation to upper respiratory track and short-term acute silicosis.

Chronic Hazards:

Silica:
This product contains trace levels of crystalline silica; once inhaled, cristobalite can remain in the lungs causing scarring, stiffening and difficulty breathing. The most common type of silicosis develops following repeated inhalation over time. Repeated inhalation of crystalline silica can also increase the risks of developing respiratory cancer. Animal studies indicate that fused silica may cause lung fibrosis. Avoid dust creation. Do not inhale dusts from this product. Do not use compressed air or dry sweeping to remove dusts from the work area. Use wet clean-up methods to remove dusts. IARC and NTP classify respirable crystalline silica as a confirmed or known human carcinogen. Although OSHA has not promulgated a specific standard for crystalline silica, materials that contain $\geq 0.1\%$ crystalline silica should be treated as a confirmed carcinogen for hazard communication purposes.

Zircon:
Zircon contains naturally occurring radioactive materials (NORM) in the uranium and thorium series, in equilibrium, at typical specific activities of 0.3 to 0.7 Bq/g thorium (85-165 ppm) and 0.3 to 3.5 Bq/g uranium (28-281 ppm). Zircon is exempt from Nuclear Regulatory Commission (NRC) regulations for source material per 10 CFR 40, since it falls under the definition of "unimportant quantity source

material" containing less than 0.05% uranium or thorium. The main radiological hazard from the product is internal exposure from small amounts of alpha particles given off by inhaled dust. Industrial hygiene practices aimed at control of airborne dust can lessen the potential for exposure. Overexposure by inhalation to inhaled dusts containing radioactive uranium or thorium may cause lung cancer. Low level gamma radiation in proximity to bulk stockpiles of zircon may present a lesser, external exposure that can be managed by limiting close proximity for long time periods to large volumes of material. IARC and NTP do not list Zircon as a carcinogen.

HMIS: Health: 1
Flammability: 0
Reactivity: 0
Personal Protection: F

4. FIRST AID MEASURES

Eye Exposure:

Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek immediate medical attention, preferably with an ophthalmologist. If a physician is not immediately available, eye irrigation should be continued for an additional 15 minutes.

Skin Exposure:

Immediately wipe excess material off skin with a dry cloth then wash with plenty of soap and water for at least 5 minutes. See medical attention if irritation develops or persists. Remove contaminated clothing and shoes and clean thoroughly before re-use.

Inhalation:

Remove from immediate source of exposure and assure that victim is breathing. If not breathing, administer cardio-pulmonary resuscitation (CPR). If breathing is difficult, administer oxygen if available. Seek medical attention.

Ingestion:

If swallowed, do not induce vomiting. If victim is conscious and alert, give 1-2 glasses of water to drink. Do not give anything by mouth to an unconscious person. Seek medical attention immediately. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Vomiting may occur spontaneously. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Medical Conditions Possibly Aggravated by Exposure:

Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable.
Flammable Limits: This material is non-combustible.
Extinguishing Media: Not applicable.
Special Fire Fighting Procedures: Not applicable.
Unusual Fire and Explosion Hazards: This material is non-combustible.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection: Wear goggles, protective clothing, and chemical resistant gloves. Use NIOSH approved respirator to prevent inhalation of dust.
Spill Cleanup: Collect material with precaution against breathing dust and dispose in accordance with federal, state and local regulations.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing dust. Keep container closed. Promptly clean residue from closures with cloth dampened with water. Promptly clean up spills.
Storage: Store in an area that is cool, dry, and well ventilated. Keep containers closed. Store in clean plastic or metal containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:	Use with adequate ventilation; mechanical dust collector is recommended. Keep containers closed. Safety shower and eyewash fountain should be within direct access.
Respiratory Protection:	If exposure limits are exceeded and local ventilation is unavailable, a supplied-air respirator or a self-contained NIOSH-approved particulate cartridge respirator is recommended.
Skin Protection:	Wear protective clothing and gloves.
Eye Protection:	Wear chemical goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and chemical here represent typical properties of this product. Contact Technical Sales for exact specifications.

Appearance:	Powder
Color:	Tan
Odor:	Odorless
Specific Gravity, g/cc	3.4 (Powder + 16% H ₂ O by Weight)
Water Solubility:	~10%
Melting Point:	Not available
Boiling Point:	Not applicable
Vapor Pressure:	Not applicable
Vapor Density (air=1):	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability:	This material is stable under all conditions of use and storage.
Conditions to Avoid:	Keep exposure to dust levels below TLV. Avoid rapid heating of the cement that may cause spalling or eruption of the cement because of rapid hydration.
Materials to Avoid:	Reacts with water to hydrate as part of the cement reaction.
Hazardous Decomposition Products:	Water of hydration will be released as steam above 250 °C.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity Data:	Not available
Chronic Toxicity Data:	Not available

12. ECOLOGICAL INFORMATION

RTECS Toxicity Data for Product Components:

Ingredient	CAS #	NIOSH (RTECS) #
Zirconium Oxide	1314-23-4	ZH8800000
Zirconium Silicate (Zircon)	14940-68-2	ZH9000000
Calcium Aluminate	12046-68-1	Not Available
Quartz, Crystalline Silica (trace level)	14808-60-7	VV7330000
Silicon Dioxide, Amorphous	7631-86-9	SA9275000
Titanium Dioxide	13463-67-7	XR2275000
Aluminum Oxide	1344-28-1	BD1200000
Aluminum Silicate	1302-76-7	BD1200000
Ferrous Oxide	1345-25-1	N07400000
Rutile	1317-80-2	VM2940000
Calcium Oxide	1305-78-8	EW3100000

Inhalation: Acute silicosis has been reported for exposure to extremely high crystalline silica concentrations particularly when the particle size of the dust is very small. Acute silicosis is rapidly progressive with diffuse pulmonary involvement and does not form classical silicotic nodules. The disease is often complicated by tuberculosis and can develop only months after the initial exposure with the possibility of death within 1 or 2 years. This product contains < 0.50% crystalline silica. Acute silicosis may not occur at the concentrations present.

Chronic: Classic silicosis is characterized by the formation of scattered silica containing nodules of scar tissue in the lungs ranging in size from microscopic to greater than 1 cm. Simple silicosis (nodules < 1 cm) is generally asymptomatic but may progress to debilitating complicated silicosis (nodules > 1 cm) with

or without continued exposure. Historically, workers who developed silicosis had greatly increased risks of developing an accompanying tuberculosis infection (silicotuberculosis).

IARC has found inadequate evidence to link exposure to amorphous silica to cancer in animals. Limited data is available concerning the health effects of fused silica in animals or humans; however, animal studies indicate a fibrogenic potential less than that of quartz. IARC has found inadequate evidence to link exposure to amorphous silica to cancer in animals.

Overexposure by inhalation to inhaled dusts containing radioactive uranium or thorium may cause lung cancer. Low level gamma radiation in proximity to bulk stockpiles of zircon may present a lesser, external exposure that can be managed by limiting close proximity for long time periods to large volumes of material. IARC and NTP do not list Zircon as a carcinogen.

Subchronic: No data.

Other: Silica particles <10 microns are considered respirable; however, particles retained in the lungs are generally much smaller. Silica particles retained in the human lung have median diameters of 0.5-0.7 microns.

13. DISPOSAL CONSIDERATIONS

Disposal Method: Dispose in accordance with federal, state and local laws, rules, and regulations.

14. TRANSPORTATION INFORMATION

DOT UN Status: The material is not a regulated hazardous material for transportation.

15. REGULATORY INFORMATION

U.S. Federal Regulations

CERCLA: No CERCLA reportable quantity has been established for this material.

TSCA: All ingredients of this material are listed on the TSCA inventory.

SARA Title III

Sections 302, 304, 313: This product does not contain any substances reportable under these sections.

Sections 311, 312:

<u>Hazard Classes</u>	<u>Yes/No</u>
Fire Hazard	No
Reactivity Hazard	No
Pressure Hazard	No
Immediate Hazard	Yes
Delayed Hazard	No

<u>International Inventory</u>	<u>Status</u>
Canada (DSL)	Yes
Europe (EINECS/ELINCS)	Yes
Australia (AICS)	Yes
Japan (MITI)	Yes
South Korea (KECL)	Yes

16. OTHER INFORMATION

NFPA:

Health:	1
Flammability:	0
Reactivity:	0

Key Legend Information

ACGIH	American Conference of Governmental Industrial Hygienists
ARD	International Agency for Research on Cancer
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
DSL	Domestic Substance List
HMIS	Hazardous Materials Identification System
ND	Not Determined
NE	Not Established
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety & Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments & Reauthorization Act
SARA Title III	Emergency Planning & Community Right to Know Act
SARA Section 302	Extremely Hazardous Substances
SARA Section 304	Emergency Release
SARA Section 311	MSDS/List of Chemicals & Hazardous Inventory
SARA Section 312	Emergency & Hazardous Inventory
SARA Section 313	Toxic Chemicals & Release Reporting
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

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