SAFETY DATA SHEET

Product: **835**
Revision Date: 6/01/2015

1. MATERIAL IDENTIFICATION

Product Name: **Ceramabond 835**

Product Description: Tan, Odorless Paste
Product Use: High Temperature Adhesive

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. HAZARDS IDENTIFICATION

GHS Classification:

Eye Irritation	Category 2A
Skin Irritation	Category 2
Carcinogenicity*	Category 1A
STOT RE, Respiratory*	Category 2

* This product is a mixture and all powders are encapsulated. Carcinogenicity and respiratory referred to above only applies to dried liquid that may powder and become airborne.

GHS Symbol:

GHS Signal Word:
Warning

GHS Hazard Determining Components:
Silicate Solution
Alumino-Silicate
Alumina-Silica Refractory Ceramic Fiber
Zirconium Silicate

GHS Hazard Statements for Health Hazards:

H303	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H350	May Cause Cancer by Inhalation
H373	STOT RE, Respiratory

GHS Precautionary Statements - Prevention:

P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe dust/fume/gas/mist/vapors/spray
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves and eye protection.
P281	Use personal protective equipment as required

GHS Precautionary Statements – Response:

P302+P352	IF ON SKIN: Wash with plenty of soap and water
P332+P313	If skin irritation occurs, get medical attention
P362	Take off contaminated clothing and wash before reuse
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do and continue rinsing
P313+P337	If eye irritation persists, get medical attention
P312	IF SWALLOWED: Call a poison center or doctor if you feel unwell
P308+P313	IF exposed or concerned: Get medical advice/attention

GHS Precautionary Statements - Storage/Disposal:
P501 Dispose in accordance with local, regional, national or international regulations.

3. COMPOSITION

Chemical	CAS No.	EC No.	Concentration	GHS Product Identifier
Silicate Solution	1312-76-1	215-687-4	10.0-20.0%	H302 Acute Toxicity, Oral, Cat 4 H315 Skin Corrosion/Irritation, Cat 2 H319 Eye Damage/Eye Irritation, Cat 2A H335 STOT, SE; Respiratory Tract Irritation, Cat 3
Zirconium Silicate	14940-68-2	239-019-6	40.0-60.0%	H315 Skin Irritation, Cat 2 H320 Eye Irritation, Cat 2B H350 May Cause Cancer by Inhalation, Cat 1A H373 STOT RE, Respiratory, Cat 2
Alumino-Silica Fiber	142844-00-6	604-314-4	5.0-15.0%	H315 Skin Corrosion/Irritation, Cat 2 H319 Serious Eye Damage/Eye Irritation, Cat 2A H350 May Cause Cancer by Inhalation, Cat 1B
Alumino-Silicate	1332-58-7	310-194-1	1.0-5.0%	H335 STOT, RE; Respiratory Tract Irritation, Cat 3
Water	7732-18-5	N/A	25.0-35.0%	None

Notes
1) This product is a mixture and all powders are encapsulated.
2) Zirconium Silicate contains traces of crystalline silica and 0.0028-0.028% Uranium and 0.0085-0.015% Thorium, which exists in complex mineralogical phase within zircon.

4. FIRST AID MEASURES

After eye contact: 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.

After skin contact: Immediately wipe excess material off skin with a dry cloth then wash with soap and water for at least 5 minutes.

After inhalation: In case of inhalation due to spray mist, machining dust or dried particulate, remove source of exposure and assure that victim is breathing. If not breathing, administer cardio-pulmonary resuscitation (CPR).

After 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.

Medical Conditions Possibly Aggravated by Exposure: Inhalation of product may aggravate existing chromic 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: This material is compatible with all extinguishing media.

Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved positive pressure breathing apparatus with full face-piece and full chemical resistant protective clothing. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: This material is non-combustible.

6. ACCIDENTAL RELEASE MEASURES

***Personal Protection*:** Wear chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots. Use NIOSH approved respirator where mist occurs.

Spill Cleanup: Mop up and neutralize liquid, then discharge to sewer in accordance with federal, state and local regulations or permits. Flush area with water to complete cleanup. Exercise caution during neutralization as heat may be generated.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. 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, well ventilated, away from combustible material, and away from ignition sources. Keep containers closed. Store in clean plastic or stainless steel containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical	CAS No.	EC No.	TLV (mg/m^3)	PEL (mg/m^3)
Alumino-Silica Fiber	142844-00-6	604-314-4	Not established	Not established
Alumino-Silicate	1332-58-7	310-194-1	No available information	5
Zirconium Silicate	14940-68-2	239-019-6	5	5
Silicate Solution	1344-09-8	215-687-4	No available information	No available information
Water	7732-18-5	N/A	No available information	No available information

Engineering Controls: Use with adequate ventilation. Keep containers closed. Safety shower and eyewash fountain should be within direct access.

Respiratory Protection: This product is not considered respirable in either the liquid or cured forms. However, if the cured product is polished, ground or chipped during processing, handling or use, powders may be released as airborne respirable particles. In these instances, appropriate personal protection equipment and local ventilation controls must be employed. If exposure limits are exceeded and local ventilation is unavailable, a supplied-air respirator or a self-contained NIOSH-approved dust and mist respirator is required.

Skin Protection: Wear body-covering 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: Paste
Color: Tan
Odor: Odorless
pH: 11.0-11.5
Specific Gravity, g/cc 2.30
Water Solubility: Soluble
Melting Point: Not applicable
Boiling Point: 100 ^{o}C
Vapor Pressure: Not applicable
Vapor Density (air=1): No data
VOC Content: 0.00 lbs/gal
Viscosity: 20,000-40,000 cP
Decomposition Temperature: Not applicable
Auto-ignition Temperature Not applicable
Partition Coefficient: No data
Flash Point: Not applicable
Flammability: Not applicable
Evaporation Rate: Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability: This material is stable under all conditions of use and storage.
Conditions to Avoid: Prolonged contact with aluminum, brass, copper, lead, and zinc may produce flammable hydrogen gas.
Materials to Avoid: Gels and heats when mixed with acid. May react with ammonium salts resulting in evolution of ammonia gas.
Hazardous Decomposition Products: None.
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: **Component: CAS No. 1344-09-8, Silicate Solution**
LD50 Oral, 1153 mg/kg (Rat)
LD50, Inhalation, No Data
LD50, Dermal, 4640 mg/kg (Rabbit)

Skin Corrosion/Irritation: Irritating to skin
Serious Eye Damage/Irritation: Irritating to eyes
Sensitization: Not sensitizing
Mutagenicity: No data
Reproductive Toxicity: No data

Acute Toxicity:

Component: CAS No. 14940-68-2, Zirconium Silicate
No Data

Chronic Toxicity:

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.

This product contains < 0.5% 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. 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 >= 0.1% crystalline silica should be treated as a confirmed carcinogen for hazard communication purposes.

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.

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.

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.

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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.

Acute Toxicity:

Component: CAS No. 142844-00-6, Alumina-Silica Refractory Ceramic Fiber (RCF)

Toxicokinetics, Metabolism & Distribution:

Basic Toxicokinetics
Exposure is predominantly by inhalation or ingestion. Man made vitreous fibers of a similar size to RCF have not been shown to migrate from the lung and/or gut and do not become located in other parts of the body. When compared to many naturally occurring minerals, RCF has a low ability to persist and accumulate in the body (half-life of long fibers (> 20- microns) in 3 week rat inhalation test is approximately 60 days.)

Human Toxicological Data
In order to determine possible human health effects following RCF exposure, the University of Cincinnati has been conducting medical surveillance studies on RCF workers in the U.S. The Institute of Occupational Medicine (IOM) has conducted medical surveillance studies on RCF workers in European manufacturing facilities.

Pulmonary morbidity studies among production workers in Europe and USA have demonstrated an absence of interstitial fibrosis and no decrements in lung function associated with current exposures, but have indicated a reduction of lung capacity among smokers.

A statistically significant correlation between pleural plaques and cumulative RCF exposure was evidenced in the USA longitudinal study.

The USA mortality study did not show evidence of increased lung tumor development either in the lung parenchyma or in the pleura.

Information on Toxicological Effects:

Acute Toxicity: Short Term Inhalation
No data available: Short term tests have been undertaken to determine fiber (bio) solubility rather than toxicity; repeat dose inhalation tests have been undertaken to determine chronic toxicity and carcinogenicity.

Acute Toxicity: Oral
No data available: Repeated dose studies have been carried out using gavage. No effect was found.

Skin Corrosion/Irritation:
Not possible to obtain acute toxicity information due to the nature of the substance

Serious Eye Damage/Irritation:
Not possible to obtain acute toxicity information due to the nature of the substance

Respiratory or Skin Sensitization:
No evidence from human epidemiological studies of any respiratory or skin sensitization potential

Germ Cell Mutagenicity:

Method:	In vitro micronucleus test
Species:	Hamster (CHO)
Dose:	1-35 mg/ml
Routes of Admin:	In suspension
Results:	Negative

Carcinogenicity:

Method:	Inhalation. Multi-dose.
Species:	Rat
Dose:	3, 9 and 16 mg/m^3
Routes of Admin:	Nose only inhalation
Results:	Fibrosis just reached significant levels at 16 and 9 mg/m^3 but not at 3 mg/m^3. None of the parenchymal tumor incidences were higher than the historical control values for this strain of animal.

Carcinogenicity:

Method:	Inhalation. Single dose.
Species:	Rat
Dose:	30 mg/m^3
Routes of Admin:	Nose only inhalation
Results:	This study was designed to test the chronic toxicity and Carcinogenicity of RCF at extreme exposures. Tumor incidence (incl. Mesothelioma) was raised at this dose level. The presence of overload conditions (only detected after the experiment was completed), whereby the delivered dose exceeded the clearance capability of the lung, makes meaningful conclusions in terms of hazard and risk assessment difficult.

Carcinogenicity:

Method:	Inhalation. Single dose.
Species:	Hamster
Dose:	30 mg/m^3
Routes of Admin:	Nose only inhalation
Results:	This low quality study in hamsters produced mesothelial lesions of uncertain significance. Subsequent studies in hamsters with glass fibers indicated that the lung burdens of RCF in this experiment were between 5 and 10 times more than that need to produce overload, and the results are therefore difficult to interpret. There are reports of injection studies with some similar materials. While some intraperitoneal injection studies reported the development of tumors in rats, the relationship of these results to classification remains controversial.

Reproductive Toxicity:

Method:	Gavage.
Species:	Rat
Dose:	250 mg/kg/day
Routes of Admin:	Oral
Results:	No effects were seen in an OECD 421 screening study. There are no reports of any reproductive toxic effects of mineral fibers. Exposure to these fibers is via inhalation and effects seen are in the lung. Clearance of fibers is via the gut and the feces, so exposure of the reproductive organs is extremely unlikely.

STOT SE:	Not Applicable
STOT RE:	Not Applicable
Aspiration Haz:	Not Applicable

Irritant: Negative results have been obtained in animal studies (EU method B 4) for skin irritation. Inhalation exposures using the nose only route produce simultaneous heavy exposures to the eyes, but no reports of excess eye irritation exist. Animals exposed by inhalation similarly show no evidence of respiratory tract irritation. Human data confirm that only mechanical irritation, resulting in itching, occurs in humans. Screening at manufacturer's plants has failed to sow any human cases of skin conditions related to fiber exposure.

12. ECOLOGICAL INFORMATION

Ecotoxity: This material is believed to be practically non-toxic to aquatic life.
Biodegradation: This material is inorganic and not subject to biodegradation.
Persistence: this material is believed to persist in the environment.
Bioconcentration: This material is not expected to bioconcentrate in organisms.
Physical/Chemical: Sinks and mixes with water. Only water will evaporate from this material.

13. DISPOSAL CONSIDERATIONS

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

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:

Hazard Classes	Yes/No
Fire Hazard	No
Reactivity Hazard	No
Pressure Hazard	No
Immediate Hazard	Yes
Delayed Hazard	No

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

16. OTHER INFORMATION

NFPA Ratings (scale 0 – 4)	Health, 1 Flammability, 0 Reactivity, 0 Personal Protection, C	
HMIS Ratings (scale 0 – 4)	Health, 1 Flammability, 0 Reactivity, 0 Personal Protection, C	

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
EC	European Commission
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
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
RE	Repeat Exposure
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
SE	Single Exposure
STEL	Short Term Exposure Limit
STOT	Specific Target Organ Toxicity
TLV	Threshold Limit Value
TWA	Time Weighted Average