

## THERMALGARD PRODUCT 317

Epoxy Polymer Concrete for the Protection  
of Concrete Up To 500°F (260°C)

### PRODUCT DESCRIPTION

**ThermalGard** is a two-component, 100% solids, and 100% reactive, epoxy polymer concrete (EPC).

**ThermalGard** is used both a neat material to prime the substrate, and as a mortar, mixed with select silica sand aggregate to create a high temperature resistant EPC.

### PRODUCT USE

**ThermalGard** is an EPC capable of withstanding continuous high temperature exposures of up to 500°F (260°C) under dry or wet conditions.

Typical applications include:

- floor systems
- radiant heat system covers
- curbs
- machinery bases
- grouts
- trench and gutter linings
- pipe linings
- tank linings
- uses where other materials are not capable of withstanding high temperature exposures

### ADVANTAGES

- Thermal stability of most epoxies rapidly deteriorates as their ceiling temperatures are reached. Thermal-Chem's **ThermalGard** provides many unique advantages in specific physical properties. The first, and most important, is ability to maintain excellent chemical and physical strength properties up to 500°F (260°C).

- Other properties include a highly cross-linked molecular structure when cured, excellent adhesion to concrete, steel and other structural building materials.
- The 100% solids formula reduces the possibility of entrapped volatile gases, voids and/or porosity in the mortar, which would significantly lower bond and compressive strengths.
- The non-porous surface can be troweled or screeded to a smooth or textured finish.

### LIMITATIONS

- **ThermalGard** should not be applied to substrates colder than 40°F (4°C) or hotter than 120°F (49°C).
- For best results heat individual Components A and B must be heated (indirect heat) to 77°F (25°C) before using.
- Do not apply to substrates with standing water.
- Do not thin Thermal-Chem products with solvents.
- Does not withstand thermal shock well
- Cracks if coldwater is applied when the floor is at a high temperature

### COLOR and TEXTURES

- Available in ten (10) standard colors

### TYPICAL PHYSICAL PROPERTIES

**ThermalGard** is an epoxy and silica sand-filled mortar comprised of Component A, a modified lower molecular weight epoxy resin and Component B, a modified high temperature amine-curing agent.

Upon blending both components together, a factory approved graded silica sand is added to the epoxy system to create a trowelable or screedable mortar.

## TECHNICAL DATA

Potlife, 77°F (25°C)	20 mins.
Tack-free Time, 77°F (25°C)	4.5 hours
Bond Strength, ASTM C884	2700 psi
Shrinkage, ASTM C883	Passes
Absorption, 24 hrs., ASTM D570	.38%
Heat Distortion Point, ASTM D648, 66 psi Static Heat Aging, 90 days 500°F (260°C)	510°F (265°C) Passes
Hardness, Shore D 77°F (25°C) 500°F (260°C)	78 66
Lap-Shear Strength, ASTM D1002 77°F (25°C) 500°F (260°C)	1,730 psi 1,110 psi
Compressive Strength, ASTM C109 77°F (25°C) 500°F (260°C)	9,800 psi 6,400 psi

## PRODUCT APPLICATION

The following typical data is based on the floor surface being smooth:

**ThermalGard** used as a Prime Coat (without aggregate):

- 160 ft<sup>2</sup>/gallon (3.9 m<sup>2</sup>/l).

**ThermalGard** used as a Mortar Overlay (with aggregate):

- 1 ft<sup>3</sup> requires 2.3 gallons Product 317 mixed with 100 lbs. (46 kg.) silica sand, applied at the thickness of 1/4 in. (6 mm) = 48 ft<sup>2</sup>/ft<sup>3</sup>.

## AVAILABILITY

Thermal-Chem and its factory-trained Representatives supply ThermalGard, Product 317 in the following container sizes: 1 gallon, 4-1 gal/case and 5 gallon pails.

## EQUIPMENT

Hand trowels and power screeds are the most common tools used in applying epoxy mortars. It is extremely important to use undamaged, clean tools. The mixer should be a concrete tilting drum type unit, with three blades attached on the inside wall of the drum. The drum and blades should rotate as one unit. Do not use a plaster type mixer. Wheelbarrows and 5-gallon pails are practical containers for the hauling of the mortar to the installation site. For small jobs, less than 0.5 ft<sup>3</sup> (0.014M<sup>3</sup>), use an electric or air drill with a paint stirrer attachment to mix the mortar properly. Be sure the drill is a slow speed (300 to 600 rpm) unit. One and 5-gallon units are pre-measured for easy mixing. However, if a smaller unit is required, a scale will be needed. The mixing ratios are listed on each product label. A thermometer is required to assure viscosity control of the epoxy. During cold temperature application, a heating box or other factory approved method of heating the individual components is required to properly install the mortar.

## SURFACE PREPARATION

Prepare all surfaces to be protected before mixing the epoxy components. Paints, oils, fatty acids, waxes, curing compounds, dirt and other foreign contaminants must be completely removed. Laitance and unsound concrete or loose tile must be removed. A pH reading must be taken of the cleaned concrete surface. Thoroughly read the Thermal-Chem Technical Data Sheet on Surface Preparation and carefully follow the appropriate requirements.

All structural repairs such as cracks, patching and leaky control and expansion joints should be corrected with the appropriate Thermal-Chem product or system before installing Thermal-Chem Mortars.

## MIXING PROCEDURES

Pre-blend Components A and B individually with a slow speed (max. 300-600 rpm) electric or air drill with a paint stirrer attachment of appropriate size for the mixing vessel. For batches of .5 cubic foot or smaller, use drill method to blend

mortar. For larger batches use a tilting drum concrete mixer with stationary blades inside a turn-able drum.

Mix Components A and B together, as specified on the product label. After product is thoroughly mixed, slowly add silica sand while blending together. Use immediately after a homogeneous blend is obtained, about 4 minutes total mixing. For smaller batches weigh each component as stated on label.

### **PRIMING**

To assure a proper bond between the mortar and the concrete, apply mixed Components A and B (without aggregate) over the entire surface area to be overlaid. The surface can be dry or moist (no standing water). Do not allow the prime coat to puddle or become thicker than 17 to 20 mils (4 to 5 mm). The mortar must be applied prior to the prime coat becoming tack-free. The prime coat is normally applied with paint rollers or sprayed with an airless sprayer on smooth surfaces and brushed on rough surfaces.

### **PLACEMENT OF MORTAR**

Place the EPC over the wet primed substrate, level and consolidate thoroughly by hand or power screeding. Whichever method is used, compaction of the mortar is essential. The mortar must be compacted until minimum air voids are obtained. A high percentage of air voids will cause faster deterioration of the mortar. Be sure to time the application of the priming with that of the mortar application to prevent the primer from becoming tack-free. The rate of travel with power screed methods must be continuous, uniform and in a straight line, or ridges and unevenness in the finish will result.

### **FINISHING OF MORTAR**

Finish the surface of the overlay to the texture or smoothness required for the specific application. For a smooth finish, hand troweling may sometimes be necessary. The EPC is designed to have good troweling characteristics. Do not sprinkle solvents on the surface of the unfinished mortars because it will dissolve the resin. Work the EPC immediately after mixing

and placement. Use mineral spirits sparingly to lubricate trowels.

### **Hot Substrate Temperature Application - Above 80°F**

1. Shield the epoxy containers from direct sunlight.
2. Cool epoxy containers to optimum temperature using ice water or air-conditioned storage. Do not allow water to mix with either epoxy component.
3. Mix only the amount of epoxy that can be used within the potlife at the specified temperature.
4. After mixing, do not delay application.

### **Cold Substrate Temperature Application - Below 60°F**

1. Preheat individual component containers to 90°F (30°C) with heating jackets or heating box. Do not apply direct flame.
2. Mix only the amount of epoxy that can be used within the potlife time specified at the working substrate temperature.
3. It is not necessary to heat the substrate.
4. After mixing, do not delay application.

### **CLEAN-UP**

Clean tools and equipment with mineral spirits, MEK or toluene solvents before the epoxy cures. Read all Safety Data on solvents before using them. Solvents are flammable.

### **STORAGE AND SHELF LIFE**

Store Thermal-Chem products on pallets off the floor and maintain room temperatures about 40°F (4°C). Do not allow either component to freeze. Should freezing occur contact your Thermal-Chem representative for instructions on how to use the product. Shelf life when stored at 77°F (25°C) is one (1) year.

### **CHEMICAL RESISTANCE**

Refer to this product on Thermal-Chem's separate Product Chemical Resistant Table, or for specific product chemical resistance application, contact your local Thermal-Chem representative.

## PRODUCT AVAILABILITY

This product is manufactured by and is available through Thermal-Chem Corporation, 2120 Roberts Drive, Broadview, IL 60155 U.S.A.

Tel: 800/635-3773 \* 847/288-9090  
Fax: 847/288-9091  
E-Mail: sales@thermalchem.com  
Web Site: www.thermalchem.com

## TECHNICAL/SPECIFICATION

Additional Product Data, complete Technical Support, and Product Specifications are all available through Thermal-Chem Corporation or their local representatives.

Every reasonable precaution and effort has been taken in the manufacturer of all Thermal-Chem products to comply with the published product data. Actual product performance may vary slightly due to environmental influences and/or conditions.

## PRODUCT HANDLING

Read the Material Safety Data Sheet thoroughly before use.

**Warning:** For professional use only. Avoid contact of uncured material with skin and eyes. Contact with skin may result in irritation. Wash skin with soap and water. If contact with eyes should occur, flush with water for 15 minutes and seek immediate medical attention.

## LIMITED WARRANTY

Thermal-Chem Corporation warrants its products to be of good quality and will replace any product proven to be defective. Satisfactory results depend not only on a quality product but also many factors beyond Thermal-Chem's control. Therefore, except for such replacement, **THERMAL-CHEM CORP. MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING THIS**

**PRODUCT**, and Thermal-Chem Corporation shall have no other liability with respect thereto, including without limitation, liability for incidental or consequential damages. Any claim regarding product defect must be received in writing within one hundred and eighty (180) days from the date of shipment. No claim will be considered without such written notice or after the specified time of interval. The user shall determine the suitability of the products for their intended use and assume all risk and liability in connection therewith.