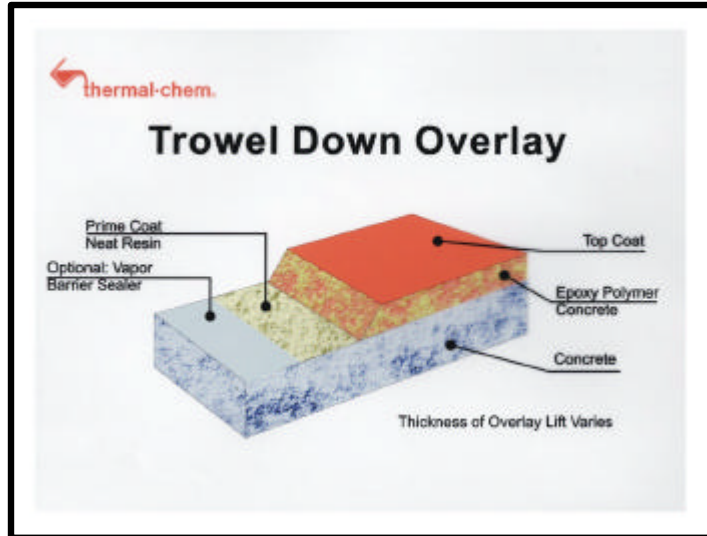


Troweled Overlay System

Definition of a Troweled Overlay System

A troweled overlay system is a blend of epoxy and sand that provides a smooth, dense finish that protects and enhances the impact, abrasion and chemical resistance of concrete.

A three (3) component mortar overlay system, it includes mixing one of Thermal-Chem's basecoat resins with Thermal-Chem TC #5 Trowel Sand. The system is then applied over a primed substrate using a depth rake or screed and troweled in place by hand or with a power trowel. Troweled overlays are typically installed at a minimum thickness of $\frac{3}{16}$ " to " but may be installed thicker if required.



The following is intended as a general purpose guide **only** and may not be an appropriate installation method for every specific project. Please contact Thermal-Chem Corporation with specific questions regarding product applications and/or recommendations.

Applicable Products

Most Thermal-Chem basecoat products can be used to install a troweled overlay/mortar floor system over a primed surface. Typically the same material is used for the primer and the trowel base coat. Always refer to individual Product Description Sheet and/or chemical resistant chart for the appropriate product selection, or contact Thermal-Chem for additional assistance.

Application of a Troweled Overlay System

Surface Preparation

Refer to *Installation Guide #2001-IG* for recommended substrate preparation and cleaning procedures for concrete, or contact Thermal-Chem directly.

Temperature - Ambient, Substrate and Material

Temperature is critical for a successful application when using 100% solids epoxies. Material, ambient and substrate temperatures directly impact the spread rate and workability of the material as well as cure time. A 20°F decrease in temperature can result in a doubling, or

tripling in some cases, of material viscosity, entirely changing spread rates and coverage. More importantly, cure times will almost double. One additional factor, material thickness (mass), also directly impacts cure time. As a general rule, the warmer the temperatures and the thicker the material, the faster the cure.

Concrete is a cold sync material and will assume the lowest temperature to which it is exposed. Always determine the substrate temperature, particularly for slab-on-grade installations, and do not assume that an ambient temperature of 70°F will produce a substrate temperature of 70°F. In most cases, substrate temperatures are cooler than ambient air temperatures.

For installations where the substrate and ambient temperatures are below 65°F to 70°F, it is best to pre-condition the epoxy material to approximately 80°-85°F. Aggregate should be preconditioned to the same temperature as the epoxy.

NEVER GUESS AT TEMPERATURE! RECORD IT WITH A THERMOMETER!



Refer to individual Product Description Sheets for basecoat and topcoat recoat and viscosity information.

Typical Spread Rates

A typical mortar mix consists of a minimum sand to resin ratio of 7 or 8 parts of sand to 1 part by weight of resin (combined components A & B) or 65 to 72 lbs. of sand blended with one (1) gallon of resin. This mix will yield approximately 25 square feet @ 1/4" thickness or approximately 30 square feet @ 3/16" thickness over a primed substrate.

NOTE: All coverage rates are theoretical. No guarantee of results is possible due to the specific nature and numerous variables present in individual projects. Variables include, but are not limited to: substrate conditions, installation techniques, material temperature, and surface and air temperatures at the time of application.



Priming

An application of a two (2) component epoxy primer is required prior to the installation of a mortar overlay system. For best results, place the troweled overlay system into a wet or tacky prime coat to insure optimum substrate and inter-coat adhesion.

A gallon of neat prime material, applied over a typically absorptive concrete substrate, should cover approximately 120 to 150 square feet per gallon. **(Substrate surface texture, porosity, and temperature of materials and/or substrate during installation will affect spread rates).** The primer should be applied by squeegee and roller. Do not allow the primer to puddle.

While the primer is still wet, sprinkle the surface sparsely with aggregate to reduce surface tension and create "teeth" for the troweled mortar mix to bite into and help prevent the mix from sliding or slipping across a smooth primed surface. This is especially important if the prime coat is allowed to cure.

CAUTION:



The troweled overlay **MUST** be applied before the re-coat time window of the primer has elapsed. Failure to complete material applications in specified time frames will require additional surface preparation or re-priming.

NOTE:



If an integral cove base is required as part of this installation, it is typically installed prior to the application of the troweled overlay floor system – refer to the *Installation Guide* for Cove Base.

Installing the System

1. After the substrate has been thoroughly prepared, the cove base installed and the substrate has been primed; mix the resin (components A and B), then slowly blend in Thermal-Chem TC #5 Trowel Sand to create the trowelable mortar. Be sure to use a container or mixing vessel that has a large enough volume to mix all the resin and aggregate.
2. Once the resins and aggregates have been thoroughly blended, place the mortar mix on the substrate and spread with a gage rake, screed, or by utilizing a screed box to insure the proper thickness of the finished system.
3. After the trowelable mortar has been spread, it should be troweled and compacted into place. The surface should be troweled closed to produce a smooth and even finish. Properly closing the trowel mix reduces porosity which provides for a more even and uniform grout or topcoat and reduces the quantity of topcoat material necessary.
4. When the troweled overlay system has cured sufficiently (usually overnight depending on product installed); a floor sanding machine or surface grinder may be used, as needed, to take out any surface imperfections, to knock off any burrs, or to remove high spots prior to the application of the grout coat and/or topcoat.

NOTE:



A grout coat and topcoat are highly recommended for maximum protection, wearability, and durability of the completed overlay floor system. It may also be necessary to add texture to the troweled finished surface. Sand and apply the grout or topcoat as soon as practical after the troweled overlay has cured. Remember to consider the recoat time.

5. Grouting material can be made by mixing neat resin (components A and B) with a thickening agent such as cab-o-sil or sil-co-sil. Once the grout has been mixed thoroughly, pour the entire contents of material onto the substrate in a ribbon. Spread the grout by means of a cement trowel and/or a hard squeegee, scraping the material across the surface into open pores, gouges, and low spots. Mix only the amount of material that can be placed in approximately 30 minutes.

CAUTION:



Thermal-Chem rapid cure materials such as ArmorPrime 100, Rapid Cure, ArmorBond Plus 3.0, or Resurfacer Plus 3.0 will have a reduced potlife of less than 20 minutes and must be mixed and placed more quickly than normal cure materials.

For more specific information, refer to individual Product Description Sheets for product being installed or contact Thermal-Chem Corporation prior to mixing and application.

6. Once the grout coat has been applied, allow it to cure before application of the final/finish coat.

Finished Textures

Smooth Even Textures: Allow the grout coat material to cure. Sand the surface, using a floor machine with 60 to 80 grit paper, as needed to remove any imperfections and/or trowel marks, and apply the topcoat by squeegee and backroll using a 1/2" nap mohair roller at approximately 150 to 175 square feet per gallon. The topcoat should cure for 12 hours prior to opening area to foot traffic or 24 hours before opening to heavy traffic unless a rapid cure material is applied.

Slip-Resistant Textures: Allow the grout coat material to cure. Sand the surface, using a floor machine with 60 to 80 grit paper, as needed to remove any imperfections and/or trowel marks, and apply the topcoat at approximately 150 to 160 square feet per gallon by squeegee and backrolling using a 1/2" mohair roller. Immediately after rolling-out the material, broadcast the selected slip-resistant aggregate into the wet topcoat material, and then backroll the topcoat again working in a cross-hatch pattern in order to evenly distribute and lock-in the aggregate.

Precautions, Limitations, and Notes

- To achieve optimum installation results, refer to individual Product Description Sheets for specific product limitations such as: application temperature, suitability for the application, cure times, substrate requirements, and available colors – or contact Thermal-Chem directly.
- No solvents of any kind should be used to place, mix, or thin any Thermal-Chem materials. Solvents can adversely affect the overall integrity and/or performance of the finished product.
- Always refer to individual Product Description Sheets and/or the chemical resistant chart for product recommendations and for specific performance characteristics of each product.
- Caution should always be taken when applying any Thermal-Chem product over a substrate that may be subject to hydrostatic or moisture vapor transmissions. When in doubt, a quantitative moisture test should be taken to determine suitability.
- Always wear appropriate eye protection, non-absorbent gloves, and protective clothing when handling any of the products and/or chemicals referred to in this *Installation Guide*. Always read and refer to package labels, warning labels, and MSDS sheets carefully prior to use.
- In case of contact with skin by any Thermal-Chem products, immediately remove the material with soap and water; and follow all written instructions on the appropriate MSDS sheets for exposure to the material and with regard to any Medical Emergency Procedures.
- Work areas should always be adequately ventilated, especially in low and confined spaces.

- It is the responsibility of the user to be aware of and comply with all the appropriate regulations for discarding of material waste and/or chemical waste; and further, it is the user's responsibility to handle and dispose of this waste within appropriate local, state, or federal guidelines.

Manufacturer

Any questions or comments regarding the contents of this *Installation Guide*, for technical questions or assistance, and/or questions with regard to specific installation procedures, contact the manufacturer:

Thermal-Chem Corporation
2550 Edgington Street
Franklin Park, Illinois, USA, 60131

Phone: 800.635.3773
847.288.9090
Fax : 847.288.9091
E-Mail : sales@thermalchem.com
help@thermalchem.com
Website: www.thermalchem.com