



TBS INSTALLATION GUIDE

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The EMBE®CRETE TG System

Note to Specifier

Technical Barrier Systems Inc. (TBS) does not warrant the performance of this product unless the instructions of this document and other related TBS documents are adhered to all respects. Other related documents include EMBE®CRETE System Data Sheets.

Note: Before using any of the products, it is up to the applicators to familiarize themselves with the relevant Material Safety Data Sheets, mixing and application instructions. Please consult Technical Barrier Systems Inc. if there are any further questions before application at 1-888-537-2888.

Description

EMBE®CRETE is a urethane cement resin flooring system consisting of urethane resin, cement, lime and aggregates which provide heavy-duty protection at ¼" to 3/8". EMBE®CRETE has high impact resistance and excellent thermal shock and chemical resistance. EMBE®CRETE may optionally be sealed with various topcoats as necessary for specific chemical resistance, aesthetics, or as required by project specifications.

Job Conditions

Temperature and humidity conditions of the area to receive the flooring system should be checked. An optimum room temperature of 75° F with a minimum slab temperature of 50°F is required for proper cure of the resin flooring system.

Concrete must be a minimum of 30 days old for resinous flooring applications.

Surface Preparation

Mechanical abrasion of the concrete surface is required to remove any, curing compounds, loose, or poorly bonded finishes and also create surface profile for resinous flooring to properly adhere to.

Oil, grease, or food fats can usually be burned off with a flame gun or removed with a commercial degreasing compound or solvent.

All unsound concrete should be repaired or replaced prior to resinous flooring applications.

Resinous flooring materials should be applied to level concrete substrates. Grind or fill high and low spots prior to application.

Repair cracks prior to resinous flooring applications.

Concrete Placement

Slab-on-grade or on the ground

- A 10 mil minimum vapor barrier is necessary to prevent moisture vapor transmission. An efficient puncture proof barrier is recommended.
- Proper jointing will minimize cracking which could transmit through the resinous flooring system.

Elevated slabs

- Pan construction should be vented
- Metal deck construction should be properly jointed to minimize cracking

Moisture Tests

TBS recommends testing for moisture vapor transmissions. The recognized methods are:

1. ASTM-F-1869 – Standard test method for measuring moisture vapor emission rate of concrete subfloor using anhydrous calcium chloride: the maximum allowed water/vapor transmission rate is 3 pounds per 1,000 ft² per 24 hours.
2. ASTM F-2170 – Standard test method for determining relative humidity in concrete floor slabs using in situ probes: This test measures the relative humidity in the slab below the surface. If taken over a period of time, it will show the rate of drying in the slab. The maximum relative humidity should be below 80%
3. ASTM-D-4263 – Plastic sheet test: This test only gives you an indication that moisture may be present and should never be used as a basis of decision.

Old Concrete

Old concrete surfaces must be structurally sound. Any unsound areas must be repaired prior proceeding with the resinous installation. Remove existing paint, scale and loose concrete by rough sanding, sandblasting, shot blasting or grinding. In some cases where plant conditions allow, a stripper may be used to remove excessive build-up of paint or sealers.

Structurally sound concrete should be mechanically prepared to remove any contamination. Vacuum shot blasting is the best method for achieving a good profile for bonding and should be used where possible. Before installation of any EMBE®CRETE System, the surface must be examined for moisture vapor transmission.

New Concrete

New concrete must be well cured and dry prior to coating. Allow to cure a minimum of 28 days. No curing agents or sealing compounds should be used at any time prior to coating. A light steel trowel finish is recommended when finishing the concrete surface.

Any oil, grease, laitance, or other foreign material must be removed. Steam clean with a strong degreaser such as tri-sodium phosphate. Laitance and other foreign material are best removed by mechanical methods such as vacuum blasting, scarification, or grinding.

All new concrete can be acid etched or mechanically prepared by vacuum shotblasting, sand blasting, scarifying, or grinding. It also provides a mechanically rough surface to achieve a good bond. When acid etching, use a 3 to 1 dilution of water to acid. Before installation of any EMBE®CRETE System, the surface must be examined for moisture vapor transmission.

Wood Substrates

Resinous flooring must always be applied directly to exterior grade plywood with extended glue line. Interior grade plywood delaminates easily and should not be used as it could result in a failure of the resinous flooring system. Marine grade plywood contains moisture repellants which could cause darkening of the resinous flooring system and should not be used. All plywood must be completely free of all waxes, varnishes, or other foreign materials.

Plywood used to cover existing wood floors

1. Clean and fasten existing wood floor to the floor joists
2. If the floor is completely sound, fasten ½ exterior grade plywood "C" plugged with an extended glue line to the existing floor. Stagger the plywood for strength.
3. ¾" DFPA exterior or ¾" DFPA underlayment grade plywood with exterior glue line must be used if the existing floor cannot be cleaned, or is not sound.
4. All plywood must be completely free of all waxes, varnishes, or other foreign materials.
5. Secure plywood with exterior glue.
6. Use ring shank or coated nails at six (6) inch centers around panel edges and support.
7. Stagger all panel joints, fill joints with epoxy filler, and cover joints with fiberglass cloth and epoxy resin.
8. Lightly sand the floor surface to ensure adhesion of the resinous flooring system.
9. Prime surface with appropriate primer prior to system application. Surface may require double priming due to porosity of plywood.

Plywood used for new construction (plywood is laid directly on the joist)

1. ¾" exterior grade plywood "C" plugged with an extended glue line must be used. All plywood must be completely free of all waxes, varnishes, or other foreign materials.
2. Use ring shank or coated nails at 6 (six) inch centers around panel edges and support
3. Stagger all panel joints, fill joints with epoxy filler, and cover joints with fiberglass cloth and epoxy resin.
4. Lightly sand the floor surface to insure proper adhesion of the resinous flooring system.
5. Remove all dust with a vacuum cleaner.

Application with waterproofing

1. After preparing the floor surface as prescribed above, caulk all joints with a sealant.
2. Coat joints with 30 mils of elastomeric coating.
3. Apply the waterproofing membrane as specified.

Metal Substrates

1. Metal substrates must be structurally sound prior to any resinous system being applied.
2. Remove all foreign materials such as oil and grease with solvents or other degreasing compounds.
3. All scaling and rust must also be removed mechanically by sanding, sandblasting, or abrasion.

4. Treat the blasted/abraded surface with a phosphoric acid solution as described below in order to prevent rust formation if the surface is left exposed for some time prior to application of the resin system.
 - A) Always use 100% solution of phosphoric acid
 - B) Mix acid solution in either glass, plastic, or earthen containers (never use metal containers), by adding phosphoric acid to water. NEVER VICE-VERSA due to heating or splashing which may occur.

Workers should be protected with safety glasses, rubber gloves, and boots. If skin or eye contact occurs, rinse affected areas thoroughly with clean water and follow MSDS recommendations.

5. Protect surface from contamination until the primer is applied.
6. Wipe metal surface with MEK solvent immediately before primer application.

Theoretical Coverage

20-22 ft² at 1/4", 13 – 14 ft² at 3/8"
DO NOT MIX PARTIAL KITS

Installation

Priming – no primer is required under normal circumstances.

- a. Add resin and hardener to mixer and blend for 30 seconds. (a 10 gallon KOL mixal is recommended) *Important:* Do not overmix or working time will be significantly reduced.
- b. Add Oxide Pigment Pack and Part III slowly to the mix (while mixer is running) and allow to blend for 1-2 minutes. Only mix as long as needed to completely "wet-out" aggregate or working time will be significantly reduced. Be sure to "wet-out" all parts of mix, scraping sides and bottom of mixer during mixing. All powder must be uniformly blended with no visible lumps of dry powder. Mixing bucket and mixer or blades should be scraped out thoroughly and cleaned with solvent (acetone, MEK or xylene) every few batches or working time on subsequent batches will be shortened. If mixing in a plastic bucket, dispose of bucket after every 2 mixes and replace with a clean bucket for this reason. *Important:* Do not overmix or working time will be significantly reduced.

Application

- a. Place mortar mixture on concrete surface and spread with flat steel trowel (recommended 3" x 12") to a thickness of 1/4 or 3/8 inch. Using considerable top pressure on trowel, spread material from side to side, push back into the previous mix (wet edge), pull forward to establish the thickness. With lighter pressure, trowel from side to side to close up.
- b. The last few strokes should always be in one direction only, left to right or right to left, but never back and forth.
- c. Excessive troweling will bring resin to the surface or reduce the anti-slip surface.
- d. As an option, consider lightly backrolling surface with a loop roller or short nap roller dipped in solvent or alcohol, to even out the finished appearance or hide knit lines. Lightly broadcasting color quartz or aluminum oxide granules and backrolling with a short nap roller to wet out the aggregate will increase texture for very wet areas, though aggregate may tend to break loose with traffic over time.

Allow the troweled mortar to cure a minimum 6-8 hours for light foot traffic, 8-10 hours for general service operation, and 16-24 hours for heavy duty service operation and maximum chemical resistance (at 75 degrees F). Colder temperatures will slow cure time.

Sealing

Sealing is not necessary unless required for a specific application or for aesthetics. Consult with project specifications. If sealing is performed, follow mixing and application instructions as outlined in Installation Instructions document for the resin used.

Limitations

1. Do not apply in temperatures below 40 degrees F or above 85° F. Working time will be less than 10 minutes above 80° F.
2. Do not apply to sand/cement mortar beds or concrete with compressive strength less than 3000 psi and tensile strength less than 300 psi. Do not apply over any substrate except sound concrete.
3. Edge Terminations: Do not feather-edge, all free edges of EMBE®CRETE TG will require a keyed edge to distribute mechanical and thermal stresses. A keyed edge is best achieved by forming or cutting grooves in the concrete. Grooves should have a depth and width of at least 2 times the thickness of the EMBE®CRETE TG mortar.
4. Joints/Cracks: All joints should ideally be honored in the EMBE®CRETE TG flooring system and filled with the appropriate joint filler. If joints must be buried at owner's request, route and fill with EMBE®CRETE SC or rigid epoxy, reinforce with minimum 12" wide fiberglass cloth. Do not use flexible membrane treatment unless approved by Key Resin Technical Services. If membrane is approved, surface of cured membrane must be coated with epoxy or EMBE®CRETE SC and broadcast to excess with sand. Isolate areas subject to thermal stresses, vibrational movements or around load-bearing columns and at vessel sealing rings. All cracks should be routed out and filled with EMBE®CRETE TG, EMBE®CRETE SC or rigid epoxy prior to floor application. Do not use flexible membrane treatment unless approved by Technical Barrier Systems Inc. If membrane is approved, follow procedures outlined above.