

APPLICATION INSTRUCTIONS

Double Broadcast or Slurry-Broadcast Aggregate-Filled Epoxy Flooring

GENERAL

Aggregate-filled epoxy flooring is a combination of low viscosity, 100% solids epoxy resin and different types of aggregate filler. These materials form a seamless, monolithic flooring system suitable for many heavy use areas. Broadcast aggregate is usually 20 - 30 mesh silica, Monterey type sand or decorative color quartz. If unusually high levels of abrasion are anticipated, aluminum oxide may be substituted for a portion of the broadcast sand. If using a slurry base, the slurry filler is finely graded silicas.

Installed flooring thicknesses will vary from 60 mils to 1/4 inch depending upon service requirements. Thinner floors are suitable for foot traffic and light vehicle traffic. Thicker applications are required for heavy mechanical abuse, impact or abrasion. Because of the gradation of fine fillers, floors done with the slurry-broadcast method are denser and more resistant to impact and chemical attack than broadcast floors done with a single size aggregate. Double broadcast floors usually achieve a somewhat more uniform appearance and are the floors of choice for commercial applications where aesthetics is an important consideration.

Surface texture can be varied from aggressively slip-resistant for wet areas such as showers and food preparation areas to an "orange peel" moppable texture suitable for offices, hallways or laboratories. It is very important to achieve the proper texture for a given area. A floor with too much texture in a laboratory will be difficult to clean, and a floor with an "orange peel" texture in a commercial kitchen will be too slippery. These application instructions will present methods for achieving different textures.

SURFACE PREPARATION

Surface preparation is vital to the long term success of the installation. All sealers and coatings other than well adhered epoxy materials must be removed. Moisture vapor emission testing should be done using the calcium chloride test method according to ASTM 1869-04.

The surface must be smooth and free of ridges and imperfections that may transfer to the finished surface. Projecting roughness should be ground smooth with a floor machine or angle grinder. Wherever the flooring system does not abut a vertical surface and around floor drains, a "keyway" must be cut into the floor. Do not feather edge the materials. In making the keyway, use a grinder or small concrete saw to make a cut approximately 1/4" into the floor. Chisel away the inner shoulder of the concrete at least 1/2 inch. The resin system will flow into this recessed area and be protected from edge damage.

Surface Preparation - Cont'd.

Next, surface preparation on the main field of the floor is accomplished. All surfaces to be coated must be clean, sound and free of mastics or other contaminants which may interfere with bonding. Concrete must be acid etched, shotblasted or diamond ground to achieve a 5-10 mil profile. If acid etching is used, it must be done using a floor machine with a "nylogrit" type brush. Etching must be done in strict accordance with the guidelines published in the APF Surface Preparation Instructions. Properly prepared concrete must have a texture similar to 120 grit sandpaper. Wood surfaces must be exterior grade plywood, securely fastened to the subfloor or joists. Wood must be sanded before application and the joints filled with Epoxy 300 Flex Paste.

Small depressions, cracks, holes and control joints should be filled with Epoxy 300 Flex Paste or Epoxy 400 thickened with fumed silica. If using Epoxy 400 Damp Surface, patching may be done while the surface is damp. Large holes should be filled with an epoxy mortar consisting of 4-5 parts aggregate (30 mesh silica or graded trowel sand) to 1 part resin. These areas must be primed with liquid resin before filling.

Cracks and control joints in temperature-controlled buildings normally do not move after initial cure and settling of the concrete slab. Normally, these areas are treated only by filling with a thickened resin as stated above. If additional protection against substrate cracks transmitting through the finished epoxy flooring is desired, 3 inch fiberglass tape may be embedded in Epoxy 300 Flex Paste to bridge the joint or crack. Smooth the tape and resin by pulling a squeegee or flat trowel over the area. True expansion joints should be premarked, filled with epoxy paste and the flooring system applied. After a 24 hour cure, sawcut through the floor and fill the sawcut with a flexible urethane caulk.

COVE BASE APPLICATION

The vertical cove base is a necessary part of many aggregate-filled epoxy flooring applications. See the separate APF cove base installation instructions for complete application guidelines.

PRIMING

Priming is not normally required on a broadcast system. However, if the concrete has cured less than 30 days, apply 2 coats of Epoxy 100 to seal off the surface. Allow the first coat to cure for at least 1 hour before application of the second coat. The second coat must be tack-free before proceeding with the application.

APPLICATION OF THE SLURRY BASE OR FIRST RESIN COAT

All drains, grease traps, etc, must be completely taped prior to resin application. Tape must be pulled as the application proceeds. If the system being applied is a slurry-broadcast system, the self-leveling slurry base must be applied with a notched trowel or squeegee to achieve a 50-60 mil base. A 1/4 x 3/16 notched trowel held as close as possible to a 90° angle (straight up and down) leaves 50 mils. A 1/4 x 1/4 notched trowel leaves 60 mils. Thirty mesh aggregate broadcast to refusal into a 50 mil slurry base will produce a floor with a finished thickness between 110-125 mils. Broadcasting to refusal into a 60 mil slurry base will produce a floor with a finished thickness between 125-140 mils. See the separate APF Self-Leveling Slurry Instructions for complete application guidelines for the slurry base.

If the system being applied is a double broadcast system, apply unfilled base resin (clear Epoxy 400 or Epoxy 600) at the rate of 100 square feet per gallon (16 wet mils) as the first base coat. If the concrete has not thoroughly dried, moisture tolerant Epoxy 400 Damp Surface must be used on this broadcast. Use a 1/8 inch notched trowel held at 30°-45° angle to gauge the thickness. It

is advisable to check the thickness with a mil gauge as the application proceeds. A mechanic wearing golf shoes should roll the floor to ensure an even distribution and remove trowel marks. In either a slurry or double broadcast application, use a brush to trim around floor drains, doors, etc. When working the resin up to the cove base, be sure to apply the material to achieve a straight line at the cove radius. It is better to bring the material onto the vertical part of the cove and allow it to flow back down. If the material is not brought completely up to the vertical, a cavity or ridge may result in the finished floor.

BROADCASTING THE AGGREGATE

Broadcast aggregate is normally 20 or 30 mesh Monterey or silica sand or decorative color quartz. Twenty-mesh aggregate adds about 10 extra mils to the floor thickness and allows for a more slip-resistant finish texture. Plan to have 3/4 pound per sq. ft. of aggregate available for each broadcast. A portion of this will be recovered for future use.

The method of broadcasting the aggregate is very important, especially in slurry-broadcast applications. Normally, a mechanic wearing golf shoes walks onto the wet resin to broadcast the aggregate. Broadcasting should be done as soon as possible after the resin application so that spike marks left in the resin will flow back before the broadcast. The broadcaster must be certain that the base material has completely self-leveled before broadcasting. Trowel marks that have not been properly backrolled will absorb more aggregate than the rest of the area and show up in the cured system as a ridge. The broadcaster should raise his feet vertically when walking and avoid scraping or twisting. If this does occur, reroll the area before broadcasting aggregate.

Broadcast the aggregate like sowing seeds for planting, but cast somewhat higher so that the aggregate falls as vertically as possible into the wet base coat. Avoid throwing down to the surface or dropping handfuls. If broadcasting from close range, hold hand high, palms up and allow the aggregate to fall between the fingers. If broadcasting into a slurry base, a greater amount of aggregate is being absorbed and it is important to allow the floor thickness to build up slowly. Broadcast a portion of the floor, let it absorb and return to broadcast again.

Broadcasting must be done to complete refusal. The broadcaster must monitor areas previously done and look for absorption areas. They will appear as shiny spots. Broadcast additional aggregate until complete uniformity has been achieved. It is important not to broadcast the edge that joins the next section to be base coated. Leave a 2 foot strip unseeded to permit the base coat to tie into the next section of the floor. Remove tape as you proceed with broadcasting. Never walk on a freshly broadcast section because the golf shoes will leave marks in the finished floor.

SWEEPING, SCRAPING AND SECOND BROADCAST

After the base resin has cured (4-16 hours, depending on the resin used), sweep away the excess aggregate with a stiff bristled broom. The floor must be protected from soiling, especially with black heel marks. Scrape the surface well to remove excessively projecting grit and to smooth any rough areas. A drywall scraper, flat trowel or razor blade scraper works well for this. After the floor has been scraped, sweep again. Vacuum hard to reach areas. Floor drains must be retaped for the second broadcast.

Floors being done by the double broadcast method now receive another coat of base resin applied with a rubber squeegee. This application may be either the neat unfilled resin or if the system is a double slurry broadcast, 2 parts resin to 1 part slurry filler. Pour the mixture onto the floor and spread with the squeegee using a light but steady pressure. This leaves a somewhat textured surface. Use a brush for the trim work. Again, be sure to get the material up to the vertical portion of the cove vase. A mechanic wearing golf shoes should backroll to ensure an even distribution. Broadcast again to refusal being aware that missed saturation spots will show as irregularities in the finished floor.

APPLICATION OF FINISH COATS

Sweep and scrape the floors as described above. Mix enough material to brush coat the cove base before finish coating the field of the floor. The cove should be coated two times to ensure a smooth surface. Use material sparingly for each coat to avoid puddling at the bottom of the cove.

Any areas not uniformly broadcast must be addressed at this time. Brush or roll the resin sparingly onto the missed area and lightly sprinkle additional quartz onto the area using the fingertips. Allow to set at least 30 minutes before carefully applying the finish coat material.

For applications where only minimal slip-resistance is required, an "orange peel" texture should be achieved. The first glaze coat should be applied with a squeegee to leave a medium texture. After this coat has cured firm, sand the entire floor with 60 grit sandpaper. This may be done with a sanding block, pole sander or floor machine. If using a floor machine, move the machine at a steady speed and do not oversand any area. Sweep the sanding dust well with a soft bristle broom. Apply 1 coat of Polyurethane 100 with a squeegee at 250-300 square feet per gallon. Backroll to ensure an even distribution. If no solvent odor can be tolerated, use Polyurethane 501. Apply a thin even coat at 300-325 sq. ft. per gallon.

To achieve a medium textured floor, pour the resin onto the surface and spread with a rubber squeegee as described above. Coverage should be 100 square feet per gallon. Again, a mechanic wearing golf shoes should backroll the area to ensure an even distribution.

If the surface texture is to be aggressively slip-resistant, the top coat material is roller applied. Mix a small amount of resin (3/4 to 3 gallons, depending on pot life and temperature) in 5 gallon pail. Material may be thinned with within to 10% MEK if desired. Pour off a portion of the mixed material into a separate pail and use to brush trim where necessary as the application proceeds. Leave the remaining material in the mixing pail and apply by the dip and roll method using a 1/2 inch nap roller. Do not pour the resin onto the floor. The intent is to apply the material sparingly, approximately 150-175 square feet per gallon. A mechanic wearing golf shoes should reroll each area to ensure an even distribution.

If applying a color quartz system outdoors, epoxy cannot be used in any portion of the top coat system. For these applications use 2 or 3 coats of Polyurethane 100, depending on the surface texture desired.

For commercial kitchen applications, the fry line area receives a special top coat system applied on top of the unsealed aggregate. If the floor is done with pigmented resin, a 2-1 slurry is made using Epoxy Novolac 800 and slurry filler. The mixture is poured onto the surface and smoothed with a flat trowel to leave an additional 60 mil thickness. Slip resistance is achieved by broadcasting #12 bleached aluminum oxide into the wet slurry. If the floor is a color quartz floor, mix 2 parts clear Novolac 800 and 1 part blended color quartz. Apply with a flat trowel in the manner described above and broadcast either #12 bleached aluminum oxide or #11 trowel grade quartz into the wet slurry for slip resistance.