

Technical Bulletin #37 Key Epoxy Terrazzo

Fine Aggregate Mix Designs, Cautions and General Guidelines

Key Epoxy Terrazzo specified with a “fine aggregate” mix design typically involves a majority percentage of #0 or finer size marble chips. There are various technical considerations and precautions when installing this type of terrazzo floor.

Precautions: If using #0 or finer aggregates, Key Resin generally recommends a maximum of 50 percent in the terrazzo mix design. Epoxy terrazzo installations where other than the traditional sizes and proportions of aggregates have been used (e.g., combinations of #0, #1, #2) may result in less than satisfactory results. When using more than 50 percent size #0 or finer size aggregates, a greater quantity of pinholes are to be expected due to greater air entrainment that occurs when mixing fine aggregate epoxy terrazzo mortars. The pinholes will not only be highly visible in ordinary light but in a light color epoxy matrix these will fill with dirt and be easily visible.

Other concerns: It is very difficult to achieve color and chip density uniformity when using a majority of #0 or finer aggregates. This is particularly prevalent with larger panels, and also with extensive use of clear glass chips, where disparate batch mixes adjoin creating a visually distinct delineation (i.e., “knit line”). A contrast of multiple colors of fine aggregates is preferred over one single color of aggregate. The use of a small amount of a dark color or black aggregate can make these issues less pronounced. The liberal use of trowel lubes can also exacerbate the color disparities of multiple batches poured within a single panel bordered with divider strips.

If the architect/designer absolutely insists on a fine aggregate terrazzo floor, and if the terrazzo installer follows some additional technical guidelines and factors in the additional cost attributed to the additional steps required, it is possible to achieve a successful outcome. Consider the following:

1. Power troweling this type of mix will not work.
2. Must use a pool trowel, and only trowel by hand.
3. Compared to typical mix designs using a blend of #0, #1 and #2 size chips, the actual mix design must be more resin-rich, i.e., lower ratio of aggregates/filler to epoxy resin. The contractor should evaluate wet samples to confirm desired final mix design, modifying the quantity of filler to adjust trowel-ability. Note that filler comprised of marble fines (ATF-20) will affect trowel-ability differently than using glass fines.
4. A more resin-rich mix design will require factoring additional epoxy resin matrix to achieve equivalent thickness normally achieved with a standard mix design using larger chips.
5. Take extra care to apply topping at proper thickness to minimize grinding, thus reducing quantity of pinholes.
6. Having good lighting is more critical with this type of floor. When grinding, do not use 24 grit stones/diamonds, go directly to 60's. 24 grit stones/diamonds will "open it up" more, thus increasing the quantity of pinholes.
7. After grinding with 60 grit stones/diamonds, use 80's.
8. Must grout at least two or three times (maybe more), as follows:

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- a. First grout coat is epoxy liquids only, no filler added.
 - b. Apply the first grout coat and allow it to flow/sink into holes. Let this dry at least one day, two days is better.
 - c. Clean grout off completely.
 - d. Second grout coat is applied with typical quantity of filler.
 - e. Clean second grout coat with standard polish stones/diamonds, 120 grit or 200 grit. Let this dry 1-2 days, same as first application. If polished too early the grout will be pulled out of holes. The grout will feel dry, but it is not hard enough to polish.
 - f. Repeat grouting procedure as needed to obtain the desired finished appearance.
 - g. Alternate procedure for more complete filling of pinholes: Broadcast the wet grout completely with terrazzo filler and power trowel using stainless steel pads designed for this purpose. **Important:** This procedure and the specific type of terrazzo filler to use should be evaluated in the contractor's shop. Note that certain types of terrazzo filler may cause an undesirable color alteration with various light epoxy matrix colors.
9. Apply recommended terrazzo sealer as needed or specified.
 10. Installing a mock-up in good lighting using the planned procedures and mix design is **highly recommended**.

IMPORTANT: There is no Key Resin standard or industry standard on an "acceptable" maximum number, density, or size of pinholes (micro-pores). This is very subjective, which makes having an approved mock-up as the quality standard for the project very important.

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