

DESIGN CONSIDERATIONS FOR TERRAZZO

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DEFINITION:

The National Terrazzo & Mosaic Association defines Terrazzo as follows: "Terrazzo consists of marble, granite, onyx, or glass chips in Portland Cement, polyacrylate modified Portland Cement, or resinous matrix binder. The Terrazzo is poured, cured, ground, and polished. Terrazzo is typically used as a finish for floors, stairs or walls."

TERRAZZO SYSTEMS:

- Sand Cushion Terrazzo
- Non-SlipWashed Terrazzo
- Polyacrylate Modified Cement Terrazzo
- Resin Matrix Terrazzo

CONSIDERATIONS FOR SYSTEM SELECTION:

- Is proposed terrazzo system for interior, exterior, or both?
- Will the terrazzo system be placed over a concrete or wood subfloor?
- Does the terrazzo system need to be breathable if being installed slab on grade over an existing concrete slab which may not have an effective moisture vapor barrier.
- Is there a terrazzo system thickness constraint, as systems range from 3/8" to 2-1/2" and typically require a depressed subfloor for systems greater than 1/2"
- If terrazzo is being proposed for an upper level of a structure, is there a weight restriction
- Will there be radiant heating system tubes or mats installed beneath the flooring system
- The proposed matrix colors may be a factor in selecting a terrazzo system
- Level of gloss desired for the finished terrazzo floor
- Required maintenance by Owner for the terrazzo floor based on anticipated use
- Use of glass, plastic, or metal aggregate will be a factor in selecting a terrazzo system
- Use of 100% recycled/post consumer glass as an effort to provide "green" terrazzo, will allow only for the use of resin matrix terrazzo
- Metal divider strip design and terrazzo panel sizes may determine which terrazzo system to use.
- To architecturally achieve a flow of terrazzo from interior to exterior with minimal thresholds a terrazzo system recommended for both interior and exterior must be used or there will be a visual difference in the appearance at the transition. and influence which system should be used
- Incorporation of slope for terrazzo in showers or on exterior decks will influence which system should be used
- Time constraints for installation of terrazzo system may be a factor in system selection
- Washing terrazzo for non-slip finish is a factor in terrazzo system selection

MATRIX COLORS:

The Terrazzo matrix binder in Terrazzo allows virtually any color of Terrazzo to be produced. While there is a wide but limited range of marble and glass colors, virtually any color can be produced with Epoxy Resin Matrix Terrazzo. And a wide range of colors can be produced with Polyacrylate Modified Cement Matrixes.

TERRAZZO AGGREGATES:

Excellent quality domestic and imported marble chips are available for use in Terrazzo in a range of colors, which can be combined to create an infinite variety of color harmonies. Note that all marble that is commercially available can be used in terrazzo as it may fracture out of the terrazzo if it is heavily veined.

To compliment the marble chip colors, and also to create colors in which marble is not available, there are a wide variety of colored glass chips available. Glass chips can be used in Epoxy Resin, Polyacrylate Matrixes, however is not recommended in cement matrix terrazzo. Shell is also commonly used in Thin-set Epoxy or Polyacrylate Matrix Terrazzo.

MARBLE CHIP SIZE:

Terrazzo marble/glass chips vary in size for approximately 1/16" in diameter to 1" in diameter. There is a number designation used with #00 being the smallest chips up to #7 being the largest chips. Use of the largest chip sizes is commonly referred to as Venetian Terrazzo. Sizes #3 to #7 are available on a limited basis due to lack of demand.

As with colors, marble chip sizes can be combined to create variations in the appearance of the Terrazzo. Terrazzo chip sizes have limitations based on the type of Terrazzo systems being used. (See Allowances For Terrazzo Finish below).

DIVIDER STRIP LAYOUT/PATTERNS:

White alloy zinc and brass divider strips are used in Terrazzo for function and Aesthetics. The dividers strips in some systems act as control joints, transitions between Terrazzo colors, transitions from vertical to horizontal installations, and for termination to adjacent flooring finishes.

Divider strips are commonly use aesthetically to create custom designs and patterns in the Terrazzo. Intricate logo artwork and lettering can be created with Terrazzo divider strips.

INTERIOR/EXTERIOR TERRAZZO:

Terrazzo is used in both interior and exterior applications. Portland Cement and Polyacrylate Matrix Terrazzo can be used for both interior and exterior applications, however. Epoxy Resin Matrix Terrazzo is not recommended for exterior use.

When optimum slip-resistance is desired for an exterior Terrazzo surface, Washed Terrazzo can be used. After grinding and before final polishing and sealing, a mild acid solution is applied that will dissolve the matrix until neutralized. This process leaves a slight depression in the matrix causing the marble chip surface to protrude slightly and provide the added slip-resistance. Upon final sealing, the Terrazzo appearance is similar to polished Terrazzo without high gloss.

ALLOWANCE FOR TERRAZZO FINISH:

When considering which Terrazzo system is best suited for the proposed application, the required minimum thickness for each type of Terrazzo system may become the deciding factor. The following minimum varying thickness and weight apply for each respective Terrazzo system:

- Exterior Sand Cushion/Venetian Terrazzo 2-½" (30 lbs./sq.ft.)
- Exterior Bonded Acid Washed Terrazzo 2" (20 lbs./sq.ft.)
- Interior/Exterior Polyacrylate Terrazzo ½" (3 lbs./sq.ft.)
- Interior Epoxy Resin Terrazzo 3/8" (3 lbs./sq.ft.)

TERRAZZO TYPE ADVANTAGES/DISADVANTAGES:

Portland Cement Sand Cushion/Bonded Acid Washed Terrazzo:

Advantages:

- Can be used for interior or exterior use
- Can be acid washed for added slip resistance in exterior use
- Topping thickness will accommodate the largest (#7) chip size
- Is breathable and not affected by moisture vapor transmission
- Sand Cushion system can accommodate substrate defects and allow for additional sloping of finished terrazzo
- Sand Cushion system can accommodate a breathable polyacrylate matrix terrazzo topping to achieve the benefits of the system with the advantages of polyacrylate terrazzo
- Sand Cushion system can accommodate radiant heat systems

Limitations:

- Requires minimum 2" depression for system installation
- Vibrant colors are very limited with Portland Cement
- Color is field tinted vs other systems which are color tinted in manufacturing facility
- Glass chips have limited use in Portland Cement
- Design flexibility due to size of panel limitations
- Lengthy cure time to achieve final appearance

Epoxy Resin Matrix Terrazzo:

Advantages:

- System thickness of 3/8" total, can be used over concrete or wood substrate
- Virtually unlimited range of vibrant colors available
- Glass chips can be used in epoxy resin Terrazzo
- Design flexibility due to minimal divider strip requirements
- Accelerated chemical cure allows for faster installation due to significantly decreased cure time prior to grinding
- Color uniformity on large installations due to sophisticated manufacturing process for resin

Limitations:

- 3/8" total thickness requires high flatness tolerance of ¼" per 10 sq.ft. in the substrate.
- Not recommended for exterior use.
- System not breathable, moisture vapor transmission barrier may be required for slab on grade applications adding additional cost
- High gloss natural marble finish can be achieved with this system
- Maximum chip size that can be used is #2.

Polyacrylate Modified Cement Terrazzo:

Advantages:

- System thickness of ½" total, can be used over concrete or wood substrate.
- Can be used over Gypcrete underlayment with proper waterproof/flexible membrane
- Glass chips can be used in polyacrylate matrix Terrazzo
- Matte finish with shine only from polished marble can be achieved with this system
- Can be used for interior/exterior applications with optimum uniformity in appearance
- System is breathable and not affected by moisture vapor transmission
- Can be acid-washed for added slip resistance in exterior applications

Limitations:

- ½" total thickness requires high flatness tolerance of ¼" per 10 lf. in the substrate.
- The most vibrant colors cannot be achieved with polyacrylate matrix.
- Maximum panel size without metal divider strips is 70 sq.ft. or as approved by HTI upon review of project conditions.