POLYACRYLATE IN-SITU TERRAZZO FLOORING SYSTEM

System Description

FormCrete Polyacrylate In-Situ Terrazzo Flooring System is a specially formulated polymer-modified in-situ terrazzo flooring system in thin overlay of **10mm** to **15mm** thick. The flooring system consists of a 2-component high performance bonding adhesive and a layer of terrazzo topping as shown in Figure 1. The terrazzo topping is also a 2-component material system which consists of the dry mix portion of marble chippings (size 3mm, 6mm or 9mm), Portland cement, fine fiber, pigment and other performance enhancement additives; the liquid portion consists of selected Acrylic polymer emulsion with anti-foaming additives. Once the terrazzo floor has been initially cured and hardened to the required strength in approximately 5-7 days, it is ground down and polished to reveal the natural beauty of the stone chippings. The polymer and additives in the binder provide strength and flexibility over conventional non-polymer modified in-situ terrazzo flooring which is lacking in flexural strength and more prone to shrinkage cracks. By mixing different types, colour and sizes of chippings and other mineral fillers, many attractive terrazzo finishing can be created. The information provided in this technical data sheet is closely correlated to ***British Standard BS 8204-4:2004 Screeds, Bases and In-Situ Floorings---Part 4: Cementitious Terrazzo Wearing Surfaces---Code of Practice***.

Advantages

- Aesthetically pleasing appearance
- Bigger panel size than ceramic tiles or marble tiles can be achieved in 2mx2m spacing (using 3mm chipping @10mm thick and 6mm chipping @12mm thick) or 3mx3m (using 9mm chippings @15mm thick)
- Ageless; will not “run out of fashion”
- Homogeneous, can be re-grinded to turn new again
- Non-toxic as the binder system is using cement and NOT using resinous binder
- Better tolerance to moisture transmission compared with resinous terrazzo system

Areas of Applications

- Shopping malls
- Departmental stores
- Supermarkets
- Airports
- Train Stations
- Hospitals
- Schools and Offices
- Hotels and Resorts
- Showrooms
- Residential
- Other interior flat floor areas

Installation Method

Concrete Substrate Surface Preparation

In most cases, concrete slab is casted initially during the construction stage leaving an approximate thickness of 50-60mm below the final floor finishing level to make allowance for the installation of the

selected floor finishes later. If in-situ terrazzo is used in this circumstance, a sound leveling screed of minimum **40** to **50**mm thick is necessary. The concrete surface shall be prepared in such a way that it is roughened and free of any oily substances, laitance, curing agents and other contaminants. Ideally, the concrete surface should be prepared in wood float or in broom finish. This will provide a better grip to receive the leveling screed subsequently.

Leveling Screed

A sound leveling screed of 40 to 50mm thick consisting of a mix ratio of 1 Part cement to 2 Parts course sand to 1 Part aggregates (size 9-12mm) is necessary to support the terrazzo topping. Leveling bed shall be installed at **10mm** to **15mm** below the finished floor level depending on the size of marble chips used. The surface of the leveling screed should also be roughened with wood float or in broom finish to receive the subsequent bonding adhesive followed by the terrazzo topping.

Bonding Adhesive

"FormCrete" High Performance Bonding Adhesive is a two-component bonding agent system consisting of Part A: Liquid Polymer and Part B: Adhesive Mortar Dry Mix. The materials shall be mixed in a ratio of 1 part Liquid Polymer to 3 parts Adhesive Mortar Dry Mix using an electric hand held stirrer until a homogeneous mix is achieved. No additional water is needed. The mixture is then applied using a steel trowel onto the leveling screed in an approximate thickness of 1.5mm. It is necessary to sprinkle water onto the leveling screed until it is no longer absorptive before applying the Bonding Adhesive so that the latter does not dry off quickly. The open time of the Bonding Adhesive is approximately 20-25 minutes and the terrazzo topping must be applied while the Bonding Adhesive is still wet and tacky; this is to ensure an effective bond between the two substrates. Re-application of the Bonding Adhesive is necessary if it has dried up before the terrazzo topping is deposited.

The Bonding Adhesive can also be used in the same manner when laying the leveling screed onto the concrete substrate to ensure an effective bond. The procedure to pre-wet the concrete surfaces until it is no longer absorptive must also be observed before applying the Bonding Adhesive.

Dividing Strips

Dividing strips made of zinc alloy, brass, aluminum or plastic of 3 to 6mm thick x 35mm H are normally used to form the panel size and also serves as level guides to achieve the required finishing terrazzo floor level. They are also installed at expansion joint areas, control joint areas, borders, intersections and pattern areas. The dividing strips are pre-installed to the required level before putting in the Terrazzo topping. They are normally installed by cutting of groove lines on the leveling bed according to the setting out markings before inserting and securing them into position by using epoxy glue or other suitable means.

Panel Size

With all precautions taken, it is not totally possible to eliminate the in-situ terrazzo floor from experiencing minute cracks or crazes due to differential shrinkage or movement between the terrazzo topping, leveling screed and the concrete base. Other possible causes of cracks may due to structural movement of the building, vibration from other construction activities, vast temperature differentiation, lack of ventilation etc. To ***minimize*** such occurrence, the maximum size of terrazzo panels is generally done in 4m2 (using 3mm chips @ 10mm thick or 6mm chips at 12mm thick) or in 9m2 (using 9mm chips at 15mm thick). The length of the panel generally should not be greater than 1.5 times the width; increasing the length of panels in relation to their width increases the risk of cracking.

Movement Joints

Expansion joints and control joints on existing base concrete should be marked and carried through to the surface of the leveling bed and the terrazzo topping. For aesthetic reason, the dividing strips on the terrazzo flooring can be arranged to coincide with the movement joint positions where possible.

In-situ Terrazzo Topping

Mix "**FormCrete" Polyacrylate In-Situ Terrazzo Part A Dry Mix** (in dry powder form incorporating **marble chips) with **Liquid Polymer Part B** at a pre-determined ratio one bag at a time using a mechanical hand held mixer and a stainless steel container for 4-5 minutes. Deposit the Terrazzo topping onto the earlier applied Bonding Adhesive while the latter is still wet and tacky. The terrazzo topping is then troweled slightly higher over the level formed by the dividing strips within each panel. It is important to distribute the terrazzo mix to the work areas and troweled to the required level as soon as possible to avoid loss of slump of the mix. The terrazzo topping should be compacted by troweling actions at intervals to remove excess slurry so as to produce a surface with regular distribution of aggregates. Attention should be given to firmly place the terrazzo mix at corners of the dividing strips to avoid weakness at these areas. At least 4-5 trowel actions are needed subsequently within the open time of 3-4 hours depending on the ambient temperature. Mist the surface lightly with a little amount water to ease troweling if necessary. Final troweling should slightly reveal the lines of the dividing strips. Upon completion and until the terrazzo's surface is no longer sticky, cover the finished floor tightly with polyurethane sheet for the purpose of curing and protection. The polyurethane sheet should be properly lapped and securely held in air tight position to prevent moisture from escaping throughout the curing period (approximately 5-7 days) before grinding can proceed.

Grinding

Once the finished floor has been initially cured and hardened for approximately 5-7 days, proceed with the first round of grinding operation using a wet-process machine mounted with diamond pads starting from 50-grit until 200-grit. After grinding, the floor is washed and rinsed thoroughly with water followed by grouting of voids, pits and other imperfections on the same day using the specially formulated "**FormCrete" Terrazzo Grout.** Protect the floor with plastic sheet and allow the grout to cure a minimum of 24 hours before beginning with the fine grinding operation using 300 till 500 grit diamond pads. After the final grinding is completed, wash the surface with clean water, check for final touch ups on the same day and allow the floor to dry sufficiently in the next 24- 48 hours.

Surface Protection

Once the floor has been sufficiently dried, apply two coats of "**FormCrete" Smooth Surface Sealer** using cotton fiber cloth or mop. After the coating is cured in 24 hours later, apply a coat of "**FormCrete" Nano Polishing Gel** using a buffing machine mounted with a suitable buffing pad until sufficient sheen is achieved. The finished floor is then ready to be handed over to the client on the same day. It is the responsibility of the owner to provide his own protection and maintenance on the sealed surface from there on. For better protection of the floor against human shoes traffic in public areas, some may consider using a high performance 2-K clear coating such us Polyurethane, Polysiloxane or Polyaspartic coatings. However, consultation must be made with the supplier to resolve the substrates moisture tolerance issue prior to application of the coating.

NB: Some owners may prefer to grind the floor to shine naturally using diamond pads until 1,500 grit plus a layer of buffed wax solution. This is an acceptable practice especially for non-shoes residential flooring.

Maintenance

The protective coating helps to inhibit penetrating spilled materials upon initial contact with the floor; however, spills must be cleaned up soon enough before the stains soak and dry into the floor. Chemical used for maintenance shall be neutral with a pH of 7-8; all purpose cleaner or soap containing water soluble inorganic or crystallizing salts, harmful alkaline or acids shall be avoided. Also avoid using sweeping compounds contain oil which will penetrate and could permanently discolor the floor. The owner should consult a professional cleaner for an appropriate long term maintenance program for the terrazzo floor.

Figure 1 – FormCrete Polyacrylate In-Situ Terrazzo Flooring System