

Waterproofing & Tiling of Pools Datasheet

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The tiling of pools always presents a challenge with regards to the following factors:

- The shape of the pool. Is it free form or symmetric in shape?
- Movement due to factors such as water pressure, displaced weight and thermal movement etc.
- The ability of adhesives and grouts to resist moisture penetration and chemical attack.
- Time constraints.

Shape

The most popular tile sizes for the tiling of pools are the 40mm x 40mm ceramic tiles laminated to a textile backing sheet such as marketed by Ceramic Industries or the 150mm x 150mm tiles as was commonly used in bathrooms during earlier years. White and various shades of blue being the most popular colours.

The 150mm x 150mm is more commonly used in larger commercial pools or pools that are symmetric in shape whilst the more popular choice for free form pools and the scum line are the 40mm x 40mm tiles laminated to a backing sheet as they are easier to use in rounded corners.

Movement

The tiles of newly filled pools are at risk of falling off or cracking due to movement for a number of reasons, some of which are:

- The pressure of the water exerted particularly on the walls and the sheer weight of the water on the floor. For example: If the depth of the pool is 2m then every m² will experience two tons of pressure in that area (2m³ of water/m²).
- Temperature variances will result in thermal movement (expansion/contraction). Remember that tiles have a different expansion co-efficient to the cement grout hence differential cracking.
- When people jump into a pool it results in water pressure on the walls due to displaced weight.

All of the above factors also play a huge role in the erosion of the cement grouts used.

Moisture ingress and chemical attack

Moisture ingress into any cement matrix can not only deprive the grout, adhesive and structure of essential chemical constituents causing corrosion of these but can also cracking when this moisture expands and contracts in the capillary arteries/voids during temperature changes. Likewise, chemical attack on these cement matrices can either be corrosive in nature and erode the surface or scale forming and ruin the aesthetic value of the finish by staining these areas.

Time constraints

Tiling a pool is generally more time consuming than plastering a pool. Tiled pools are normally filled after full hydration of the grouts whereas PoolCrete pools are filled the day after application. Tiled pools are also purposely filled at a slower rate than plastered or fibre lined pools (±1m per day) so as not to expose them to rapid temperature changes (different expansion co-efficient between tiles and grouts etc.)

The South African pool builders have traditionally used white cement to grout swimming pool tiles due to its hard and relatively quick setting properties. Using a Flexbond/water (or even Elastobond) solution to mix this with would render it more chemical resistant and provide some flexural strength.

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A waterproof shell is essential for the tiling of pools. There are two tried and tested systems for this:

Option 1- Permastop

Shuttered concrete or brick built pools

Walls

1. Pre-dampen the entire wall area ensuring that the substrate is saturated with water.
2. Brush on an HCL/water solution made up of 1 volume HCL and 3 volumes clean water and allow this to fizz before wire brushing the entire surface. Please ensure that the surface is free of contaminants and organic growth before proceeding.
3. Rinse off with clean water.
4. Brush on a sodium bicarbonate/ water solution made up of 1 cup sodium bicarbonate to 5 litres of water in order to neutralize the substrate and then rinse off with clean water.
5. Allow the excess moisture to disappear.
6. To the dampened surface brush on a liberal coat of Permastop using a large distemper /block brush mixed in accordance with the data sheet instructions.
7. For the corners and where the floor meets the walls a polypropylene membrane strip should be dipped into the Permastop slush and placed in such a way that it overlaps both the wall and floor surfaces by at least 100mm. Making use of a paint brush/iron out all air bubbles.
8. A second coat should be applied after the first coat has set for \pm 30 minutes but no later than 90 minutes after the first coat. Ensure that the differential crack where the floor meets with the wall is coated with Permastop.
9. We recommend that a scratch plaster (15mm-20mm) be applied approximately 45 minutes after the application of the second coat of Permastop.
10. Once this new plaster is properly hydrated and cured you may proceed with tiling.

NB!

Scratch plaster mix to be:

- 1 volume Cemcrete Water-Repellent Cement
- 3 volumes clean plaster sand
- 1 volume clean river sand

Floors

The concrete on which the screed is to be laid should be hard, free from loose material, mould oil or grease and have a characteristic strength of minimum 30MPa. The following is recommended:

- Apply Permastop slurry as per Cemcrete's attached datasheet. (To be done +/- 20min ahead of screed)
- A screed mix sufficient for a depth of 20mm should be dumped on the base concrete (freshly grouted with Permastop) and spread somewhat thicker than the final required thickness. It should then be compacted using a screed stamper (proper design). Extra compaction is recommended on edges of panels or where the floor meets the walls.
- Apply Permastop slurry onto this green screed and embed CemForce woven membrane into this slurry with overlaps of 50mm. Where the floor meets the wall, the CemForce should be embedded into the same slurry coated at least 50mm up the wall. Apply a second liberal coat of Permastop slurry thus saturating the CemForce properly.
- The second level of 20mm screed (with Cemcrete Water-Repellent Cement incorporated in the mix design) to be laid over the first (now with a covering of Permastop and CemForce), compacted and finished off with a wood float.

Cemcrete provides a comprehensive technical service based on over 4 decades of experience in the field of surface applications and cement technology. Cemcrete believes, to the best of its knowledge, that the information contained herein is true and accurate at the date of issuance and is subject to change without prior notice. For further clarification of these instructions, contact Cemcrete.

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Hand packed or gunite pools

Entire shell

1. Pre-dampen the entire surface area ensuring that the substrate is saturated with water.
2. Brush on an HCL/water solution made up of 1 volume HCL and 3 volumes clean water and allow this to fizz before wire brushing the entire surface. Please ensure that the surface is free of contaminants and organic growth before proceeding.
3. Rinse off with clean water.
4. Brush on a sodium bicarbonate/ water solution made up of 1 cup sodium bicarbonate to 5 litres of water in order to neutralize the substrate and then rinse off with clean water.
5. Allow the excess moisture to disappear.
6. To the pre-dampened surface brush on a liberal coat of Permastop using a large distemper /block brush mixed in accordance with the datasheet instructions.
7. A second coat should be applied after the first coat has set for \pm 30 minutes but no later than 90 minutes after the first coat. Ensure that the differential crack where the floor meets with the wall is coated with Permastop.
8. Allow the Permastop slurry to hydrate for the next three weeks following the day of application and then do a light acid wash using a solution made up of 1 volume HCL and 10 volumes clean water.
9. Brush down with a stiff nylon brush and then rinse off with clean water.
10. Allow to dry and only tile surface when the moisture levels subside to the level recommended by the relevant manufacturer of the specified tile adhesive.

Option 2- MatCrete System

Shuttered concrete or brick built pools

1. Ensure that the surface is hard, clean and free of:
 - Dirt
 - Grease, oils or fat
 - Organic growth
 - Friability
2. Where the wall area meets the floor area do a flashing overlapping the floor and wall 100mm using MatCrete mixed to a slush and CemForce membrane cut 200mm wide. Dilute 1 volume FlexBond with 4 volumes clean water and then use this solution to mix MatCrete powder to a sloppy plaster consistency. Using a block brush place this material in a band overlapping the floor and wall by 100mm.
3. Place CemForce membrane cut to the correct width into this slush making sure that the ends overlap by 50mm. Iron out any trapped air or bubbles.
4. Overcoat this flashing with a second coat of MatCrete and allow to set.
5. Using the same mixing ratios described in point (2), paint the MatCrete slush approximately in bands 1000mm in width starting at the top of the ring binding at one end of the pool to the opposite side of the pool, up the wall ending on the opposite ring binding. (The coping tiles are placed on top of this ring binding)
6. Run CemForce rolls into this wet slush following the team applying the slush from one end to the other from top of wall to top of wall. Using the same MatCrete mixture as described in point (2) ensure that the CemForce is properly saturated and fixed to the surface with a second coat. Air locks and bubbles to be ironed out.
7. Repeat the process overlapping the CemForce 50mm until the entire pool area is properly covered with the MatCrete system.
8. At the end of each day allow the completed work to stiffen overnight and pick up from that point the following day.
9. Repeat point (5) to point (8) (Only this time lay the CemForce perpendicular to the first layer).
10. Apply a final coat of MatCrete over the entire area so as to ensure that this coat removes the texture of the CemForce membrane properly.
11. Allow the MatCrete to air cure for 3 days before tiling begins.

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Hand packed or gunite pools

1. Dilute 1 volume FlexBond with 4 volumes clean water and then use this solution to mix MatCrete powder to a sloppy plaster consistency. Using a block brush slush this material liberally in a band 1000mm in width working from the ring binding on one end of the pool towards the opposite end ring binding (where the coping tiles are to be placed).
2. Run CemForce rolls into this wet slush following the team applying the slush from one end to the other. Ensure that the CemForce is properly saturated and fixed to the surface with a second coat. Air locks and bubbles to be ironed out.
3. Repeat the process overlapping the CemForce 50mm until the entire pool area is properly covered with the MatCrete system.
4. At the end of each day allow the completed work to stiffen overnight and pick up from that point the following day
5. Repeat point (1) to point (3) (Only this time lay the CemForce perpendicular to the first layer).
6. Apply a final coat of MatCrete over the entire area so as to ensure that this coat removes the texture of the CemForce membrane properly.
7. Allow the MatCrete to air cure for 3 days before tiling begins.

Special Note

To facilitate ease of work on site I recommend that the FlexBond/water solution be mixed prior to commencement of work on site and stored in 200lt drums. The CemForce to be used for the flashing should also be pre-cut to 200mm prior to commencement of work on site. I attach herewith the datasheets for: FlexBond, MatCrete and CemForce.

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