Information sheet

Fibreglass re-lining of concrete swimming pools

The following procedure is one method for re-lining in-ground concrete swimming pools. This procedure does not imply any warranty against failure of the swimming pool surface layer, tie layer, or laminate due to blistering, delamination, black spot and iron hydroxide depositing, or fading.

Think and practice workshop safety.

Before starting any project using liquid chemicals you must use the appropriate protective wear.

Please keep in mind the majority of products supplied in the Composite Industry are manufactured and supplied by ISO accredited companies where the products are monitored and tested throughout production by qualified chemists, engineers and technicians. To get the best results from the products and the equipment follow the directions given by the manufacturer and or their qualified distributor.

Read the data sheets and MSDS carefully before starting any project with composite products.

The re-lining of in-ground concrete swimming pools is generally necessary when the original coating has been sufficiently eroded over the years, due to chemical and/or physical forces.

Of course, there is no reason why a brand-new concrete swimming pool cannot be lined using fibreglass/polyester resin and finished with a suitable Flowcoat [sometimes known as Finish Coat].

Nupol Composites does not have any scientific evidence to suggest that one particular method of re-lining in-ground concrete swimming pools is better than another; however, from feed-back received from various applicators, the following method seems to be more prevalent than others.

Before any repair procedure is carried out make sure you have the following safety equipment available, Current regulations are such that you are responsible for the safety of your operators.

Protective gloves
Protective eye wear; close fitting
Protective face mask or respirator
Overalls
Protective foot wear
PVC apron if required

You will need the following equipment and raw materials to carry out the work.

Good quality long bristle brush
Good quality medium pile roller
Good quality bristle, disc or paddle rollers to suite the application
Mixing containers
Metric measure for catalyst
Scales for weighing resin and fibreglass
Flat stirring stick 30mm x 3mm
Laminate thickness gauge
Acetone for cleaning
HETRON®922PAS/PAW vinylester resin
Nupol swimming pool flowcoat
BUTANOX MEKP
CTG powder bound
Glass or polyester surface tissue

Method

1. Remove any old coating to expose 'fresh' concrete.
2. Neutralise concrete by washing with a 10% solution of Hydrochloric Acid*.
   *Caution: when diluting concentrated acids **NEVER** add the water to the acid, **ALWAYS** add the acid to the water whilst stirring and always wear suitable protective clothing and safety glasses.
3. Wash the neutralised acid/concrete residues with water and remove from the pool. Allow the concrete to dry thoroughly.
4. When the concrete is completely dry, apply a coat 0.25mm [0.010"] [normally applied with long-haired rollers] of thixotropic Vinyl Ester. Use 2% MEKP which is recommended by the supplier of the Vinyl Ester, and allow any foaming or 'fizzing' to subside before commencing the application. The Vinyl Ester acts as a binder for the concrete and also provides a good physical/chemical bond for the laminate layers. The concrete must be thoroughly wetted with the Vinyl Ester and depending on absorption properties of the concrete, a second coat may be necessary.
5. After 1 – 2 hours [time will vary according to local conditions], apply one or more layers of 300g/m^2 - 450g/m^2 of powder bound chopped strand mat in combination with a suitable quality laminating resin. For additional opacity or hiding power the laminating resin may be coloured by adding 2% - 3% of paste colour. Normally, the colour of this laminating resin is similar to the colour of the Flowcoat [or Finish Coat]. The two colours then combine to 'reinforce' the total opacity or hiding power. A layer of glass tissue should be applied after rolling the main fibreglass layer, in order to provide a more even surface for the Flowcoat, and to minimise glass fibre protrusion.
6. A preferred alternative to paragraph 5 would be to use Vinyl Ester resin in the laminate thus providing a chemical barrier layer similar to a moulded fibreglass pool. Adequate curing of the Vinyl Ester is essential, in order to achieve adequate chemical resistant properties. Do not add paste colour to a Vinyl Ester resin since this will significantly degrade its chemical-resistance properties.
7. When the laminate has reached sufficient cure, the top surface should be sanded using 60 grit discs to provide good physical bonding. Remove any dust before proceeding.
8. Prior to application of the Flowcoat, the preferred process is to apply a layer of **Vinyl Ester** to the sanded glass laminate in order to provide added chemical resistance behind the Flowcoat [finish coat] layer, as well as providing a better physical bond between the laminate and the Flowcoat.
9. Use swimming pool grade Flowcoat only, and apply so as to achieve a dry film thickness of 0.5mm [0.020"] minimum, to ensure adequate cure and performance. Normal application method is by roller.

   DO NOT APPLY THE FLOWCOAT IN FULL SUNSHINE, as this will cause premature gelling of the coating, resulting in tacky areas of under-cured material. If necessary, apply the flowcoat early or late in the day when the sun is at low angles. Wherever possible, all work should be carried out under 'shade cloth' or similar sun-screening material.

   DO NOT APPLY WHEN DEW IS PRESENT OR FORMING.
10. Depending on temperature, use 1.5% - 2% M.E.K.P recommended by supplier, and wherever possible, do not apply any materials below 15^{o}C or above 30^{o}C. DO NOT reduce catalyst level below 1.5%.

11. After 24 hours, THOROUGHLY inspect the re-coated surface for 'tacky' spots and test various areas for cure by rubbing the Flowcoat [Finish Coat] surface with a cloth, dampened with acetone. *If 'tacky' spots have been identified, then grind these areas back to the laminate and re-apply Flowcoat. Check cure in these areas after 24 hours and if satisfied, leave pool for a further 24-48 hours [preferably 7 days if possible] before filling the pool with water.

***N.B. There should be no transfer of colour to the cloth if the Flowcoat is adequately cured.**

12. Remember, if the coating has not been THOROUGHLY checked prior to filling the pool with water, then any areas which are tacky, or under-cured will rapidly change colour [typically, white patches will occur within 24 hours of exposure to water!]. Furthermore, the flowcoat will be continually attacked by the water and will be softened to the point where it can be scraped-off with fingernails. If this problem occurs then, drain the pool, remove the offending areas, and re-coat properly, or [if the pool cannot be drained], apply a suitable under-water epoxy patching material. It is far better to properly apply flowcoat and adequately inspect the final coat rather than have to drain the pool etc.
13. Ideally, the re-coating procedure commencing with the Vinyl Ester layer should be carried out on the same day to ensure the best possible physical and chemical bonding of the various layers.
14. For information on Re-Lining of In-Ground Fibreglass Swimming Pools, consult separate Nupol Composites Information Sheet.
15. The current colour range for these Flowcoats is available on request from your local Nupol Composites representative.

Refer also to Material Safety Data Sheets for Polyester Resins, Vinyl Ester Resins, Polyester Gelcoats/Flowcoats, Acetone, and M.E.K.P.