

## **APPLYING A GRP LINING TO A SWIMMING POOL**

This advice is offered as a guide to pool lining contractors. While individuals may attempt to line their own pool we strongly advise against this, since experience in the application is an essential factor in a successful job.

Before lining can commence the pool must be examined thoroughly, and all cracks and leaks repaired with cement, resin patch, or a resin/river sand grout.

Ensure that any paint or old surface finish is sanded clean and free from dirt and grease, and the pool is totally dry.

### **NOTE:**

1. Certain paints will dissolve in styrene monomer causing difficulty in priming.
- 2: The presence of water will interfere with resin gelation.

If concrete is new, an acid wash to neutralize any alkalinity is beneficial. Wash can be weak solution of pool acid. Allow pool to dry completely. An acetone wash can assist the final drying. NOTE: Gloves, goggles and an apron are recommended for this operation.

To ensure good adhesion, sand down the pool, this will also assist in removing slight bumps.

Once a pool has been carefully prepared and thoroughly cleaned, priming can commence.

### **PRIMING**

- The resin used should be an isophthalic primer or laminating resin, having good chemical resistance properties. Catalyse the resin, 2-3% MEKP KP-9 or other suitable catalyst. Stir well and with a lamb's wool roller, apply approximately 400gm/m<sup>2</sup>, coating the whole of the pool surface area. Allow to gel and cure. Resin may exhibit a slight tack when gelled due to slight air inhibition on the surface, but this is not a problem, as it aids with intimate bonding with the laminate.

### **NOTE:**

New lambs wool rollers should be used at this stage, and through the lamination stage to ensure that they are fluff free when applying the finishing or surface coat later.

## LINING THE POOL WITH GLASS MATT, OR WOVEN CLOTH

The recommended lay up for the pool lining is two layers of 450g matt or cloth or combination. Glass matt has proved the most popular due to cost consideration.

Knowing the area to be laminated, the total glass and resin requirement can be calculated fairly accurately.

e.g. 70m<sup>2</sup> pool area - glass requirement:  
 = 70 x 2 x 450gm/m<sup>2</sup>  
 = 63 kg glass

70m<sup>2</sup> pool area laminating resin requirement  
 (Using a 3 resin: 1 glass ratio)  
 = 63 x 3  
 = 189kg resin  
 Allow 10% excess in final calculation

Check with your supplier for his resin recommendation. Once again a good quality isothalic resin should be used. A white or blue resin is available for laminating, but if used, extreme care must be taken to ensure no air bubble entrapment occurs as this can prove detrimental in the long run.

Having calculated your requirements, cut your glass into lengths sufficient to cover an area of wall the width of the glass, and extending from the coping area and curving just into the base of the pool. Lengths will vary around the pool, but those of the base will be largely constant.

When laminating, arrange laminate with an intervening space between lay-outs. This will be laminated at a later stage. Space should be that of the glass matt width less plus/minus 10cm either side to allow for overlapping when times comes to overlapping this area.

Weigh the glass and calculate the resin requirement for each drop (fall) of glass matt. Sufficient resin should be catalysed to wet out at least one strip. A resin pot life of 20-25 mins @ 25°C at 2% catalyst should allow adequate time. Experience will eventually dictate how much resin can be used in 20 mins, but endeavour not to over weight as this leads to waste.

Apply the majority of the catalysed resin to the primed surface, (saving 20-30% for application to dry areas of glass) with a lambs wool roller. Lay on the glass matt and roll the resin through the glass with a consolidating roller until the resin and glass becomes one matrix, free from air bubbles. Use remaining resin for touch up and wet out, where necessary.

A stripping brush may be used to bring the resin through the glass, but a consolidating roller should also be used to finish the laminating. Repeat the laminating procedure, i.e. laminate one, skip one, etc. round the pool walls, returning and laminating skipped areas after adjacent laminates have gelled.

The overlaps can be done wet on wet, but care must be taken to ensure a good bond without air bubbles entrapment and a non lumpy finish. Repeat this procedure with the second glass layer.

Lamination of the step should be done last, for obvious reasons, particularly your way out of the pool.

A chemical resistant synthetic veil should be applied over the laminate,

- a) to maximise the adhesion between laminate and surface or finishing coat.
- b) in the event of pinholes or rupture of the finishing coat it will minimize water absorption and the reverse osmotic effect, which can lead to flaking of the surface and leaching of the laminating resin through the pinholes or micro bubbles.

This application can usually be accomplished utilising the resin on the surface of the laminate.

#### NOTE:

1. Should part of the pool be exposed to sunlight for the majority of the day, attempt, if possible, to laminate this part early in the morning, when it is shaded the exception being the steps.
2. As the day proceeds, temperature can change dramatically, therefore make sure that the resin can be adjusted to give you a reasonable pot life with high temperature (ca 35°C) low catalyst (ca 0,6%), and low temperature (13°C) high catalyst (2,5-3%). Check with your supplier.
3. Poor laminating, rushing the job, too low a catalyst level i.e. poor cure can mean relining the pool at a later date. It pays to take care.

Leave the pool lining to cure for at least 8 hrs before commencing with the finishing surface coat.

### **FINISHING**

Ensure that the pool lining is free from imperfections i.e. lumps, dry areas, air pockets etc. Sand/ grind patches and repair if necessary.

If recoating a previously coated pool all vestiges of wax must be removed by sanding before commencing, as the old wax coat will cause adhesion problems between undercoat and top coat.

*Finishing or surface coats must be well stirred at all times prior to use, as wax migration to the surface can cause starvation in the material at the bottom of the container. A tacky surface will result, with consequent attack by the water leading to white patches, unsightly markings, and dirt entrapment later.*

Using a lambs wool roller, defluffed (see priming and laminating), apply a coat of previously catalysed waxed resin, white or pool blue at a coverage in the region of 600 – 700 gms/m<sup>2</sup>. Catalyse only sufficient resin that can be used within the pot life advocated by the supplier. A good starting point is 15 mins @ 2% catalyst and 25°C. Once again care should be taken to ensure that under-catalysing does not occur. If in doubt consult your supplier.

When applying the coating, use a well-soaked roller and apply with regular downward strokes (on walls) and smooth horizontal strokes on the pool bottom. Excessive rolling or brushing can disturb the final effect and induce an uneven wax dispersion, leaving inhibited patches and possible pin holing.

Allow coating to cure to a semigloss eggshell finish, then examine for pinholes, air bubbles, glossy or tacky areas indicating wax starvation and air inhibition. Sand, repair and recoat these areas, allowing an overlap area of 8 – 10 cm. To ignore these signs can cause flaking and bubbling under the surface coat and dirt entrapment in the long term.

*If possible, pool should be kept empty for 5 – 6 days to ensure full cure before filling.*

## **MOSAIC AND COPING TILES**

If possible, tiles should be applied after the curing has been completed, resin laminate and finishing coat having been taken up and over the area where copings are to be installed. This will ensure lining is protected from any water seepage due to splashing or lapping over the end of the laminate.

Mosaics and copy can then be applied in the normal way, with the proviso that tile area is sanded to remove wax surface. Adhesion can be affected with epoxy adhesives or polyester pastes and a standard tile cement for filling.

Should mosaic and coping remain in place during the lining procedure, a cutting disc should be used to rout a channel below the mosaics of a depth of +/- 20 mm and the glass laminate taken up to and into this channel, then finished in the normal manner. A surface tissue once again could be beneficial before finishing.

### **NOTE:**

1. It is important that all equipment is kept clean. Do not leave rollers and brushes in a dirty condition. Clean with acetone after use.
2. Do not apply resin or finishing coats with acetone soaked equipment – this will be detrimental to the lining.
3. Use plastic containers for resin and coating where possible, as they can be used again. Hard cured resin can be knocked out readily as there is no adhesion between the resin and plastic.
4. Do not attempt pool lining if there is any suggestion of rain.
5. After rain, dry out pool thoroughly before commencement of any laminating or coating.
6. Do not waste materials, they cost money and may cost you your job.
7. Purchase your resin pre-accelerated. If possible this will negate the need to store accelerator and catalyst, which when combined can be explosive.

**POLYESTER SAFETY INFORMATION**

All sales of products manufactured by Cray Valley Resins South Africa and described herein are made solely on condition that our customers comply with applicable health and safety laws, regulations and orders relating to the safe handling of our products in the workplace. Before using, read the following information and both the product label and Material Safety Data Sheet pertaining to each product.

Most polyester products contain styrene. Styrene can cause eye, skin and respiratory tract irritation. Avoid contact with eyes, skin and clothing. Impermeable gloves, safety eyewear and protective clothing should be worn during use to avoid skin and eye contact. Wash personal protective equipment thoroughly after use.

Styrene is a solvent and may be harmful if inhaled. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Extended exposure to styrene at concentrations above the recommended exposure limits may cause central nervous system depression causing dizziness, headaches or nausea and if overexposure is continued indefinitely, loss of consciousness, liver and kidney damage.

Do not breathe or ingest vapour, spray mists and dusts caused by applying, sanding, grinding and sawing polyester products. Wear an appropriate OSHA approved, properly fitted respirator during application and use of these products until vapours, mists and dusts are exhausted, unless air monitoring demonstrates vapours, mists and dusts are below applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

The International Agency for Research on Cancer (IARC) has reclassified styrene as Group 2B "possibly carcinogenic to humans". This new classification is not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and has published the following statement: Recently published studies tracing 50 000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among all workers), and no increase in mortality related to styrene.

Styrene is classified by OSHA and the Department of Transport as a flammable liquid. Flammable polyester products should be kept away from heat, sparks and flame. Lighting and other electrical systems in the workplace should be vapour-proof and protected from breakage.

Vapours from styrene may cause flash fire. Styrene vapours are heavier than air and may concentrate in the lower levels of moulds and the work area. General clean air dilution or local exhaust ventilation should be provided in volume and pattern to keep vapours well below the lower explosion limit and all air contaminants (vapour, mists, dusts) below the current permissible exposure limits in the mixing, application, curing and repair areas.

Some polyester products may contain additional hazardous ingredients. To determine the hazardous ingredients present, their applicable exposure limits and other safety information, read the Material Safety Data Sheet for each product (identified by product code) before using.

**FIRST AID:** In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapours or spray mist, remove to fresh air. If swallowed, get medical attention.

Polyester products have at least two components that must be mixed before use. Any mixture of components will have hazards of all components. Before opening the packages, read all warning labels. Observe all precautions.

Keep polyester containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations. Emptied containers may retain hazardous residue. Do not cut, puncture or weld on or near these containers. Follow container label warnings until containers are thoroughly cleaned or destroyed.

FOR INDUSTRIAL USE AND PROFESSIONAL APPLICATION ONLY. KEEP OUT OF REACH OF CHILDREN.

**DISCLAIMER AND LIMITATION OF LIABILITY**

The products sold hereunder shall meet Seller's applicable specifications at the time of shipment. Seller's specifications may be subject to change at any time without notice to Buyer. Buyer must give Seller notice in writing of any alleged defect covered by this warranty (together with all identifying details, including the product code(s), description and date of purchase) within thirty (30) days of the date of shipment of the product or prior to the expiration of the shipment's quality life, whichever occurs first. The warranty described herein shall be in lieu of any other warranty, express or implied, including but not limited to, any implied warranty or merchantability or fitness for a particular purpose. There are no warranties that extend beyond the description on the face hereof.

The Buyer's sole and exclusive remedy against Seller shall be for the replacement of the product or refund of the purchase price in the event that a defective condition of the product should be found to exist by Seller. No other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available to the Buyer.

The sole purpose of this exclusive remedy shall be to provide Buyer with replacement of the product or refund of the purchase price of the product if any defect in material or workmanship is found to exist. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Seller is willing and able to replace the defective products or refund the purchase price.