

PRODUCT INFORMATION

Version 1.04

Print date : 21-08-07

Description

This product is a modified vegetable oil based liquid resin which is cured by Ultra-violet light. It contains no acrylates and is free from water and VOC'S.

In appearance it is a yellowish liquid with a viscosity similar to polyester resin, stored in U-V light safe storage vessels.

The product is circa 98% derived from renewable resources.

Storage Advice

During long term storage this product *may become* cloudy, this can be easily reversed by heating to 45-50°C (104-122° F) for 2 -5 hours. Shake or stir thoroughly until uniform colour and clarity is obvious throughout the resin. This can now be used for 5 to 7 days, if kept at approx 25°C (77° F), without the need to reheat and homogenize. (In a warmer climate than W. Europe this may not need to be done).

Application Advice for surfboard manufacture

- All work so far has been using UV tanning lamps to provide the UV radiation source for curing. Our UV `oven` contains 7 light tubes around the board blank, 2 tubes below rail height the other 5 spaced evenly around top. The UV light tubes can be 80 or 100 Watt types (we have been using 100 watt). The wattage of the bulbs/tubes will determine the length of exposure time required. An on and off timer of 0 to 5 mins is preferable to control the exposure time, other wise use a stop watch to time UV exposure. The length of tubes will govern the length of the UV oven and may limit the length of the boards that can be cured.
- It is advisable to filter the resin for gloss coats prior to use to remove any particles. Paint filters circa 400 micron can be used and are readily available at most auto paint factors. The resin should be warmed to around 30°C, this will lower the viscosity and speed up the filtering process. Store filtered resin in UV safe container. If filtering into a `day` usage pot, then make sure this pot is UV safe, this can be done by wrapping in black tape. It is preferable to keep it in warm cupboard when not use, to keep viscosity more user friendly.
- The resin will work best when used at around 30°C (86° F). This gives best viscosity and wetting out of the glass cloth. This temperature may appear high but the resin will cool rapidly on contact with the blank which is at a lower ambient. (A good workshop temperature should be maintained at 20-25°C).
- About 75 to 85 % of the resins final hardness is achieved within the first 12 hours, final hardness is reached after about 10 days.
- Have some kind of UV-light-safe storage for your gear, squeegee, brushes etc. if you leave them exposed to light they will become hardened, wrapping in thick black polythene works well eg. black bin liners.

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Preparation of blank is no different to normal, just make sure it is dust free. We have had some success in over laminating onto water based paint, cellulose paint should be no problem once dry as the resin contains no solvents.

Laminate

- Place your decals on blank and wet out underneath with resin then squeegee flat ensuring no air bubbles underneath. If there are air pockets under the decal then when exposed to UV cure the air pocket gas will expand and form bubble under the glass. If the decal has resin rich areas around it then yellowing will occur in these areas. The decals can be put in between layers of cloth also.
- The blank can be wet out before or after laying on the cloth, it is your choice, some do it some do not.
- Depending on what glass laminate schedule you require, we would recommend a maximum of 2 x 6oz at a time. If your glass schedule is more than this then do it in separate stages.
- Resin is poured onto glass as per normal practice and spread with squeegee. Try to get resin evenly distributed as per polyester/glass. Try to remove excess resin from under glass cloth as it may cause blister problem if too much resin is left under cloth, it will also yellow more than the rest, (as glass seems to magnify the UV cure effect). This could take some trial & error on your part to get right.
- Remember you can take your time to get things right as the resin is not curing very quickly under normal ambient light conditions, unlike a normal polyester resin with MEKP catalyst.
- Once glassing has been completed, it should be left for approx 5 minutes for air release from resin to occur, before board is put into UV `oven` and cured.
- For different intensity of UV light (different number of tubes) the time exposure will vary, we use 7 light tubes of 100 Watts around the board.
- Exposure to UV for the laminating stage will have to be trialled in your own workshop to get an optimum time. At present we use an initial UV exposure of 45 seconds has been enough to start the reaction, (this has shown that it creates temperatures of 30 to 45°C, (86-113°F) on the glassed blank, from an ambient of 20 - 24°C), then a rest period of 1 to 2 min with lid open to stop temperature build up. Continue the sequence three times and the laminate should be cured. The board may have to be flipped to get the under rail laps, a further 45 seconds exposure should take care of this.
- The above exposure time sequence has been enough to start the reaction, the temperature of the board laminate should stay around the 35 to 45°C mark, if it goes up then there is greater chance that the resin will start to yellow, so be careful how close to the lamp/tubes the rail areas are. Lamp tubes can be masked off if necessary while exposing the rest of the board.
- The glass laminate should now be dry and cured enough to sand lap areas. This UV exposure time sequence each user will have to fine tune for their own UV oven and blank size.

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- Overheating the resin in the UV oven will also cause it to scorch and brown, beware of heat build up in the UV oven. It is preferable to have fans to extract hot air inside UV oven.
 - Once cured the rail can be sanded for sharp bits then other side can be laminated the same as above.
 - If there is a bubble in the laminate or where the rail lap did not stick, then the best course of action is to cut it out straight away, wipe off any resin and reapply new resin and cloth for the repair. If trying to inject resin into a bubble it is unlikely that it will cure under the already cured laminate above it, as the cured laminate is now shielding the area underneath and the UV will not penetrate through it to cure liquid resin in the bubble.

Sanding coat

- The sanding coat we made up contains the resin plus 1.5% parts by weight Aerosil (Fumed Silica), this is left to *`wet out`* for 24 hours prior to use, so should be made up day before use. It is possible to use only the resin for this if you do not require a thicker sand coat.
- It seems at present that a period of about $\frac{3}{4}$ to 1 hour is preferable before applying sanding coat, the glass laminate should be lightly sanded and dust blown off before sanding coat applied.
- Application of sand coat is same as for polyester. The sanding coat should be left for 5 to 10 minutes for air release before being exposed to UV for approx 2 min on then 2 min off until cured, individual workshop trial will have to be done to get the correct sequence for you. Then remove drip tape and give another 45 seconds. Sometimes it helps to turn over board to get that under rail part as the top surface is cured.
- If sand coat has good straight / glassy finish you might like to leave it, if not then it will need sanding as per polyester. It is usually better to leave sand coat for at least 4 hours before cutting into it, more preferably next day.
- If having to sand for top/gloss coat make sure surface is to same standard of cleanliness as per polyester board.

Top/Gloss coat

- It can be preferable to filter the resin for the top / gloss coat, as is done in some workshops when using some types of polyester.
- Once applied leave for 5 to 10 minutes for air release to occur before UV exposure. A heat blower gun / hair dryer can assist release of entrapped air, as the increase in temperature will reduce viscosity and allow air up through resin more easily, but take care not to overheat in small locations as it will scorch resin.
- Top/ gloss coat will take approx same as sand coat for UV exposure, ie maybe 2 minute on 2 minute off until it is cured dry. This resin system is a top down cure system, so the surface will skin over first then the lower level will be cured, so be careful of putting fingers on it too soon.



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- If coat has blemishes then cut back with 400 /800 grade paper and work up same as per polyester board.

Other

- The use of this resin has been only for surface work because the UV light does not penetrate very deeply, therefore leash plugs and fin fixings will have to be fitted conventionally with a polyester mix as per normal practice, or possibly an epoxy mix, or possibly a polyurethane adhesive.
- Pigments and tints, most `normal` polyester pigments used in resins are generally considered not suitable for UV cure applications, due to the problems of pigment materials blocking UV frequencies that are needed for activating the UV catalysts. It would probably lead to an undercured resin matrix. At the present time it would be better to do any colour work on the blank and leave resin clear until we have a more definite recommendation of which particular pigments/tints to use from particular companies. We would recommend that if you want colour tints that you do a sample size before committing to a full blank.
- It would be preferable to leave board 14 days to mature the resin cure before surfing. A couple of hours sun on each side would further enhance the cure. The board will take on a creamy / yellow colour with exposure to sun, at the moment this is inevitable but does show a more thorough cure. (the yellowing of resin is being worked on for future formulas)