

1: Boat Painting: A boat may be painted with anything, but some materials are better than others. Paint is applied more easily than gel coat and usually has a better shine because it goes on more smoothly, but it is frequently more expensive and does not go on in thick layers. Where thickness is not needed we suggest bottom paint below the water line and polyurethane above on the outside of the hull. The polyurethane will give a shiny finish and will last longer in the sun than any other finish but is expensive. The inside of the boat can be painted with any of these materials but the interior is rarely sanded smooth so the polyurethane is wasted. Gel coat has the advantage of being a thicker coating for longer wearability as well as the fact that it will stick to a tacky resin surface without sanding. A thicker coating is useful on the bottom of the hull if it is frequently dragged across sand, and on the floor where there is a lot of foot travel.

2: Gel Coat is basically colored laminating resin. It will dry tacky unless otherwise treated to make a dry finish. It may be brushed, rolled, or sprayed on a clean, dry, and sanded surface such as wood or old fiberglass. It may be laid directly on a fresh, tacky, laminating resin surface without sanding. It should not be used on metal as it may crack due to metal expansion and contraction in the sun. As with any other polyester resin, gel coat will not stick properly to fresh epoxy resins or paints and will probably peel off. It should not be laid over any other type of finish except sanded gel coat or resin since putting polyester on lacquer or enamel paint may cause the paint to lift from the surface underneath. Gel coat also dries more slowly than resin and therefore needs more catalyst, 2-4 oz per gallon, depending on temperature. Care must be taken not to catalyze more than can be applied in 10-15 minutes. Do not catalyze a whole gallon even if you think you can apply it in 15 minutes, since that large mass of material will cause it to harden much faster. Gel coat has a 15-20 minute pot life at 70 degrees, and heat in the air or on the surface (direct sun) will cause it to harden a lot faster. Coverage is approximately 70-100 square feet per gallon, single coat, but a lot depends on the method of application. The number of coats necessary will depend on the color of the gel coat and the color of the surface. Dark blotchy surfaces may need more than one coat of a light color gel coat.

3: Surface Preparation: Old paint other than gel coat should be removed by sanding or paint remover, and the surface should be final sanded to 150 grit for brushing and rolling and to 280 grit for spraying. Any exposed fiberglass should be coated with resin or primer and sanded – the gel coat will not give a good finish on exposed glass. The best surface for spraying is obtained by using a high-build polyester primer that when sanded gives a smooth even surface on which to spray.

4: Mold Use: Gel coat is normally used in a mold for making fiberglass parts. It provides both the color for the part and a barrier against pinholes on the surface of the fiberglass laminate. If brushed, two separate thick coats should be laid in different directions to cover thin areas and brush streaks. A rule of thumb is to brush a heavy coat in one direction, let it tack up for approximately 10 minutes, and then brush a second heavy coat across the brush marks of the first coat. If you wait too long between coats the 2nd brush coat will dissolve the 1st (thin) coat and wrinkle the surface. When sprayed, it will produce an “orange-peel” surface for best resin bonding. For mold use, a thickness of at least 20-25 mils. is desirable. Let the gel coat cure long enough so that it will not transfer to your fingertips, before laminating the fiberglass.

5: Painting/Brushing/Rolling: When used for painting, gel coat must be treated to dry hard. If rolled or brushed, it will show the brush marks or any other marks left by the application. If this type of finish is acceptable, the gel coat should be mixed with surfacing agent (6-8 oz/gal of gel coat), catalyzed, and then brushed or rolled on the surface. The surfacing agent gives the same waxy satin finish as finishing or surfacing resin. If you want a shinier surface see the PVA instructions in the spraying section. This allows the gel coat to dry hard rather than tacky. Some smoothness may be obtained by mixing in some finishing or surfacing resin. This will produce to a smoother surface but the gel coat color will be tinted by the pinkish-brown resin. You may also thin the material a little to help it flow out smoother. You may also try smoothing the gel coat surface with a foam brush. Be sure to get the foam brush that does not dissolve in resin or gel coat. When using the gel coat/surfacing agent mixture, you need at least 10 minutes “wet” time on the surface for the wax to film to float to the surface of the gel coat. If the mixture starts hardening too early, you may have some spots that are dry and some spots tacky (spotty cure). We do not recommend using any resin or gel coat in direct sun or hot weather (90°) unless the area is very small. If a shiny finish is desired, the brush marks may be sanded out with 600 grit wet/dry sandpaper, and then compounded and polished to the desired shine. When gel coat is brushed or rolled, one to two coats is usually enough. When multiple coats are to be applied you would usually mix the surfacing agent in the last coat since that is the only one you need to dry hard (non-tacky). If you want to recoat after the surfacing coat (i.e.: the color did not completely cover the surface), you may recoat as long as the surface is tacky, whether or not there is surfacing agent in the mix. Any further painting will require surface sanding.

Non-Skid: The deck or floor of a boat will usually need non-skid material to keep people from slipping on a wet deck. Glue-on non-skid strips may be used; or else the

surface (paint) coating may be treated. Sand may be sprinkled on a wet surface or mixed in with the paint or surface material. Sprinkling the sand on top of the surface gives you better control over coverage than mixing in the paint. Unfortunately, the sand on the surface will show, but a coat of paint or gel coat may be applied over the sand. Windsurfing boards use sugar or salt for non-skid, but that is generally too fine for boats. You may also apply a gel coat, thickened with filler, with a paint roller that will leave a bumpier surface.

6: Painting/Spraying: If you mix catalyst and gel coat in a standard automotive paint gun and spray it on a surface, you get severe orange peel and a tacky surface. This is normally unacceptable. The material is too thick for the gun. You need to modify the gel coat to be the same viscosity as car paint. Any paint spray gun that is set up for car paint, whether siphon or pressure, that will give a smooth finish, is sufficient. The main thing to remember is that this is a 15-20 minute pot life material so the gun needs to be cleaned within that time period in order to avoid having the material set up in the gun. If the material does start to gel in the gun you should soak all the parts in acetone as soon as possible and start picking out the gelled material. Sprayed gel coat will always have some orange peel—it will never spray as nicely as paint.

- a) Take the gel coat and thin it down so it flows reasonably smooth. You have less orange peel but still tacky. There are a variety of choices:
- b) Add surfacing agent to the above mixture – you have a reasonably smooth surface with a waxy film. If you want this to be shiny you sand, compound, and polish. This will give the nicest finish. However, a polished surface will need cleaning and waxing more often to avoid chalking.
- c) Take the gel coat, thin it, leave out the surfacing agent, spray it, let the surface dry 2-3 hours, and spray 3-4 mist (thin) coats of PVA mold release lightly over the gel coat. Let each coat of PVA dry before spraying the next. This forms a green film that will seal the surface so the gel coat will dry hard. The PVA may then be washed off with water after 3-4 hours. The quality of the shine on this surface will depend on the smoothness of the surface, which depends on the expertise of the person using the spray gun. The reason for this treatment is to cut off the air from the resin (gel coat) surface. Any coatings such as spray can clear lacquer, will work. The advantage for the PVA is that it is removable. Clear lacquer

sprayed over the surface will turn yellow in the sun.

- d) Gel coat mixed with clear Simtec – the clear partially thins out the mixture, makes the surface dry hard, and helps the gel coat flow out to avoid orange peel. Single coat – mix 1:1 gel coat and clear; multiple coats – first coat more gel, last coat more clear. Simtec is designed to be mixed with the gel, not used by itself as a topcoat. You also need to further thin this mixture as necessary (so it sprays similar to acrylic enamel car paint). See section 6. The advantage of this method is the possibility of a very smooth shiny surface. The disadvantage is the color intensity has been cut by the clear and will chalk or fade much faster than straight gel coat. This will not give a surface equal to that of a polyurethane finish.
- e) You may experiment with spraying a thinned gel coat without surfacing agent on a surface, and top coating with a polyurethane clear. This will give the longest lasting shiny surface but the clear is expensive. See Jim about this.
- f) Thinner: Normally a mixture of styrene and acetone, more styrene than acetone. Styrene is the correct thinner but does not flash off, leaving the surface wet for longer periods of time. Acetone will flash off but will dull the surface if used in too high a concentration. Normally, you would not use more than 10% acetone to thin gel coat; the rest of the thinner to be made up of other materials. Other thinners that may be used are MEK solvent or a good quality slow lacquer thinner. The total amount of thinner to add to the gel coat would be somewhere between 15% and 50% depending on who is doing the spraying. I have also used urethane reducer as a thinner. You may need to test spray the gel coat before catalyzing, mixing in measured amounts of thinner until you get the material to flow the way you want it to. You need to remember the amount of thinner for each gun load of gel, and mix the catalyst in when ready to spray. You should run some acetone through a siphon gun after each catalyzed cup load to partially clean out the gun but mainly to keep the older catalyzed material from setting off subsequent material too fast. A gravity gun does not need to be cleaned between loads. It is helpful if you have experience in spraying acrylic enamel paint. We want to emphasize that there is no set method of spraying. A lot of it will be experimentation

on your part until you get the experience necessary to do a nice job.

7: Splatter Finish: If a splatter or webbed finish is desired, you mix 2 parts of the colored gel coat with 1 part of clear webbing solution. You may vary the ratio of color to webbing solution for different effects. Pour approximately 1-2 inches into a standard spray gun; add the appropriate amount of catalyst, and spray. The coverage depends on how fast you move the gun. I put 2 coats on the inside of a Jeep with 1” of mixture in a spray gun. You do not need to add surfacing agent to this mixture, as the webbing solution will make the splatter tack free. For best results, it should be sprayed while the base coat previously laid down is still tacky. This is obviously not possible if you have to walk on the base coat surface to get at the areas to be webbed. If there is a period of a day or longer between the base coat application and the splatter coat, decrease the catalyst a little to let the mixture of the webbing solution stay liquid a little longer. One alternative method is to apply the base (gel) coat without surfacing agent, spray the webbing on from outside the boat, and then PVA the entire surface to make it dry tack-free. See section 3 above. Webbing solution is a lacquer-based material and can be used with lacquer paint, polyester-based resin and gel coat, and polyester-based urethane like Awlgrip. It will not work with acrylic enamels, water-based paints, or acrylic-based urethanes like Imron. What the webbing solution does is to make the material that would come out in a fan change to strings. Increasing the amount of webbing solution tends to give a blotchy or spotty surface rather than stringy. You will also gel more blotches if the spray gun is aimed at a surface rather than along it. A smaller gun tip will give a finer splatter.

8. Any coated surface should be protected by waxing with a good quality carnauba or equivalent wax. The surface should first be cleaned and polished out if dull. Sandpaper, compound, and polish cut a new surface whereas glazes fill fine scratches (swirl marks) but does not add protection. A new surface needs to be very smooth for the shine and to help avoid surface deterioration. Failure to put a wax or other protective coating on a polished surface will result in rapid surface deterioration.

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Gel Coat Usage

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