

## **FINISH AND UPHOLSTERY**

### **GENERAL**

It is customary to finish and paint an aircraft with the wing and all fairings removed. The external surfaces and cockpit/baggage areas are prepared at the same time; they may or may not be painted simultaneously. Upholstery is added last. Read this entire section before starting.

### **PREPARATION AND FILLING**

Most of the work involved with finishing the aircraft involves preparation of the surfaces to be painted. This is true of both exterior and interior (cockpit) surfaces. The materials you will be using will be wax and grease remover, micro balloons and epoxy resin, light-weight autobody filler, polyester or epoxy primer, and polyester glazing putty. These should all be available from local automobile paint suppliers. (If a good filler is unavailable contact Tri-R-Technologies for a supply of an excellent polyester filler called "Poly-Lux".)

Every section of surface that you work on will need to be cleaned with a wax and grease remover. Do not try to saturate the area to be cleaned, a dampened cloth rubbed over the area is all that is required at this time. Do not neglect this step.

Select those areas of the airframe that will require a large amount of filler and do these first. Areas such as those along the fuselage seams, tail seams, and around other external strips of reinforcing fiberglass tape are typical of those requiring a large amount of fill. These areas will be filled with dry micro and block sanded to shape.

Mix some micro keeping it as dry as possible to avoid weight build-up; remember that the wetter the micro the heavier the weight. Lightly sand the area to be filled using 100 grit sandpaper. Apply the micro with a plastic squeegee or metal trowel. Make the application thicker than you really need so that you can remove the excess without having to do a second application. After complete cure, block sand the micro to contour. It may be necessary to select a curved block a curve to properly sand in places like fillets. The sanding involved is hard work and time consuming but the final appearance depends heavily on this and subsequent fill / sand steps.

It is recommended that micro not be applied over cured micro because the resin has a tendency to bleed into the first layer of micro making it very hard to sand. If a second application of heavy filler is required proceed as follows. Mix a small amount of the polyester primer and squeegee it on. Allow the primer to cure, lightly sand, then switch to automobile body filler for the heavy filling. Minimize the amount of body filler used because it is heavy. Try to do all of your heavy filling on the entire aircraft (including cockpit and baggage areas) first so that the job will have some continuity.

After heaviest filling is complete sand the entire surface of the aircraft with 100 grit sand paper and blow the dust off. (You should have cleaned the surface with wax and grease remover prior to sanding.) From this step on you may desire to use a power sander such as a double action orbital finishing sander in some areas. Be careful and do not power sand too much in one spot because the heat from friction can damage the skin and also you can sand through a layer of glass.

After the entire airplane is roughed with the 100 grit paper mix a small amount of primer in a fairly flat container and using a squeegee apply the primer working it into the surface. This should be a thin coat because you are only trying to fill the weave of the cloth and any elusive pinholes that you might have. Let it cure. Using 120 grit paper block-sand away as much of this primer as you can without getting into the fiberglass. Remove the dust.

Now spray a medium coat of primer over the surface. After cure touch up any pinholes that show up with a polyester glazing putty from your auto paint supplier and start the task of sanding the entire aircraft. Again use block sanding techniques but reduce the grit of the paper to 220.

A third coat of primer may be required but keep it thin. Final sand the aircraft with 320 or 400 grit sand paper. Double check your work since the next step is painting. Use a good light for this inspection. You do not want to have to repair anything after you paint.

## PAINTING

**WARNING: Use eye and lung protection as recommended by the manufacturer of the paint you choose. Paints have caused serious health problems to homebuilders.**

Special considerations must be remembered when painting a composite aircraft. It is recommended that any structural surface be painted a light color (pastels or white) to minimize heating from the sun and subsequent structural deterioration. You can trim in just about any color unless your trim covers too much area. Think about it before choosing your paint. The darker the color the hotter the surface will be in the sun.

Everybody has their opinion on what paint is best. Attributes of various paints differ and the user should weigh the trade-offs regarding ease of application, ease of repair, need to rub, and expense. Most commercial automobile finishes are suitable providing that you assure that the paint provides UV protection. The reason for this is that if the paint does not function as an UV barrier the airframe may be damaged by sunlight and lose strength. Most new paints do exhibit UV qualities but be sure to ask your dealer. Listed below are several types of paint that you may consider:

Lacquers--- These paints are easy and forgiving to apply but many coats are required. Lacquer is easy to repair and damage can be completely hidden. It is rather brittle unless a flex additive is incorporated. It usually requires lots of rubbing after application.

Enamels ---Synthetic and acrylic --- These are rather inexpensive and more flexible than lacquers. They take fewer coats to apply. Additives are available to improve qualities such as dust-free time and cure time. They are not the best to repair.

Epoxy---This is a two part paint that isn't too hard to repair. It is more expensive than enamels and lacquers. All epoxy and polyurethane paints are somewhat expensive.

Polyurethane--- This is normally a two part paint and depending on the manufacturer may or may not be repairable. Some can be buffed but if applied right give a beautiful shine without rubbing. They also come in acrylic versions. Just remember to protect yourself when using these deadly chemicals.

Once having selected the paint that you will use follow the manufacturer's instructions. It is also wise to get some briefings and technical advice or hands-on assistance from an experienced painter.

U.S.Registered aircraft must be placarded and identified in accordance with latest FAA regulations. See FAR 45.22 and 25. Also refer to AC 20-27 regarding special markings and placards for experimental aircraft.

## UPHOLSTERY

Builders take great pride in the quality and general appearance of the cockpit. The greatest variable here is the upholstery. A superb looking upholstery installation can make a homebuilt aircraft look like a truly professionally-built machine. It often separates the champion from others during show plane judging.

An optional factory upholstery kit is planned. Builders are encouraged to contact the factory regarding it.