

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

Making Carbon Fiber Floor Panels For Your Super Cub



By utilizing Carbon Fiber, I was able to save almost 10 pounds over the standard hardwood floor!

With a bit of time and materials, I'll show you how you can achieve the same weight savings and improved floor visual appearance. Needless to say, though significantly lighter, the CF floor is far stronger as well.

There are a host of YouTube videos that demonstrate various aspects of the processes that I employed. At the end of the day, everything is really quite simple. You may have a few “do-over” steps as you learn, but I can assure you if I can do this anyone can. I’m no home hobby, handyman expert. This was my first experience with Carbon Fiber. If I can do it—anyone can!

There are several ways to “lay up” CF. The easiest is what is called a “hand” lay-up. This is where you are brushing or using a plastic squeegee (a complete parts list is at the end of this PDF).ⁱ I’ll cover hand lay-ups at the end of this PDF.

Next most efficient is to do what is called Vacuum Bagging. I used this process to create the floor panels. One needs a vacuum pumpⁱⁱ You’ll also need a two piece vacuum valve.ⁱⁱⁱ The primary advantage of vacuum bagging your products (e.g. floor panels) is that it yields a more optimal resin-to-material ratio, leading to a sturdier product. Further efficiencies can be achieved through what is called Resin, or Vacuum Infusion. I’ll leave it up to the reader to Google and compare these various methods^{iv}. Needless to say, doing a simple hand lay-up is likely far more than sufficient for strength for these floor panels. 😊 vacuum bagging is far more elegant!

You’ll need some type of release wax. There are many types on the market.^v There are other release agents available as well, but wax works and it is inexpensive.

You’ll need a smooth, flat surface for the layup. Glass is ideal. Smooth lexan or plexiglass works. The firm nature of Melamine board from your local hardware store works well too.^{vi}

The below picture shows me using a glass surface, sized initially by laying the wood floor template in place.



Again, there are a ton of “How to” vacuum bag videos on YouTube.^{vii} Many of you have likely seen the hugely popular Draco and now Snappy video series by Mike Patey—he uses vacuum bagging almost exclusively for his many carbon fiber projects.

Materials you’ll need include Carbon Fiber^{viii}, 1/8” Divinycell^{ix} or honeycomb^x (internal strength), peel ply^{xi}, low temp perforated material^{xii}, breather cloth^{xiii}, vacuum bag material^{xiv} and sealant tape^{xv}. Again, materials lists and sources at end of the PDF.^{xvi} You’ll also need gloves—these work well and are available.^{xvii} Of course resin is needed. I personally like to use West Systems epoxy resin^{xviii}. There are other resin types available.^{xix}

You can save some money on materials by substituting 3+ mil painters plastic drop cloth from your local hardware store for the vacuum bag film. You can also use Duct Tape in lieu of the sealant tape (Mike Patey shows these savings in his video series).

As seen in the following series of pictures, first measure the approximate size of a floor panel. Then cut out two layers of CF that are perhaps an inch wider/taller.

What I find works well is to use a separate, flat surface for the material preparation.

Lay your sealant tape around the perimeter of the glass (or melamine) surface. You can see the tape around the edges in the previous picture. Prepare the remainder of the surface by applying several coats of release wax.

Cut out and lay a measured portion of say .5 mil or other thin plastic drop cloth out. Lay your CF down. Mix your resin and pour on the CF. Sample picture below (from another project). Use your plastic squeegee to insure all the CF is well “wetted out” (you can see the color change). Then you can move the now resin infused CF to your glass or other prepared surface.

In the below picture you’ll note the use of blue painters tape on the carbon fiber. When measuring out your desired material size, it helps to mark the edges with such tape. Cut the material through the center of your marked tape. This prevents the edges from unravelling while you’re working on and moving the material around.

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)



Next cut out similar sizes of the Divinycell (or honeycomb), peel ply, perf film, and breather cloth.

The size you cut out of the vacuum bag material will need to be larger, as initially before applying the vacuum you need to allow for the increased required distance of the materials. Several inches wider is usually sufficient.

Set the Divinycell (or honeycomb) on top of the wetted out CF from the previous step.

Wet out and lay another piece of CF down on top of the Divinycell. Note: If desired you can use two layers of CF on the very bottom, then two layers here. Suggestion: Try one set up with one CF layer sandwiching the Divinycell and another floor panel set up using two layers each. Experiment and see which you prefer.

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

In order, lay the peel ply, perf material and breather cloth down. Use two layers of breather cloth for the small square where you'll place the base of the Vacuum valve assembly.



Don't forget to put the base of the vacuum valve assembly in place before you tape the vacuum bag film down! Been there done that!

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)



Secure the vacuum bag film in place. Using scissors or a razor blade, cut tiny slots where the (above picture) vacuum base (the orange piece) will fit into the metal base. "Screw" the vacuum fitting onto the base thru the vacuum bag film material.

Attach your vacuum motor to the assembly and start sucking a vacuum. If you have an air leak you'll be able to both hear it (probably) and see that you have less than say 20 atmospheres pulling on your vacuum motor. Diligently seal all leaks. Spray with soapy water if necessary.

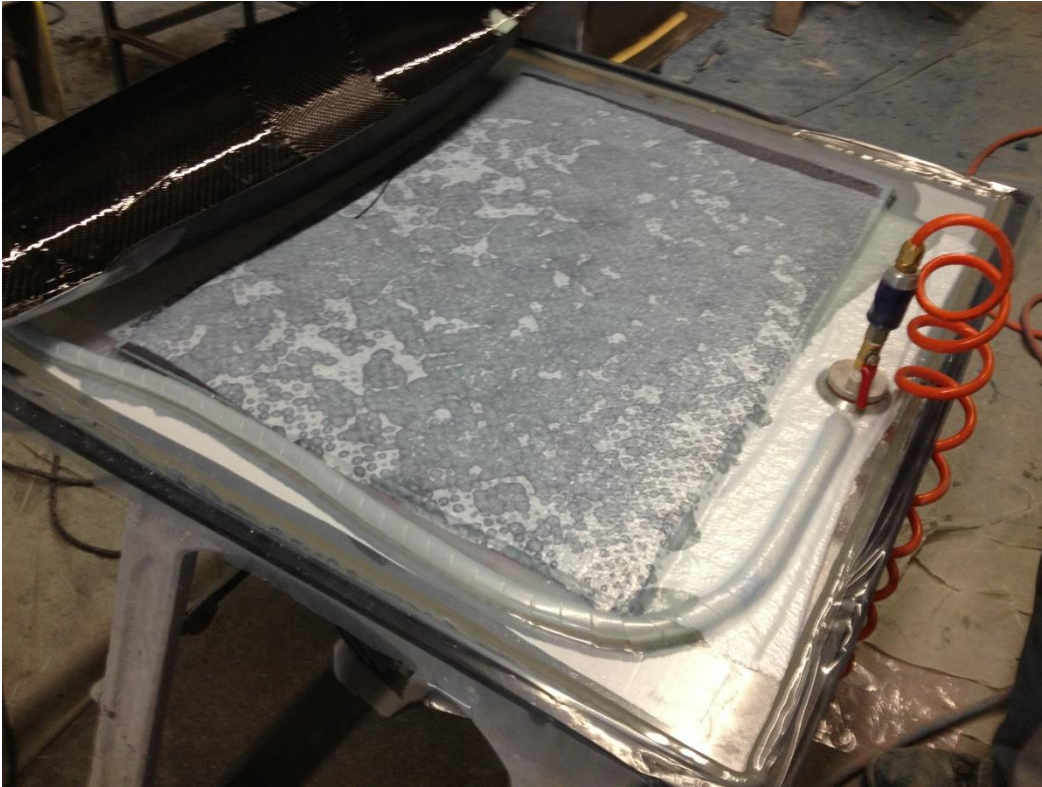
eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)



Once you apply a vacuum, you'll see excess resin being absorbed by the breather cloth. This is of course the excess resin that would otherwise be present in a hand lay-up process. This excess resin detracts from the strength and durability of the final product. Though more complicated and expensive (for materials), this is a good reason to use vacuum bagging if able.

The final product after about a 12 hour cure under vacuum:

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)



Remove the vacuum bag material and peel off all the layers of other materials. This is often a bit of a challenge. Persevere and the lowest peel ply later will release/pull away from the Carbon Fiber.

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

You'll then need to cut out the carbon fiber to match the specific floor panel. NOTE: Carbon Fiber dust is likely worse than asbestos for your lungs. You must use a respirator and ideally a good filtration system when cutting cured carbon fiber!



Use a die grinder, oscillating cutter, jig-saw cutter or other suitable device. We used a die grinder with a metal cut-off wheel in this case. Wear gloves throughout this process!

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

The cut out edges of the final floor panel will be VERY sharp. Use a sanding block with perhaps 80-grit sandpaper along the edges. Again, wear gloves throughout this process!

For grins, weigh your original wood floor piece and compare its weight to your new carbon fiber piece. As mentioned earlier, I did save 10 pounds overall.

Earlier in the document I mentioned that you can hand lay-up instead of vacuum bagging. Hand lay-ups are a LOT simpler. But, due to the far less than optimal resin-to-carbon fiber ratio in the final product, hand lay-ups are no where as strong. Your choice.

To do a hand lay-up you simply wet out the carbon fiber layer(s) as mentioned above. Sandwich one (or two) layers, then your Divinycell (or honeycomb), then another layer (or two) of carbon fiber then a peel ply later.

Use your squeegee to get out as much excess resin as is practical. Here's a picture of a hand lay-up on a Melamine surface.



Cut out the final product as illustrated earlier and there you go! Much simpler, though not as elegant!

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

Materials cost? If I had to guess, for the vacuum bag approach you're into everything for maybe \$1,500. For hand lay-up perhaps \$800. Just a wild guess.

I'm happy to answer any questions. Feel free to email me at ted@fly2ak.com or call me anytime 303-378-4987.

I have had people ask if one can simply purchase pre-made carbon fiber sheet. Yes, for instance:

Like here: <https://tinyurl.com/yadtt7vp>

Or here: <https://dragonplate.com/solid-carbon-fiber-sheets-plates>

Of course, there are likely many other places one could purchase pre-made sheets...

ⁱ 3M Hand Applicator

https://www.amazon.com/gp/product/B00657SFPE/ref=ox_sc_mini_detail?ie=UTF8&psc=1&smid=A1UMBRA5ZTB CX8

ⁱⁱ Excel 5 Continuous Run Vacuum Press System <https://www.veneersupplies.com/products/Excel-5-Continuous-Run-Vacuum-Press-System.html>. This is an great product that I have. There are others for sale here https://www.fibreglast.com/category/Vacuum_Bagging_Pumps

ⁱⁱⁱ Vacuum Valve assembly: <https://www.aircraftspruce.com/catalog/cmpages/vbvacvalve2.php?clickkey=31724>

^{iv} One reference on hand layup vs other composite techniques

<https://www.compositesworld.com/articles/fabrication-methods>

^v Release wax

https://www.fibreglast.com/product/Meguiars_Mold_Polish_Conditioner_and_Release_Wax_118/Mold_Releases

^{vi} Melamine board <https://www.homedepot.com/p/Veranda-Melamine-White-Panel-Common-3-4-in-x-4-ft-x-8-ft-Actual-750-in-x-49-in-x-97-in-461877/100070209>

^{vii} Vacuum bagging overview: <https://www.youtube.com/watch?v=URGXbpib1dY>

^{viii} Carbon Fiber:

https://www.fibreglast.com/product/3K_2_x_2_Twill_Weave_Carbon_Fiber_Fabric_01069/carbon-fiber-fabric-classic-styles

^{ix} Divinycell https://www.fibreglast.com/product/Vinyl_Foam_3_lb_Density/Foam

^x Honeycomb https://www.fibreglast.com/product/Nomex_Honeycomb_1562

^{xi} Peel Ply https://www.fibreglast.com/product/Polyester_Peel_Ply_583/Vacuum_Bagging_Films_Peel_Ply_Tapes

eAeroFab LLC

2630 S Harlan CT, Lakewood, CO 80227-4049

Phone 303-378-4987

ted@eaerofab.com

Check out our [Fly-2-Alaska Website!](#)

^{xii} Low temp Perf https://www.fibreglast.com/product/low-temperature-release-film-1580/Vacuum_Bagging_Films_Peel_Ply_Tapes

^{xiii} Breather cloth https://www.fibreglast.com/product/Breather_and_Bleeder_579

^{xiv} Vacuum Bag material https://www.fibreglast.com/product/1783-1785-nylon-bagging-film-below-300/Vacuum_Bagging_Films_Peel_Ply_Tapes

^{xv} Sealant tape <https://www.fibreglast.com/product/yellow-sealant-tape-00580/Tapes>

^{xvii} Gloves

https://www.amazon.com/gp/product/B07FW4YSSW/ref=ppx_yo_dt_b_asin_title_o08_s01?ie=UTF8&psc=1

^{xviii} West Systems Epoxy Resin https://www.westmarine.com/buy/west-system---105-a-epoxy-resin--323733?cm_mmc=PS--Google--GSC%3ENonB%3EProduct%2520Type--323733&product_id=323733&creative=108421551244&device=c&matchtype=&network=g&gclid=Cj0KCQjwoub3BRC6ARIsABGhnybSquPukXa0k0712n18BhpPZwnotlWRZEUia964XIfUXmwqZcpJf4kaAivKEALw_wcB

^{xix} Resin overview & other types: https://www.fibreglast.com/category/Epoxy_Resins