



Skinning a part with genuine Carbon fibre twill weave fabric is a viable alternative to the more complex and expensive process of moulding a carbon part, especially when cosmetics are the primary objective. Skinning a part with Carbon fibre will enhance its appearance and increase its strength. Due to the popularity of skinning, AMT Composites has packaged all of the required items into a convenient kit form that can be used to cover an original part (made from plastic or metal), with genuine aerospace grade 3K Carbon fibre and finish it to a high gloss. The materials supplied in the kit are capable of producing professional quality parts but as with any manual task there is some degree of 'black art' to achieving the perfect result, although nothing that perseverance and a dedication to detail will not overcome. The skinning kits comprises either 1 or 1.5 square meters of 3K twill weave Carbon fibre fabric, with sufficient black epoxy base coat and water clear epoxy top coat to create a glossy Carbon surface. The polishing cream, polishing pad and various grades of waterpaper will help you to achieve a high gloss surface with that sought after depth to the Carbon weave. Comprehensive instructions are included in the kit and will guide you in detail through the process of skinning a part.

## Instructions

### Step 1 – Clean

The first thing to do is make sure your part is clean and free of any grease or dust. Wash the part in warm soapy water and scrub to remove any dirt and grease, and then dry thoroughly.

**NOTE:** You can skin just about anything form metal, plastics, wood and even foams. So take care when cleaning and don't use solvents that can damage the original part.

## **Step 2 – Key the surface**

When clear and dry, you need to abrade the surface so as to provide a mechanical grip for the resin on the surface. Use the 120 grit sandpaper and sand thoroughly all over until the surface is dull and scratched. Then remove any dust.

## **Step 3 – Mixing the Base coat**

In order for the Carbon to stick to the part it is important to apply an adhesive layer (Base Coat) to the surface. This Resin is black so that the color of the part you are skinning does not show through the Carbon.

The Resin and Hardener are clearly marked. The mix ratio is 100 (PBV) parts by volume of Resin to 38 (PBV) parts by volume of Hardener. Syringes are provided in the kit for this purpose. Use the 50ml syringe for the Resin and the 20ml Syringe for the Hardener.

***Hint:** An easy way to draw the resins from the bottles is to drill a 3 mm hole through the lid and insert the syringe tip through the hole, then turn the bottle upside down and draw out the resin with the syringe. Spare tops are provided so you can seal the bottles after use. Or you can just store them upright on a shelf with the syringe left in the hole in the lid. It is also a good idea to mark the syringe with a permanent marker so that you don't use the incorrect syringes if you intend to use them later.*

If you have an electronic scale, it is preferable to use that. The mix ratio is 100:33(PBW) (i.e. 100 parts by weight of Resin to 33 parts by weight of Hardener)

**Safety First** – Wear the gloves provided!

Using one of the mixing sticks, mix the Resin and Hardener together in one of the paper cups provided. Mix thoroughly for at least a minute, scraping the sides of the cup often while mixing.

## **Step 4 – Applying the Base coat**

Using one of the laminating brushes provided, apply a thin coat of base coat to your part. Be careful to not build up excess pools in the corners as this will spoil the detail of the part you are skinning. Make sure the layer is as smooth and even as possible.

***Hint:** Brush in one direction only, dragging the brush at a flattish angle across the surface. The resin will self level, but if it's cold this may not happen. So work in a warm environment of at least 23 degrees.*

Now set the part aside and allow the base coat to get around 80% dry. Depending on the temperature the time can vary, so keep checking until it is firm but still tacky.

***Hint:** Rather than touching the resin on the part and leaving fingerprints on the surface, test the resin left in the cup. When the resin is still tacky, but does not stick to your finger, it is time to move on to the next step.*

*Clean your brush in acetone. It is a good idea to leave the brush submerged in the acetone until the epoxy has cured. This will ensure that any residual resin left between the bristles of the brush will dissolve into the acetone, before it dries hard.*

### **Step 5 – Applying the Carbon Fabric**

Now you are ready to stick the Carbon Fabric to the tacky base coat. In order to prevent contamination of the Carbon fabric, always wear the gloves provided. Do not touch the carbon with dirty or greasy hand, as this may affect the quality of the finished product.

Roll out your Carbon on a flat cutting table. Use newspaper under the carbon to keep it clean and dust free. Make sure the fibers align nice and straight and the pattern is not distorted.

Then cut a piece bigger than you need to cover the part. Use a pre cut template if necessary for complicated shapes. The Carbon needs to be at least 30mm bigger all around the edge. You will trim the cured excess off afterwards to create a nice sharp smooth edge.

***Hint:** Carefully pull a single “tow” of carbon fiber out of the fabric to create a line perpendicular to the edge. Then cut between the tows. This will help to minimize short loose strands of Carbon getting in your way.*

Being ever careful to avoid distorting the fabric, lift the carbon and drape the piece very lightly over the tacky base coat.

Depending on the shape, be careful not to press the carbon down incorrectly, as it is impossible to pull loose and re-align without distorting the weave and messing up the base coat.

Work from the centre outwards and carefully press the Carbon down onto the tacky base coat.

The Carbon provide is 2x2 twill weave that drapes fairly easily around curves, so manipulate it to follow the shape of your part. Try and avoid cutting the fabric at the corners, but if it is necessary, try and cut parallel to the “tows”. This is never easy and requires practice to get it correct.

Rub gently with your fingers to make sure all the Carbon is stuck down and there is no bridging of the fabric across recessed areas.

When all the Carbon is stuck down, set the part aside so the base coat has time to bond to the Carbon. An hour should do, but a bit longer if it's cold.

**Note:** The base coat needs to lose most of its tack before the top coat is applied.

## **Step 6 – Mixing and Applying the Top coat**

The Top coat has been UV stabilized to give the finished product a nice clear, non yellowing finish. The Resin has a purple color.

The mix Ratio is slightly different to the Base coat at 100:40(PBV) or 100:33.3 (PBW)

Mix the Resin and Hardener together as you did before, being careful to stir for at least a minute while scraping the sides of the cup often while mixing.

### **1<sup>st</sup> Coat**

Using a clean brush, apply the first layer of Top coat to the Carbon so that it saturates through and wets out all the Carbon. Do not apply it thickly as this will cause pooling in the hollows and runs down the vertical sides. There must be no excess shiny patches of resin and the Carbon must have a matt look all over with the fabric weave still be apparent above the resin but completely saturated.

*Hint: If it is cold, a hairdryer can be used to assist with warming the resin and thinning it sufficiently so it penetrates the Carbon. This will also help to drive out any tiny air bubbles that may have been mixed into the resin or that are trapped between the fibers.*

Allow this coat to dry to a firm tack, before applying a second coat.

Depending on temperature this may take several hours. Again, feel the left over resin on the sides of the cup and when it's tacky but firm, you can mix another batch and apply a second coat as you did before.

### **2<sup>nd</sup> Coat**

Mix a new batch of Resin and carry on as before. But this time aim to just cover the weave of the Carbon with a thin layer of resin. Make sure the fabric is completely covered. Then leave to dry to a firm tack!

### **3<sup>rd</sup> Coat**

Apply a third coat as before and make sure there is sufficient resin above the fabric so that you can flat out all the bumps with waterpaper after it is dry.

## **Step 7 – Allow to fully cure.**

In order to sand and polish you need to let your part fully cure. This will typically take around 8 to 16 hours depending on the temperature. The colder it is the longer it will take. And in winter, the temperature overnight can drop to near freezing which will prevent the epoxy from curing completely, so keep the environment warm. (A minimum of 18 degrees C)

## **Step 8 – Flattening and Smoothing the surface**

Using the waterpaper provided, start with the 220grip paper on a sanding block and plenty of water and gently flat the surface to remove any high points and

unevenness from the surface. Your aim is to get a flat surface at this stage. The shine comes later.

***Hint:** Keep the surface wet and do not apply too much pressure, but allow the waterpaper to cut away the highpoints on the surface. Rinse the paper often in water. If the dust start to turn black, you have gone too deep and will be sanding away the Carbon. Dry the part with a soft clean towel after each session and inspect to see if there are any spots that haven't been sanded before continuing onto the next grit size.*

*DO NOT BE TEMPTED TO SKIP ANY STEPS OF THE SANDING PROCESS.*

Once the surface is flat, you need to smooth it out.

Using **clean** water now and the 400 grit waterpaper, gently sand with plenty of water to remove the scratches left by the 220 grit. (It is not really necessary to use a sanding block for this, but clean water is a must)

Again dry the part with another clear soft cloth and inspect before changing to the next grit size. Change the water too!

Continue smoothing on up through the grits as before until you finally finish with the 1500 grit.

At this stage the part should start to look very good, especially when it's wet. However there is one more stage to go before you are finished.

### **Step 9: Final Finishing**

Dry the part and give it one final inspection and correct and blemishes that may be present. You may have to go back a few steps. But it's better to do it now than try and fix it later.

You have two options.

- A.** Spray the part with a clear lacquer varnish. Either automotive 2K or Clear Lacquer in a rattle can. For either option, apply a few thin coats, allowing drying between coats, rather than one thick coat. This will help to prevent runs on the surface.
- B.** Use the Polishing Cream with the Foam pad provided and polish to a perfect high gloss finish. Finish off with a new soft lint free cloth to remove any polish residue!

As mentioned earlier the Top Coat Epoxy Resin system has been UV stabilized, so should provide sufficient protection from the harsh African sun, but if you are concerned that it may not, you should then opt for option A above and use the 2K clear automotive paint as your final coat. You may also want to gently sand that once it has dried with the 1500 grit waterpaper to ensure a smooth surface and then polish with the cream.

---

Should you have any queries or require more products, please contact us at.

AMT Composites ----- [www.amtcomposites.co.za](http://www.amtcomposites.co.za)

Johannesburg 011 392 4232

Cape Town 021 511 2669

Durban 031 705 2034

Or visit one of our Retail outlets at:

<u>JHB</u>	<u>Cape Town</u>	<u>Durban</u>
6 Director Rd Aeroporto Spartan Ext 2 Kempton Park	Unite 3 & 4 M5 Freeway Park Cnr. Upper Camp & Berkley Rds Maitland	Unit 16 Power Centre 21 Laaner Street New Germany Pinetown

### **CONTENTS OF KIT**

1 sqm Carbon Fiber Twill weave  
250 gram Epoxy Base Coat Resin  
83 gram Epoxy Base Coat Hardener  
250 gram Epoxy Top Coat Resin  
83 gram Epoxy Top Coat Hardener  
5 x 250ml Cups  
10 x Tongue Depressors  
5 pairs Nitryle Gloves  
2 x 25mm Laminating Brushes  
2 x 60ml Syringes  
2 x 20ml Syringes  
50 gram Polishing Cream  
1 x Polishing Pad  
1 x 120 grit Waterpaper  
1 x 220 grit Waterpaper  
1 x 400 grit Waterpaper  
1 x 800 grit Waterpaper  
2 x 1500 grit Waterpaper  
4 x Spare lids  
1 x Instructions