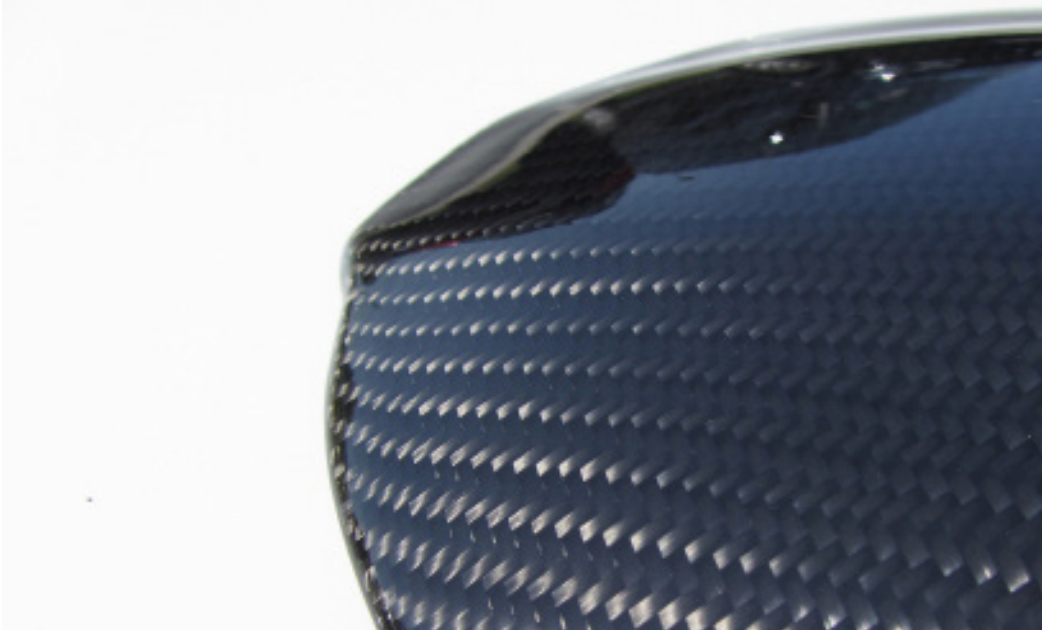
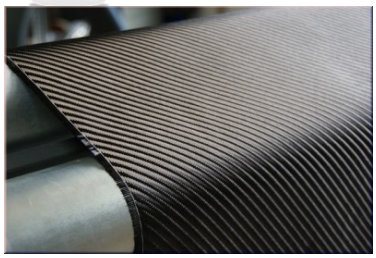
Carbon Surface Finishing



With a little craftsmanship, surface finishing isn‘t that difficult. The parts should be processed under optimal conditions, meaning the material and room temperature should be around 20°C. The work area should be dust-free, and you should always wear disposable gloves. You‘ll also need the following materials:

Materials

- Epoxy resin Epox4307/Hardener 313
- Carbon fiber fabric (in this case, 200 g/m² twill weave)
- Acetone or silicone remover
- Clear coat



Tools

- Brushes or laminating rollers
- Mixing cups and stirring sticks
- Sandpaper
- Knives and scissors
- Disposable gloves
- Digital scale

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Carbon-Sets

Surface Pretreatment

Plastic parts, fiberglass-reinforced plastic (FRP), metals, and wood should be clean, dry, and free of grease.
Remove dirt, solvents, and grease from the parts to be coated.
Then sand the surfaces with grit sizes ranging from 40 to 180. Cleaning and sanding improve the wettability of the parts, significantly increasing the adhesion and service life of the bonded joint. After sanding, remove the sanding dust with a vacuum cleaner or compressed air. Clean with acetone or silicone remover and allow to air dry thoroughly.

Always let parts treated with acetone air dry for 2–3 hours.

When working with trim parts (e.g., dashboard trim panels), be sure to note that some material may need to be removed beforehand so that the parts can be reinstalled with a precise fit later on.
Colored parts should be painted black or finished with two coats of carbon fiber, as otherwise the color may show through the fabric later on.

TEST THE ADHESION ON PLASTIC PARTS.

To avoid adhesion problems, especially with thermoplastics or plastics, you must or should conduct a test beforehand. You can also apply a primer (adhesion promoter) or an epoxy-resin-compatible paint. If you are unsure about unpainted plastic parts, consult a trusted paint shop. They can provide you with information and, if necessary, assist with annealing and painting the parts. Industrial molded parts may also contain residues of release agents; to remove these, anneal (heat-treat) the parts for 1–2 hours at 60°C beforehand.

For visible components exposed to temperatures above 45°C—such as automotive parts that can heat up to 75°C in the summer—tempering is absolutely necessary. Otherwise, discoloration and deformation may occur. For parts subjected to heat stress, we recommend our Epox 200G + Hardener 120L.

Preparation

You should gather all the materials and cut the carbon fiber to size. To do this, place the carbon fiber on the part to be coated, cut it out with enough excess, and set it aside. Alternatively, you can use a template.

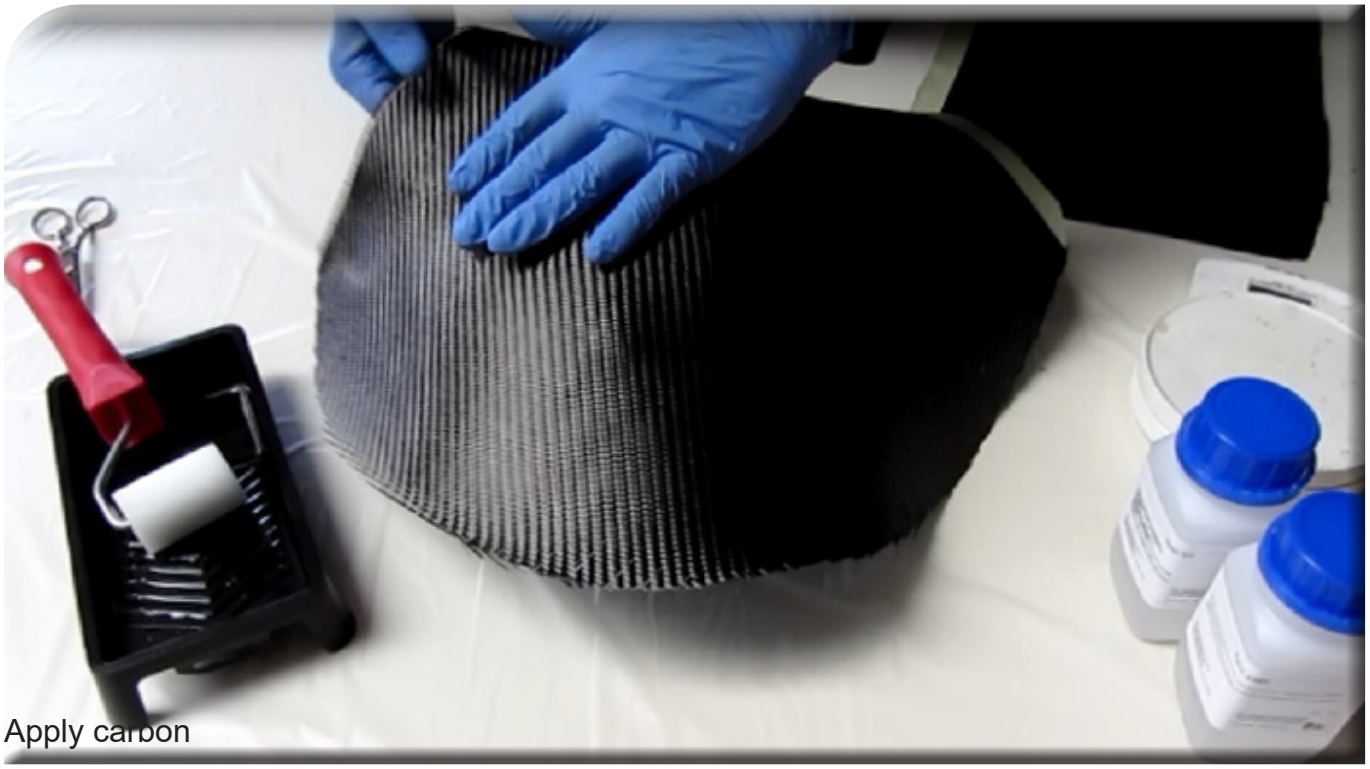
Resin Application and Laminating

The 200 g/m² carbon fiber has a resin consumption of approximately 240 g/m².
Calculate the surface area of the cut piece of carbon fiber and then the amount of resin required.

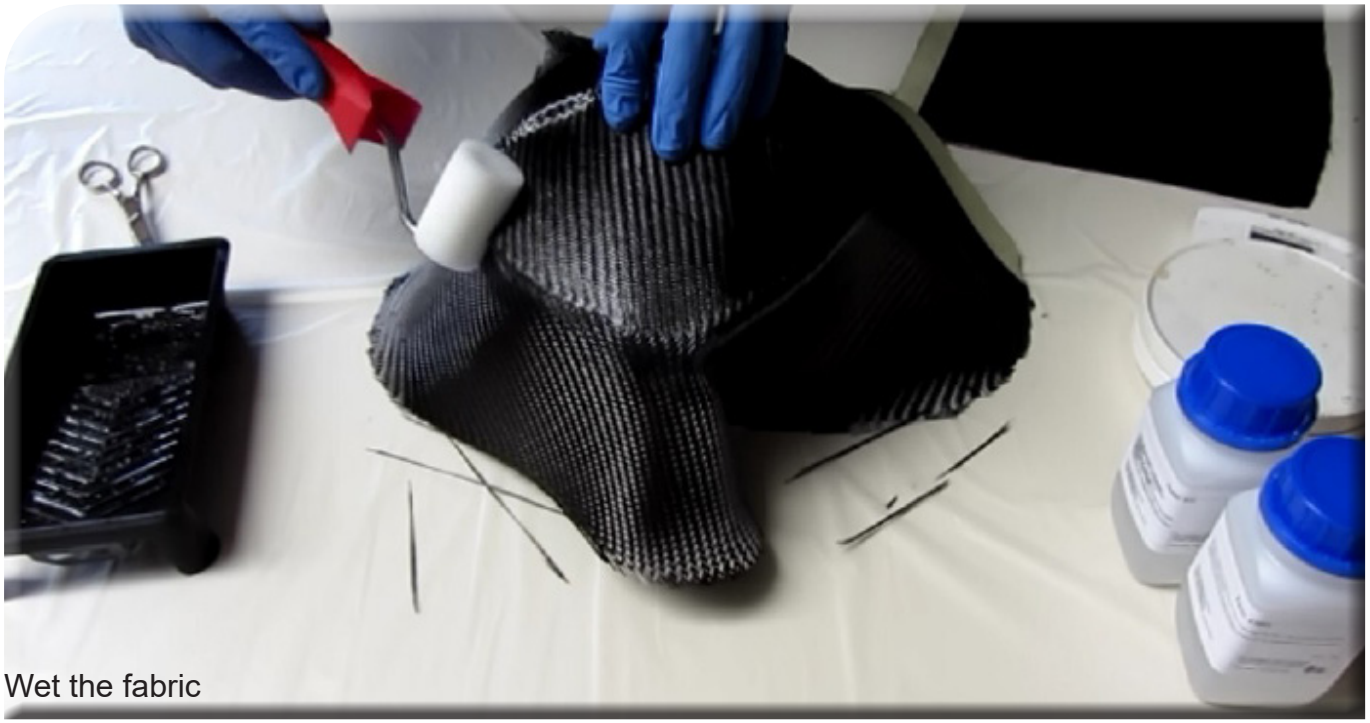
Example: A cut piece of carbon fiber has an area of 0.2 m², and the resin consumption for this fabric is approximately 240 g/m².
Calculate the amount of resin: 240 g × 0.2 m² = 48 g of resin required.
Keep in mind that brushes or laminating rollers also absorb resin, so add a flat rate of 10 g. You will therefore need approximately 60 g of resin; with a mixing ratio of 100:50, this amounts to 40 g of Epoxy Resin 4307 + 20 g of Hardener 313.
Mix the resin with the hardener and stir both components thoroughly.

It is essential to strictly adhere to the mixing ratio, which can only be achieved by weighing the ingredients precisely using a (letter-scale) scale. When mixing, you can only achieve a homogeneous mixture by transferring the mixture to another container and stirring slowly and thoroughly (Important: scrape the mixture off the sides of the mixing bowl).
After mixing, pour the resin/hardener mixture into a second mixing cup and mix it thoroughly once more.
Apply a thin coat of the mixed resin using a brush or a laminating roller, and carefully place the carbon fiber on top.

Resin Application



Apply carbon



Wet the fabric

Next, dampen the fabric and apply an even layer of resin.
Roll or dab from the center toward the edges to remove any remaining air trapped in the laminate. Work carefully so as not to displace the fabric. Now wait until the resin has set before applying another layer of resin. If the surface hardens faster than expected, wait 24 hours and sand it again (320-grit). Be careful not to sand down to the fabric; sand only the surface layer of the resin.

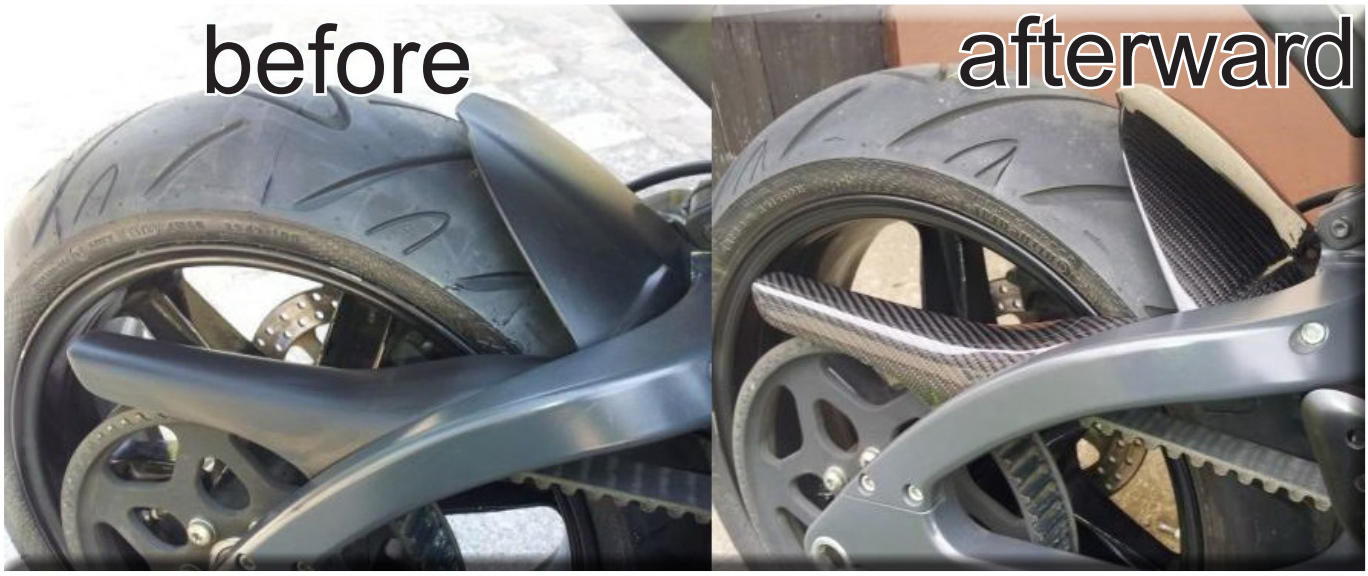
Cut off any excess carbon fiber with scissors, a blade, or a suitable tool, and carefully sand down the edges.

After sanding, remove the sanding dust with a vacuum cleaner or compressed air, and apply another coat of resin. Any openings or screw holes that, due to the design, cannot be covered with carbon fiber should be cleaned out and sanded down with a blade or suitable tool before applying the clear coat.

CLEAR COAT

Once the laminate has fully cured, sand the surface with 400-, 600-, and, if necessary, 800-grit sandpaper.
We recommend applying at least two coats of our Acryl HS Clear Coat Ultra Plus. This VOC-compliant clear coat is particularly user-friendly, easy to apply, and stands out for its low coverage rate.
The first coat can be applied with a brush; to do so, mix the clear coat with hardener in a 2:1 ratio and stir both components thoroughly. Example: Mix 30 g of clear coat with 15 g of hardener.

Apply the mixed clear coat and let the parts air dry for 8–10 hours. For oven drying, set the object temperature to 60–65°C for 20–40 minutes. Once the clear coat has cured, sand the surface with 800-grit sandpaper. If there are still minor imperfections, you can apply another coat with a brush.
The final coat of clear coat should be applied by spraying, using a spray nozzle between 1.2–1.4 mm and a spray pressure of 3.5–4 bar.



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