

Laminating a panel with polyester resin and fiberglass mat.

With a little craftsmanship, the manufacturing process isn't that difficult. A panel should be built under optimal conditions, meaning the material and room temperature should be around 20°C. A dust-free environment and, if necessary, a dust extraction system should be available. You'll also need the necessary materials. For a fiberglass-reinforced plastic (FRP) mold, you'll need the following:

Materials:

- Gelcoat SG
- DIEPAL or Allnex polyester resin
- Fiberglass mat 150 g/m²
- Fiberglass mat 300 g/m²
- Tear-off fabric
- Formula Five release wax
- Acetone



Tools and Resources:

- Digital scale
- Paintbrushes and paint rollers
- Mixing cups and stirring sticks
- Knives and scissors
- Dosing syringe
- Disposable gloves
- Respiratory protection



Siehe auch unsere Materialliste mit Artikelnummern und Link auf Seite 8.

Separating layer:

Apply Formula Five release wax sparingly with a cotton cloth and let it sit for 10 minutes. Polish with a clean cotton cloth. Depending on the shape, apply up to five coats, let it dry for a few hours, and then polish again.



Laminating:

You should have all the materials ready and cut or tear the fiberglass mats to size. To calculate how much gelcoat is needed, you can weigh a piece of fiberglass mat cut to fit the mold.

Example: The cut piece of 300 g/m² fiberglass mat weighs 200 grams.

Calculate the surface area: $200\text{g} : 300\text{g/m}^2 = 0.67\text{m}^2$

Recommended gelcoat application rate: 500–850g/m².

Calculate the amount of resin: $850\text{g/m}^2 \times 0.67\text{m}^2 = 569.5\text{g}$

With a hardener addition of 2%, this would be (rounded):

550 g of gelcoat and 11 g of hardener

Mix the gelcoat with the hardener and transfer it to another container. This prevents resin that hasn't been thoroughly mixed from remaining at the edges and bottom of the first container.

Apply the mixture to the glass plate, always spreading it in one direction whenever possible to avoid air pockets. Allow the resin to set until the surface is still slightly tacky but no longer forms strings. The best way to test this is with the finger test (wear gloves!). To achieve an even surface, it is advisable to apply two coats, allowing the first coat to set until it passes the finger test. (See Fig. 2)

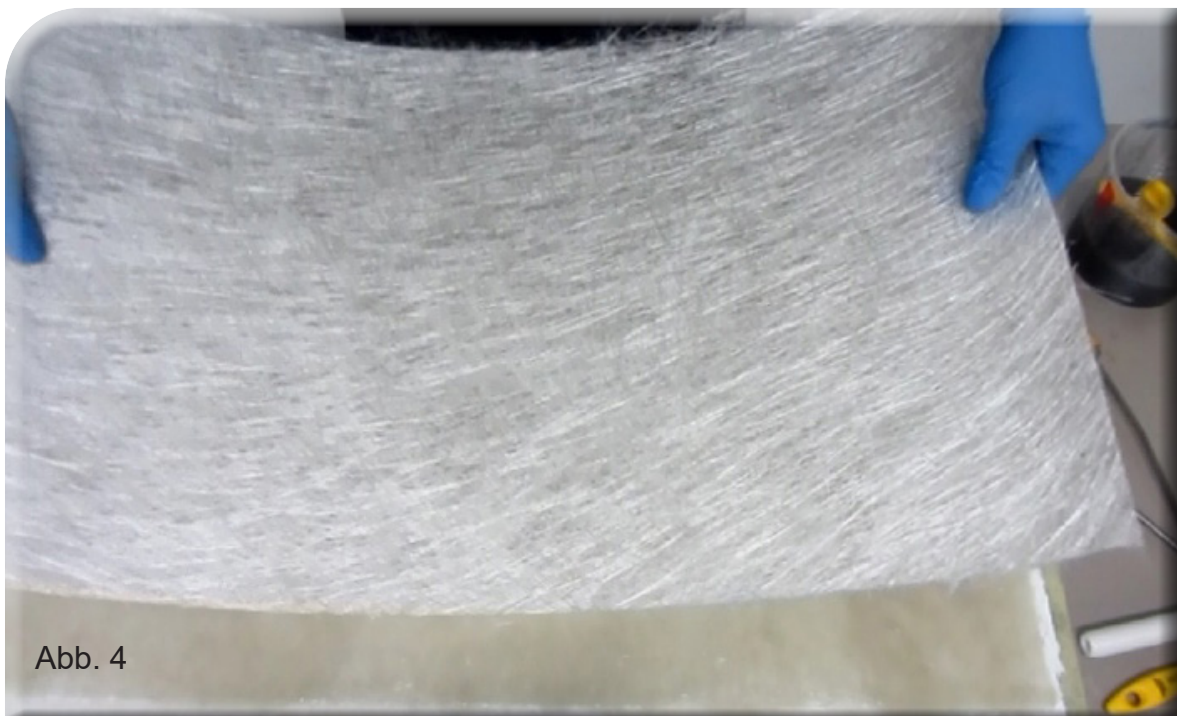
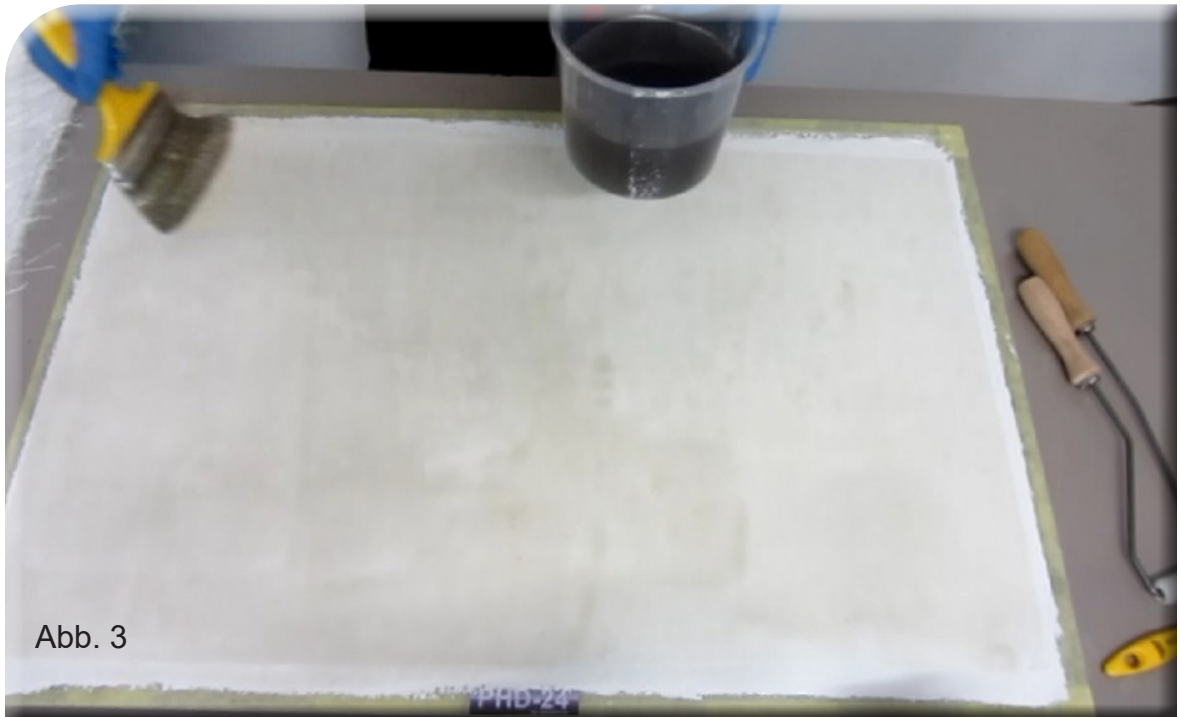


Abb. 2

After applying the second layer, continue laminating wet-on-wet! Mix the polyester resin with the hardener.

For the amount of resin, you can use the following rule of thumb:
Total weight of fiberglass x 2.5 = amount of resin.

Apply a coat of resin to the mold, lay down the first layer of 150 g/m² fiberglass mat, and saturate the fabric. Using a brush, spread and dab from the center toward the edges to remove any air still trapped in the laminate. (See Figs. 3, 4, and 5)



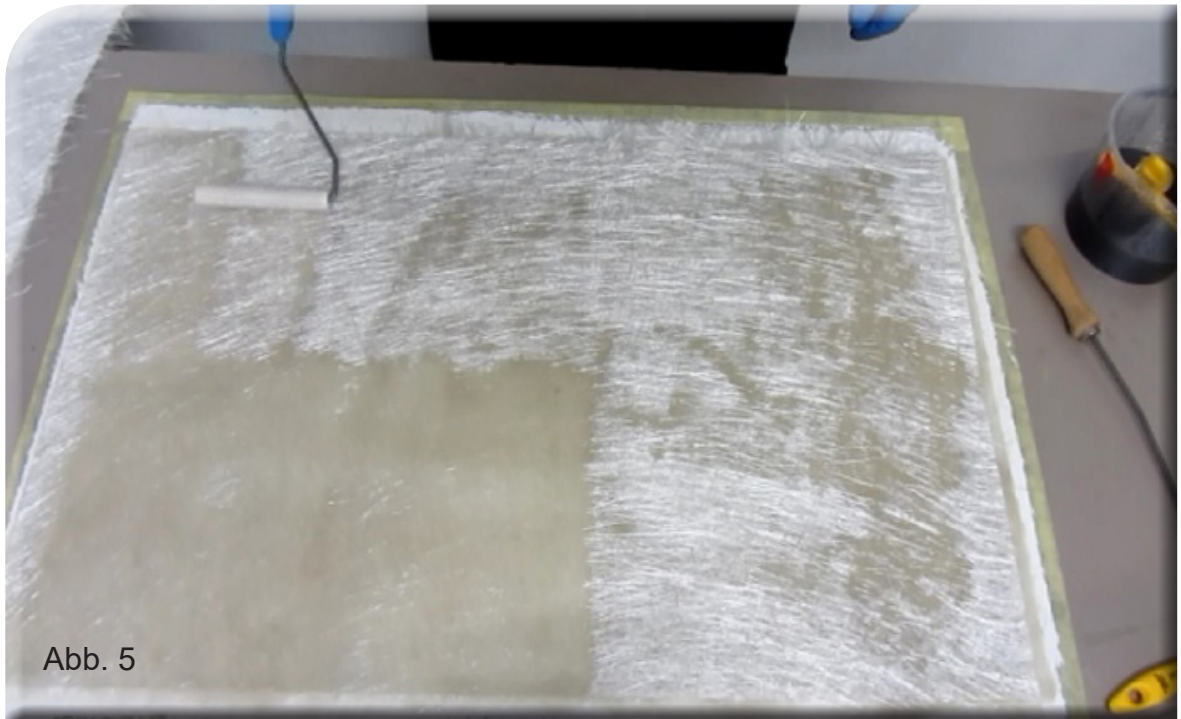


Abb. 5

If the fiberglass layer appears transparent, it is ideal; if white spots are visible, apply a small amount of resin with a brush. Alternatively, you can use a de-airing roller. Continue working with a 300 g/m² fiberglass mat and repeat the steps until the second-to-last layer. Approximately 4–6 layers of 300 g/m² fiberglass mat should be sufficient for a 5 mm-thick panel. The number of layers depends on the panel's intended application.

Alternatively, you can replace 300 g/m² fiberglass mats with 450 g/m² or 600 g/m² mats to achieve a certain material thickness more quickly.

To quickly produce thick laminates with high mechanical properties, you can also work with complex fabrics, biaxial fabrics, roving fabrics, etc.

Always alternate between roving fabrics and fiberglass mats to avoid glass fiber pockets.

Fiberglass mats should always be impregnated from the bottom up.

Make sure there is always enough resin on the surface and that the mat is impregnated from the bottom layer after it is laid in place.

The final layer should be lightly impregnated with resin and have a matte sheen after drying.

If the surface is shiny, too much resin has been applied; you can correct this by using a peel-off mesh. (See Figs. 6 and 7)

After removing the release fabric, the component is completely dust-free, clean, and has a uniform, rough surface texture.

This saves you the trouble of sanding and eliminates the need to clean up sanding dust. (See Fig. 8)

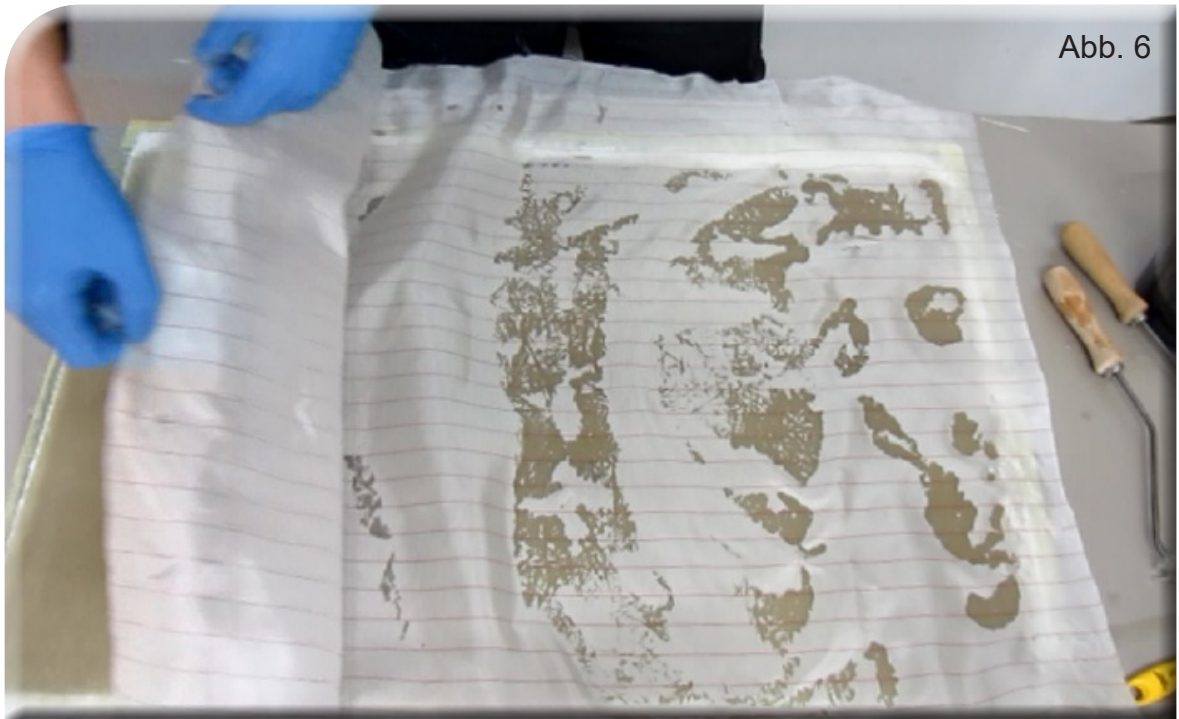


Abb. 6

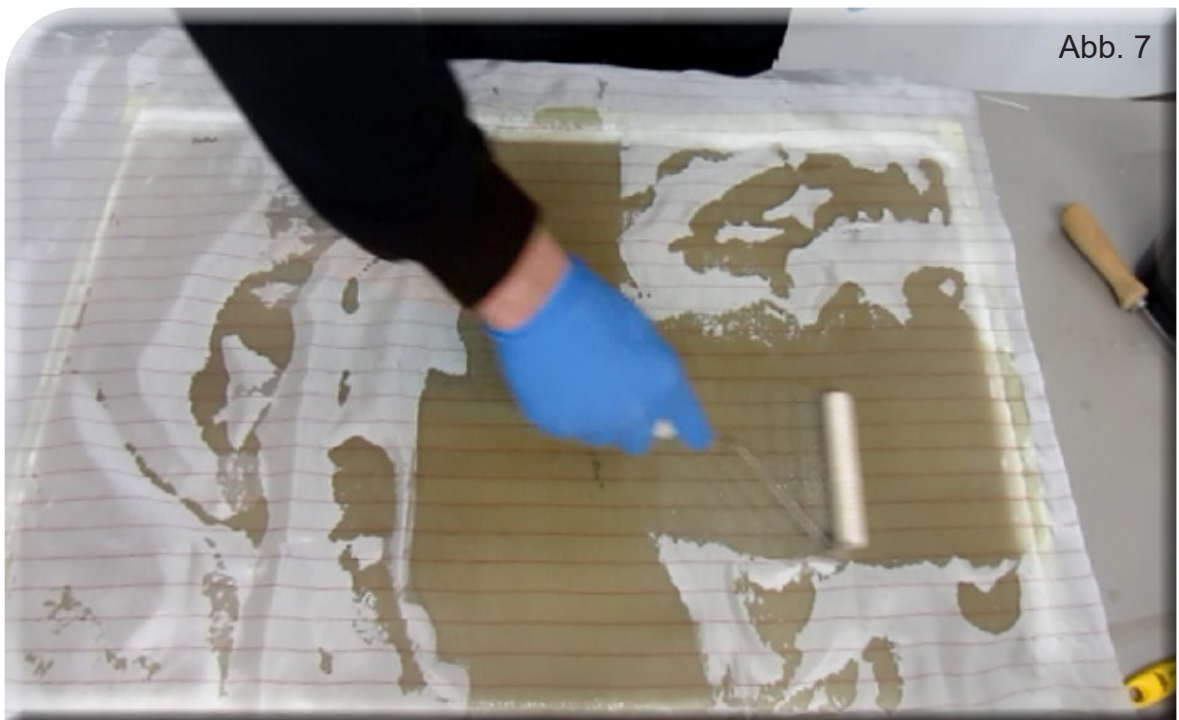


Abb. 7



Abb. 8

Demolding:

The plate should cure for at least 24 hours at 25°C.

You should be able to pry the panel loose using plastic or wooden wedges.

(See Fig. 9)

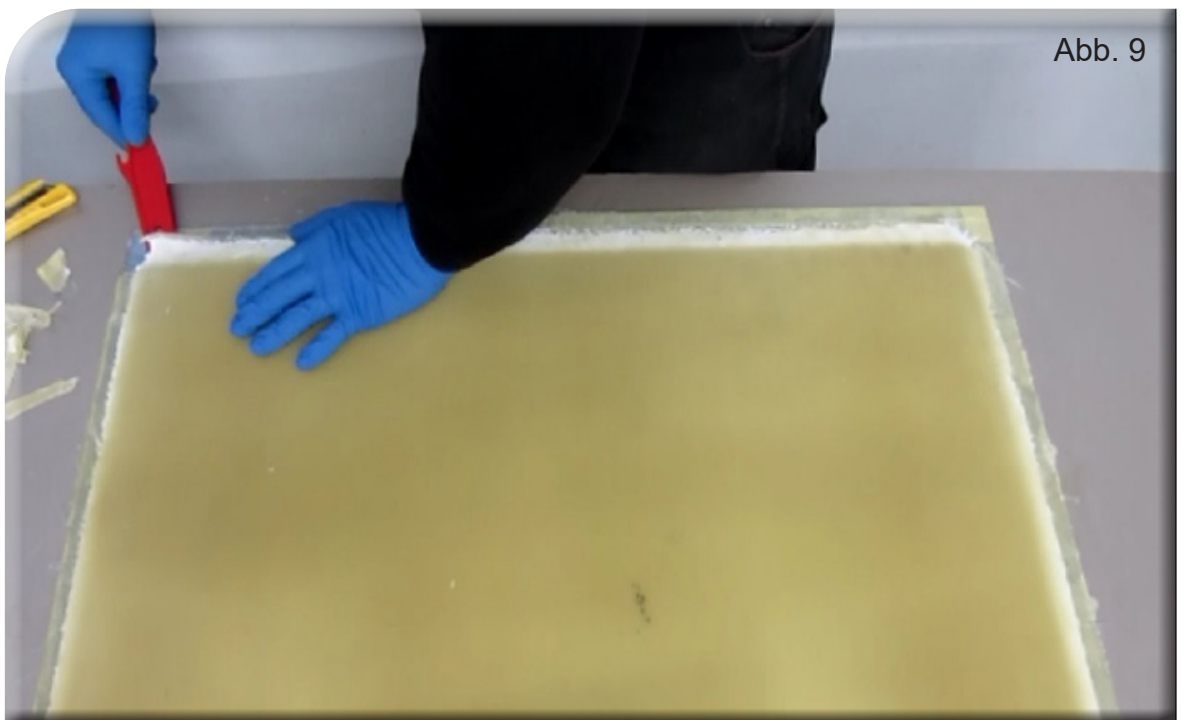


Abb. 9

Abreißgewebe hinterlässt eine gleichmäßige raue Oberflächenstruktur, somit ist ein optimaler Untergrund zum weiteren Laminieren, Versiegeln oder Kleben gegeben.



Abb. 10

After demolding (see Fig. 11), you can trim the panel, paint it if necessary, or polish it to a high gloss. Be sure to use silicone-free polishing compounds for this. Small imperfections in the surface can be filled with a small amount of gelcoat and smoothed out by applying a strip of Scotch tape. Other imperfections can also be corrected with sandpaper (grit 600 to 2000). When sanding or polishing, be careful not to generate localized heat.

Good luck



Abb. 11

List of Materials:

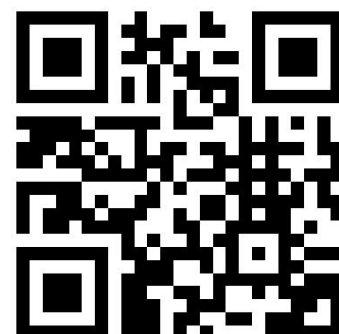
Artikel	Artikelnummer mit Link
Gelcoat SG	13000-20-V
Polyester resin DIEPAL 2140 or Allnex 4627 BEMT/56	D-17010-V A-10010-V
Fiberglass mat 150/ m ²	20150-P
Fiberglass mat 300/ m ²	20300-P
Release Wax Formula Five	32080
Acetone	35120-V
Digitale scale	76083
Laminating brush	70030-V
De-airing roller	84050-V
Mixing cup	71001
Dosing syringe	71903
Mixing sticks	71010
Knife (Cutter)	85001
Scissors	85010
Disposable gloves (M)	74010
Respirator mask FFA1P2 R D	39102

If you have any questions, please don't hesitate to contact us.

Our team will be happy to assist you.

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