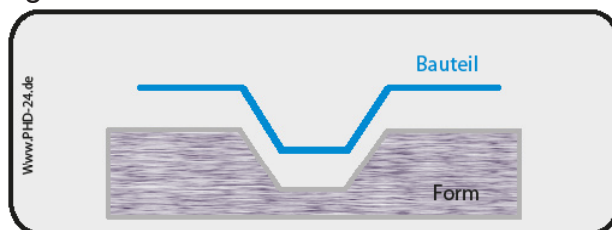


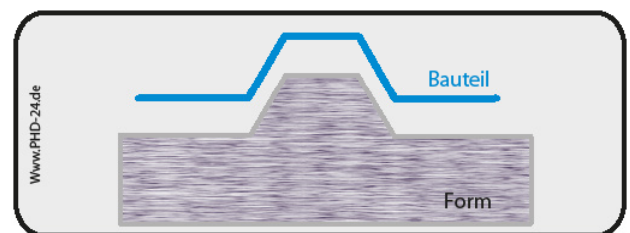
Mold Making with Epoxy Resin

With our starter kit, you can create a positive or negative mold from a master model. With a little craftsmanship, making a mold isn't that difficult. A mold should be built under optimal conditions, meaning the material and room temperature should be around 20°C. A dust-free environment and, if possible, a dust extraction system should be available.

The negative mold is used for smooth exterior surfaces, e.g., visible parts such as model-making or car bodies



The positive mold is used for smooth inner surfaces, such as containers or pools.



Items included in our set:

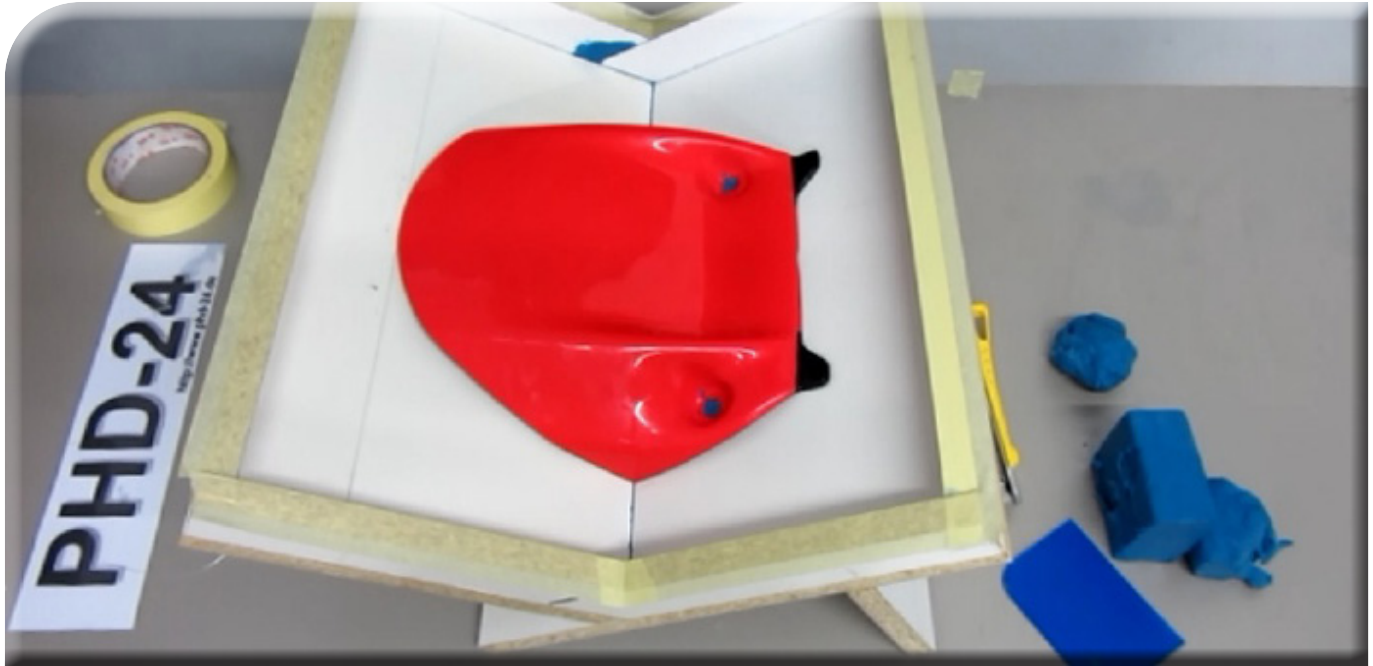
- 1 kg Epoxy Resin 4307 + 0.5 kg Hardener 1208-F
- 250 g Epoxy Resin Gelcoat 4300 + 138 g Hardener 390
- 100 g Color Paste RAL 9005 Black
- Formula Five Release Wax
- 500 ml Acetone
- 2 m² roving fabric 300 g – twill weave
- 1 m² glass filament fabric Finish 163 g – twill weave
- 100 g glass fiber chippings
- 100 g microflocks
- 25 g thixotropic agent
- Laminating set 3 (2x nylon-polyamide rollers 100 mm + clamping bar + tray)
- 5 x 100mm nylon-polyamide rollers
- 5 x 600ml mixing cups
- Brush set (2x30mm / 2x50mm)
- Metal disc de-airing roller 15x50mm
- 10 x wooden stirring sticks
- 10 x protective gloves
- Scale
- Scissors 11"



Item Number: 10002

Master Model

In these instructions, we assume that a master model is available.



You can also make a master model out of wood, plaster, modeling clay, aluminum, or fiberglass-reinforced plastic.

Preparations

The surface should be dry, clean, and free of grease before treatment. Molds made of porous materials (e.g., foam, plaster, and wood) must first be sealed with a varnish or similar coating. A suitable surface finish on plaster can be achieved with appropriate primers, sealers, and varnishes. In general, two-component varnishes (polyurethane, epoxy, or acrylic-based) have proven to be the most effective. First, gather all your materials and cut the fabric to size. Ensure the work area is dust-free and dry. The application temperature should not be below 10°C. Ideally, the ambient temperature, the temperature of the components, and the surface temperature should all be 20°C.

Keep children and pets away.

Follow safety precautions; we recommend wearing gloves, a respirator, and safety goggles. For more information, please refer to the safety data sheets on our website.

Remove dirt, solvents, and grease from the mold.

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



Separating layer

For an optimal release layer, we recommend the following structure:

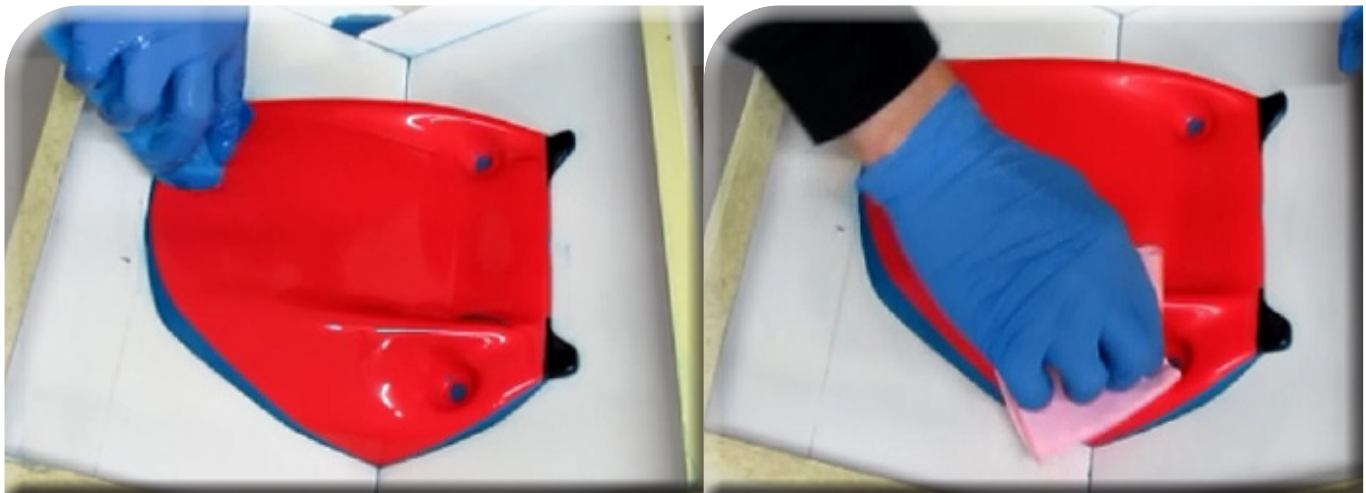
Apply a thin, even layer of FORMULA FIVE® MOLD RELEASE WAX to the mold surface using a clean, dry cloth or applicator pad.

Wipe off any excess wax with a clean, dry cloth.

Once the wax layer is fairly dry (approx. 10–12 minutes after application), polish the waxed surface by hand with a clean cloth until it has a high gloss and the mold surface is smooth and free of streaks or smudges. A polishing machine may also be used.

To ensure complete coverage, 2–3

coats should be applied before first use. Vary the rubbing motions when applying each coat (e.g., bottom to top, right to left, in a circular motion). Wait at least one hour after applying the final coat of wax before beginning the lamination process.



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Gelcoat layer

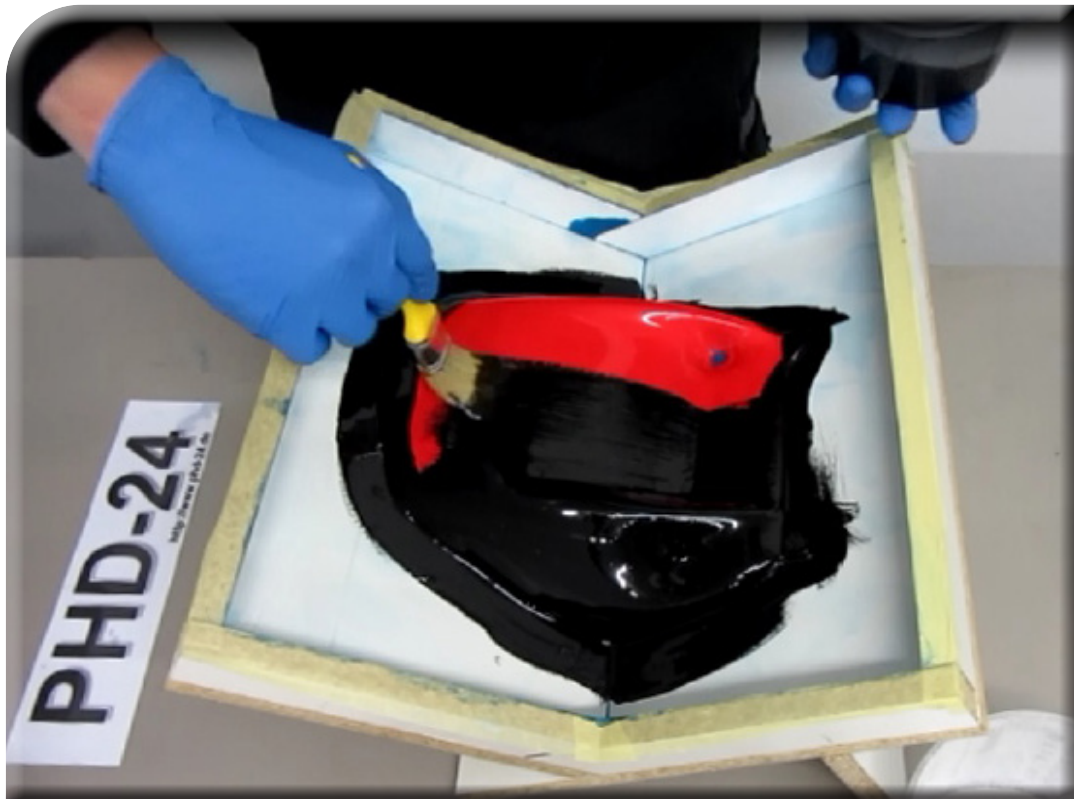
Epoxy Gelcoat 4300 + Hardener 390

- Mixing ratio: 100 parts / 55 parts (100 parts resin / 55 parts hardener) by weight!
- Application temperature: 10°C or higher
- Working time (at 20°C): approx. 40 min

When working with epoxy resin, you should measure the resin and hardener precisely using a scale; the mixing ratio must be strictly adhered to! For epoxy resins, the application temperature should be between 20–30°C, not below 10°C. The relative humidity should not exceed 70%. We also recommend decanting the mixture to ensure a homogeneous blend. After adding the hardener, mix in 20% black color paste.

To prevent the mixture from running off very steep surfaces in the mold, you can add up to 5% thixotropic agent to the resin/hardener mixture.

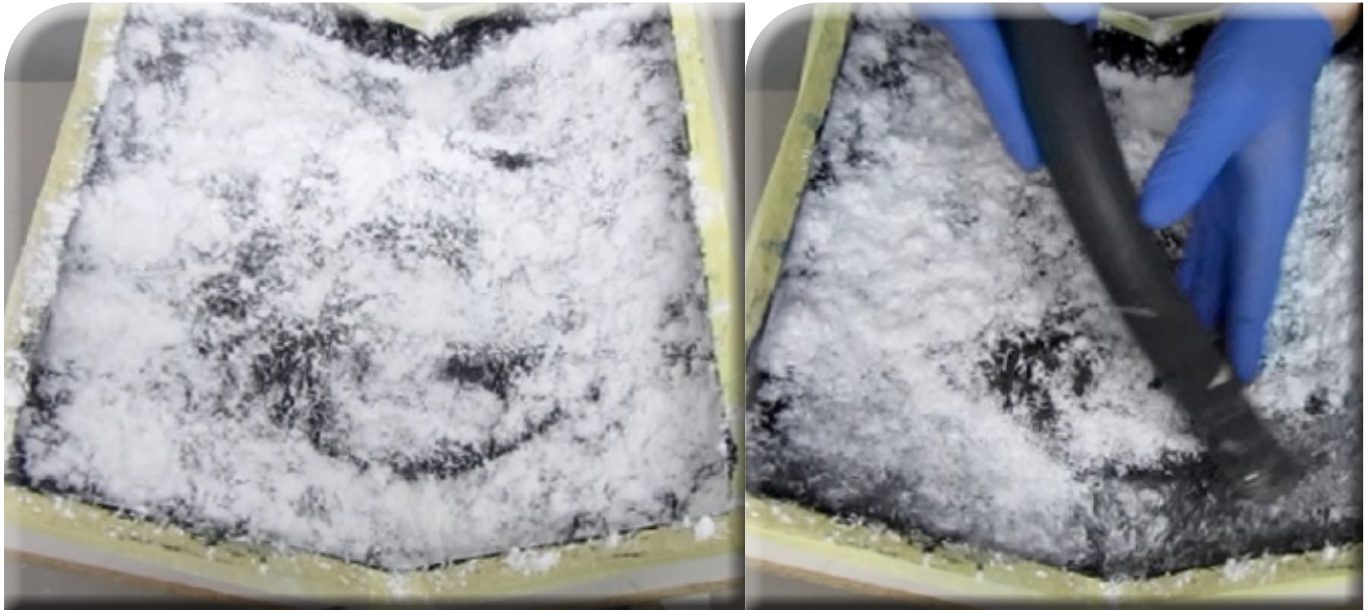
To prevent the mixture from curing too quickly, the mixed resin and hardener should be placed in a shallow container, such as a paint tray. Thanks to this large surface area and shallow storage, the mixture will not heat up as quickly.



When performing the “finger test,” the resin should be mixed to the point where the surface is still slightly sticky but no longer stringy. (Wear gloves!)

You can then apply the second coat of gelcoat.

Now sprinkle on a mixture of equal parts fiberglass chips and microflocks.

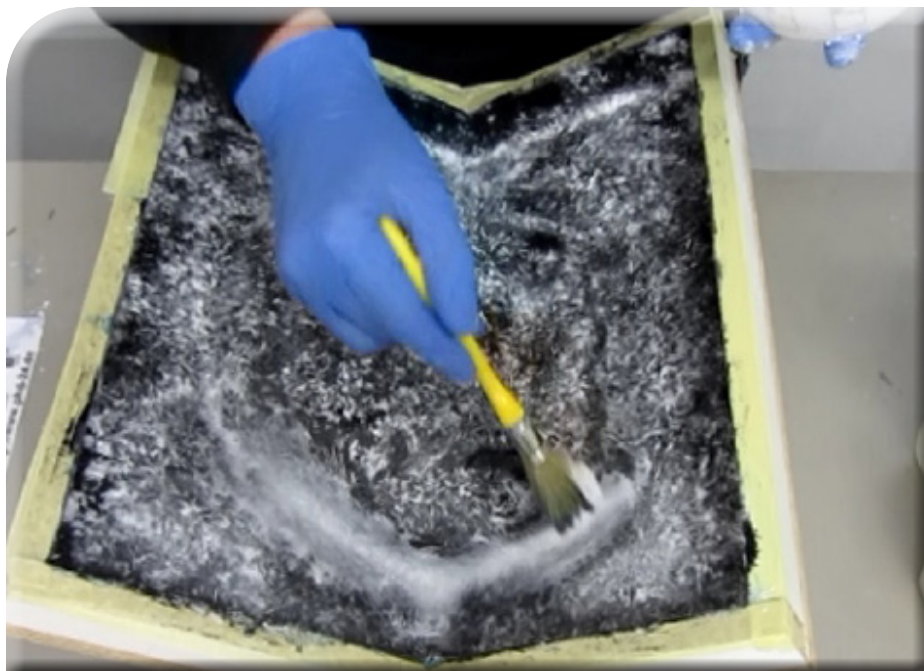


Once the resin has set again, you can carefully vacuum up the excess glass fiber shavings and microflocks with a vacuum cleaner without damaging the gelcoat layer.

Reinforce Edges

Mix a small amount of Epoxy Resin 4307 with Hardener 1208-F to reinforce the edges. Add equal parts fiberglass chippings and microfibers to the resin until a thick but spreadable mixture forms. Apply this mixture to the edges so that the radii of curvature are large enough for subsequent layers of fabric.

- Mixing ratio: 100 parts / 50 parts (100 parts resin / 50 parts hardener) by weight!
- Application temperature: 10°C or higher
- Working time (at 20°C): approx. 40–45 min



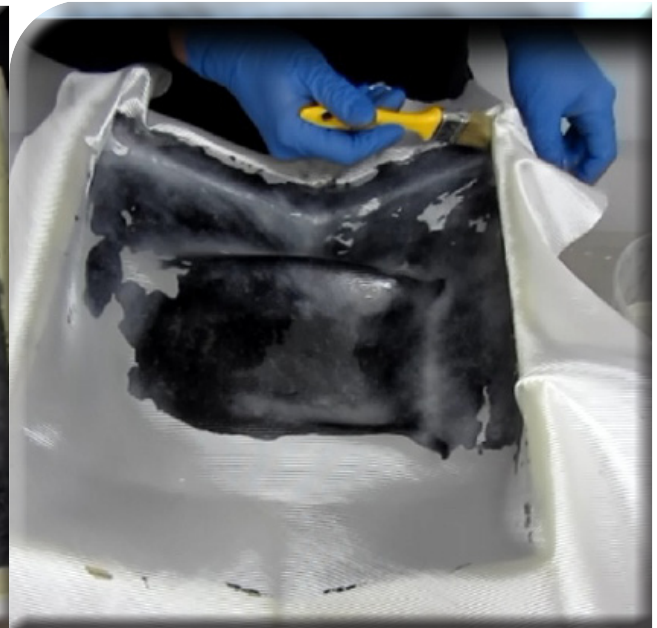
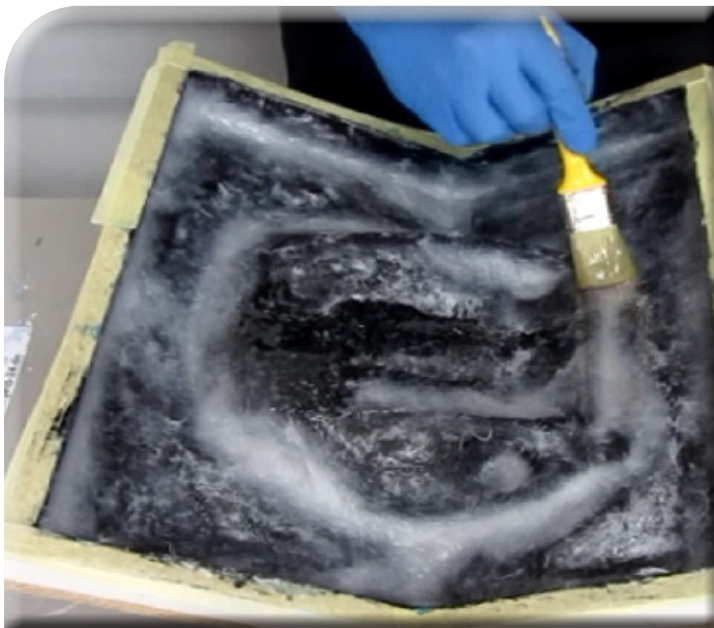
Laminate

Mix Epoxy Resin 4307 with Hardener 1208-F.

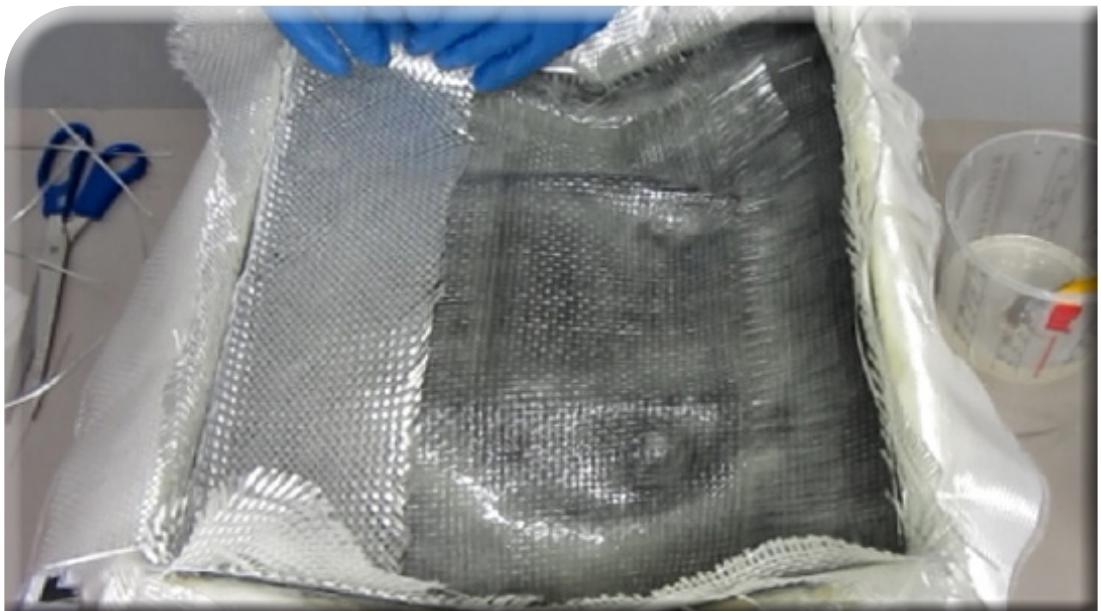
The surface should still be slightly tacky.

Apply a coat of resin to the mold, lay down the first layer of Finish 163 g/m² fiberglass fabric, and saturate the fabric. Using a brush, brush and dab from the center toward the edges to remove any air still trapped in the laminate. If the fiberglass layer appears transparent, it is ideal; if white spots are visible, apply a little more resin with a brush. Alternatively, you can use a laminating roller.

Now use the de-airing roller to roll out the air from the inside toward the outside.



If necessary, apply a small amount of resin, lay down a layer of 300 g/m² roving fabric, and vent the layer again. Continue working with the roving fabric and lay down additional layers.



The number of layers depends on the future requirements for the mold. A mold should always be laminated thicker than the final part it will produce, so that a drying part does not warp a mold that is too thin due to shrinkage. Alternatively, you can use roving fabric with a weight of 580 g/m² or 800 g/m² to achieve a certain material thickness more quickly.

You can also work with biaxial fabric, filament fabric, etc.

Make sure there is always enough resin on the surface and that the fabric is saturated from the bottom layer after it is laid down.

A laminate should have a matte sheen after drying.

Unmolding

The mold should cure for at least 24 hours at approximately 25°C. It can be removed from the mold after 24–48 hours, and it reaches its final hardness after 7–10 days.

The mold should be able to be removed from the master mold using plastic or wooden wedges.



After demolding, you can trim the mold and, if necessary, polish it to a high gloss. You should use silicone-free polishing compounds for this. Minor surface imperfections 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 (600 to 2000 grit). When sanding or polishing, be careful not to generate localized heat.

This information is based on our current knowledge and experience. However, we provide it without any obligation. It is intended to inform you about our products and their possible applications and is therefore not intended to guarantee specific product properties or their suitability for a particular purpose, nor does it constitute complete instructions for use. We reserve the right to make changes in line with technical progress and operational developments. The use and processing of our products in accordance with our instructions take place outside our control and are the sole responsibility of the user.

The user remains responsible for verifying the suitability and possible applications for the intended purpose. We welcome suggestions for improvement and reports of errors.

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