



Recommended Procedure for Making Plastic-Faced Plaster Molds

Plastic-faced plasters (PFP) are low-cost, fast-build tools made up of an epoxy working surface backed up by tooling plaster. A PFP combines the advantages of both materials. Plaster is a low cost, fast setting and dimensional stable product. The epoxy face provides a non-porous, moisture free, durable and sandable surface.

PFPs are primarily used as intermediary or disposable one-use tools. They can be used as short-run production tools in ovens and autoclaves if proper materials and methods are used in construction. There are many methods of making a PFP depending upon the end-use requirements. This procedure outlines a method for making a high-quality PFPs, which can possibly be used for many production cycles.

Required Materials

Mold Release Wax – PA0801

Epoxy Surface Coat – PT1105 A/B1

**High Temp Epoxy Surface Coat – PT1995 A/B*

Epoxy Laminating Resin – PT2114 A/B

**High Temp Epoxy Laminating Resin – PT2848 A/B*

Fiberglass Tooling Cloth – style 7500 (10 oz.)

Tooling Plaster – Ultracal or Densite

Metal Reinforcement – black pipe or square tubing

Hemp – fine grade

Laminating Brushes – PTM&W Brush or 2” nylon brush cut to ¾-inches long

Mixing containers for plaster and epoxy

Gram Scale, Scissors, Stanley Knife

*These materials should be substituted if the PFP is to be used at or above 250° F.

Preparation of Master

- Master should be clean and accurate as possible.
- Make sure there are negative drafts in vertical work areas.
- Master surface should be non-porous and smooth.
- If the master is made from wood or plaster, it should be sealed with several coats of a lacquer-based sanding sealer. Let each coat dry before subsequent coats are added.
- Apply a minimum of three coats of mold release wax, buffing between coats. Wet buff (cold water) the final coat.
- If a PVC film barrier is used, it should be given a coat of wax before use.

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Construction of PFP

1. Cut fiberglass cloth into 24" X24" squares or a size that is easy to handle and wet-out. Pre-weigh resin and hardener into plastic or metal mixing containers and cover with lids. Shake out the amount of hemp to be used. It can be slightly wet down before use.
2. Use a short-bristle laminating brush to apply the epoxy surface coat to the pattern surface. Keep the thickness to .020-inches or less. Take care to avoid trapping air in the surface coat. Allow this coat to tack-off until you can leave a fingerprint but not have the epoxy transfer to your finger. Note: If you are making a one-use tool for room temperature service, apply a second coat of PT1105 A/B1 and, while wet, proceed directly to step 5 to apply the plaster and hemp backup.
3. If you are making a stronger tool for more than one cycle or for high-temp usage, proceed as follows: While the first surface coat is still in the finger print stage, laminate two-three plies of fiberglass cloth, using epoxy resin and proper laminating techniques. Take care to keep air entrapment to a minimum. Rotate the cloth in 45-degree increments for each added ply. Note: Use two plies as a minimum. The more plies used, the stronger and more durable the tool.
4. Behind the laminate, apply a coat of PT1105 A/B1 Surface Coat. Use this material even if you use the high temp systems for steps 2 & 3. This coat provides a bond between the epoxy and plaster. This system uses a special hardener, which will cure in contact with wet plaster. While this coat is wet, proceed to the next step.
5. Prepare the plaster mix according to the manufacturer's recommendations and use it to wet-out the hemp. Apply the plaster-saturated hemp pads to the back of the wet epoxy coat. Note: If the epoxy has cured hard before applying the hemp, the plaster will not bond to the epoxy! Force out as much air as possible. Cover all surfaces to a thickness of about 2-inches.
6. Apply backup structure using wet rolled hemp pads. Use enough attach points to secure adequate support.
7. Allow the PFP to cure overnight or for a minimum of 12 hours. It can be used for room-temperature applications at this point.

Preparation and Post Cure

1. Use wooden or plastic wedges and rubber mallets to remove the cured PFP from the master. Do not strike or hit the PFP with anything.
2. Once separated from the master, check the PFP for voids, delaminations and surface deformities. Repair with appropriate materials.
3. If the PFP is to be used for high temp applications, place in a drying oven and slowly raise the temperature to 180° F. Allow it to dry at this temperature for 24-hours before placing into service.
4. If the PFP is to be used for curing autoclave tools or parts, run an autoclave check by placing a few plies of dry fiberglass fabric and vacuum bag them to the surface of the PFP. Pressurize to the level the PFP will see in service and hold for 15-minutes. Upon removal inspect for any voids caused by the pressure. Repair with appropriate materials.



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