SURFACE CASTING
METHOD:
For Molds & Core Boxes

Presented by: Hapco Inc.
STEP 1 – SPACER LAYER

- Apply a layer of ¼” foam to create a uniform ¼” thickness around the pattern.
- Cut the foam along the shape of the frame and cut strips to cover any exposed areas of the pattern.
- Lay the foam on top of the pattern. You may want to use double-sided tape to hold it in place.

The goal is to create a uniform spacer layer which represents the amount of surface material needed.

- Use masking tape to hold sections / pieces of the foam together. This will allow the foam to come off of the pattern as one piece and be reused for duplicate molds.
- Place another layer of double sided tape
- Place a trash bag over the foam to prevent the backup resin from sticking to the foam.
- Attach the frame and remove excess trash bag.
**STEP 2 – MIXING & POURING FILL-ITS**

- Using a can opener, cut the rims off of both the A Side and the B Side cans.  
  (Cutting the rims off makes mixing and pouring cleaner and easier.)
- Be careful not to let the rim fall into the material.
- After the rims are removed, run the can opener along the edge of both cans to flatten out any ridges.
- Mix both the A Side can and the B side can, individually, with a metal spatula.
- Pour the B Side into the A Side can.
- Begin mixing. Mix well, scraping the sides and bottom of the can. Periodically wipe the spatula off by scraping it flush along the rim of the can. This will get any unmixed material off the spatula.
- Once the Haprez is mixed, pour it into a mixing container large enough to accommodate the fill-its. This will make the mixing of Fill-Its easier.

Fill-its can be mixed by hand, with a pail mixer, or with a cement or dough mixer. When mixing by hand, put on rubber dishwashing gloves to protect your hands and arms.

Gradually add the Fill-its to the resin. Pack the fill-its into the mold and level off.
STEP 3 – GATING & VENTING

Gating and venting is different for every mold or part. It is important to imagine where bubbles might get trapped while the resin is traveling in the gate and out of the vents. Ideally leaving an air free, solid mass of material surrounding the pattern. You want to have a pressure decrease while filling a mold. In other words; the more vents the better. If you locate an area where air might potentially get trapped, it is a good idea to place a vent there. It is easier to trim excess material than it is to fill a void from a lack thereof.

When the Fill-Its have cured, remove the foam covered pattern and trash bag completely from Fill-Its.

Depending on the ratio of Haprez to Fill-Its, the surface will need to be roughed up. You can do this by hand sanding, using motorized sanders, or sandblasting. This step is essential for the high performance material to chemically and mechanically bond to the Fill-Its/Haprez back-up.

Locate the points at which you will inject the material into and where it will exit the mold.

Drill a ½” to 5/8” sprue hole to lowest point.

Insert couplings and tubing where the holes were drilled.
To release the pattern, we will use 2-4 coats of the Grease-It Wax LT (liquid) or P (paste). After applying the wax to the parting board and pattern, buff it off with a cloth or paper towel.

Brush on 2-4 coats of Grease-It Wax LT or P using a 2” throwaway brush.

Buff thoroughly between each coat.

The next step in releasing this pattern will be 4-5 thin coats of Grease-It 2. It can be painted on; however, we recommend using it in a spray bottle under pressure and spraying it to ensure a smooth, even surface.

Spray light, even coats of Grease-It II.

Use a hair dryer to turn the liquid PVA into a thin film.

It is a good idea to turn the pattern 1/4 turn between each coat.
STEP 5 – CASTING THE SURFACE

When the pattern and Frameset with the Fill-It back-up are put back together, there should be about a 1/4” gap between them. This negative space will be filled with a high performance material via a meter-mix despising machine or gun (ex. RAPIDFIL, RAPIDSHOT) That material will cure to become the exposed surface of the mold, with the Fill-It’s supporting it. If the gating and venting was done properly, filling the mold completely, with little to no air bubbles or voids should be the end result.

a.) Put a RS mixer over the detent on the front of the gun. Slide the retainer nut over the mixer and screw on tightly.

b.) With the unit on, hold the gun over a waste container. Depress the trigger to remove the lubricant from inside the ports.

c.) Insert the tip of the nozzle into the gate tube and hold firmly.

d.) Hold the trigger continuously until you see the vents fill up with resin. Intermittently shooting material creates voids and air bubbles.

e.) Crimp the gate tube with vice grips immediately so the material does not leak out of the mold and create voids.
STEP 6 – DE-MOLDING

After the proper amount of time has passed to allow the material to cure, it is time to de-mold and check our work. Note: De-mold time varies from resin to resin so follow Hapco’s handling notes precisely to avoid de-molding too early and wasting hours of work.

a.) Clip off the gates and vents so the mold will rest evenly on the table when flipped over.

b.) Use the jacking screw method when possible. This helps remove the pattern evenly, avoiding any warping or creeping during de-molding.

c.) Carefully remove the pattern from the mold.

The high performance Hapflex Surface Coat with a Fill-It Back-up!