

SILICONE MOLDS & RESIN CASTINGS MADE EASY

Presented by Nicholas F. Starace II at the SMSNJ June 23, 2009 meeting

1. Why Resin Castings?

- Many identical parts can be made quickly
- High quality end product; virtually no shrinkage

2. This discussion covers a single mold technique for parts with at least one flat surface, i.e., do not have shape all around.

3. Materials Needed:

- Silicone mold rubber
- Casting resin
- Mold release
- Mixing set
- For plugs (pattern) - butterboard, or styrene, or wood, or sample part
- For mold box - wood or particle board, wood screws

Cost will probably be under \$100 depending on the scope of the project.

4. Fabricate the plug or use a sample part as the plug. Ensure plug surface simulates surface of the end product. For example, if the end product is say a deck cabin in oak, choose a wood for the plug that looks like oak in scale.

Tip: The plug can also be used as a vacuum forming plug.

5. Build a mold box starting with the base. Give enough space around the finished plug, say 1" all around. Build the walls around the base making the height about 1" higher than the highest point of the plug. Ensure a good fit all around to avoid leakage of the mold rubber.

6. Attach plug to the base using screws or silicone adhesive. Several different parts can be cast simultaneously. Brush on mold release agent to entire plug, base, and inside walls of the box. It will prevent the mold from sticking to the plug, base and sides.

7. Following the manufacturer's directions, mix parts A and B of the silicone mold rubber. To avoid layering mix enough to fill the mold box in one application. Be sure work area is well ventilated. Try not to mix in a lot of air as air bubbles may ruin the mold. Pour the mold rubber into the box slowly as a thin strand from approximately 6" above the highest point of the plug(s). Avoid pouring into the corners or directly on the base. Fill the entire box.

Tip: a. If the part has overhang it may need to be cast separately as 2 or more pieces.

b. Larger molds can take quite a bit of silicone. To help conserve it, old molds can be cut into chunks and added to the newly poured rubber as fill. Be careful to place them away from the plug(s), against the box sides.

8. After 16-24 hours the mold should feel firm and be ready to de-mold. Remove the screws holding the side walls, and peel away the walls.

9. Carefully work the mold off the base of the box and the plug. You now have a perfect impression of the original plug, including any wood grain, nicks and scratches that may have been left in the plug!

10. Following the manufacturer's directions mix parts A and B of the casting resin solution and pour it into the mold. Resin will set in 10-15 minutes after which the casting can be removed. Make a "throw-away" casting to clean out the mold. If it's good, use it. Make as many parts as you want; the mold will not deteriorate. No preparation between pours is necessary.

Tips: a. Small parts can be cast in a "mold box" made of Klean Klay modeling clay.

b. Color tinting is possible; pigments available from Micro-Mark.

c. Castings can also be made from low temperature alloys.

BEAR IN MIND THE CASTINGS WILL BE ONLY AS GOOD AS THE QUALITY OF THE PLUG. IT IS THEREFORE ADVISABLE TO BE VERY METICULOUS IN MAKING THE PLUG!