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Introduction

- This poster outlines two basic techniques used in the creation of molds for prototyping and producing composite parts.
- "Splash molding" is used in situations where a replica of an existing part is desired. The example uses an existing part made from sheet metal, however parts with other compositions can be used so long as compatibility with molding supplies is observed.
- Plug creation is used in the situation that an original part does not exist. A surface representative of the desired part, otherwise known as a plug, can be created many ways. For the example, computer modeling was used to create a surface from which "egg crate" type profiles were generated and laser cut. Plugs can also be created freehand without the aid of computers and automated cutters with satisfactory results. Once a plug has been created, a mold is "splashed" from it just as from an existing part.
- Basic materials required for this work include:
 - Base and flange materials.
 - Plastic filler, frekote and mold wax.
 - Surface tooling epoxy.
 - Glass fabric.
 - Laminating resin.
 - Tooling dough.

Acknowledgements

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"Splash Molding" of an Existing Part



Start with actual sheet metal part.



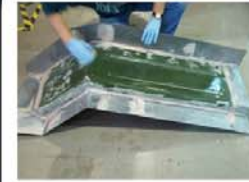
Sand off paint, reinforce, and add bagging flanges.



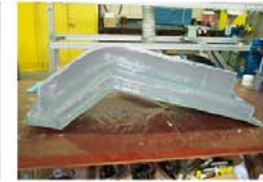
Once the bagging flanges have been tack welded into place, its ready for filling.



Fill crevices and build corner fillets.



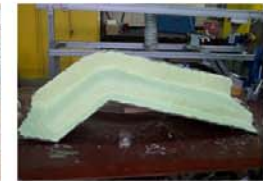
Apply Frekote and mold release wax.



Apply tooling epoxy layer.



Apply glass fabric and laminating resin.



Apply 1/8" thick layer of tooling dough.



Cover tooling dough with a layer of glass fabric and laminating resin.



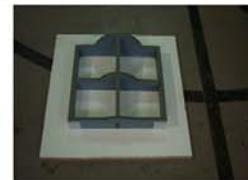
Cure overnight and then pull the mold from the original part.

Plug Creation

For situations in which an existing part is not available a surface representing the part can be created. The "egg crate" method shown here is one possible way to create the surface or "plug". Only a few materials are required: foam sheet or plywood for the egg crate, urethane foam to fill the voids, and filler to close out the surface.



Prepare egg crate pieces for plug construction.



Assemble egg crate onto melamine base.



Fill with expanding urethane foam.



Allow foam to cure and then cut away excess.



Sand and apply filler to complete surface. Ready for "splash molding".