

## **Modeling in wax for Direct Metal Casting**

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### Introduction:

Sculpting directly in wax and casting that piece into metal is an exciting way to create an original sculpture. Generally there is no mold involved making this method of casting one of the quickest and most direct. The material can be difficult to work with, however, if it is unfamiliar. The following is a general overview of the material and some recommendations for its use.

A wide variety of sculpting wax is available. Waxes for casting, modeling and injecting are made in different hardnesses, colors, with different shrinkage rates and with different molecular structures. The follow information was tested using a base of Victory Brown microcrystalline wax.

Small or hollow pieces modeled and/or fabricated in wax can be cast directly into metal using the lost wax method. Sculpting wax is purchased in blocks. These blocks are hard to work with because the material is generally so stiff. Three solutions to this problem are listed on the next page. These methods can be combined.

### Working with the Wax :

1. Melt the wax and pour it into thin sheets. Small pieces can then be cut or torn off for modeling. Pour wax into a Teflon cookie sheet or a released rubber or plaster sheet mold. Allow the wax to cool completely before attempting to demold. Running cold water over the warm solidified sheet can speed the process. Demold from the Teflon sheet by twisting the ends of the sheet. Cold water poured at the released edges will help a stubborn wax sheet release.

2. Add a softener to the wax or blend waxes. Melt the sculpting wax and add Vaseline, a soft disclosing wax or a combination. Adding too much of either can make the wax too soft and sticky for modeling. Experiment to find what you like. Your formulas will vary depending on the type of modeling you are doing and the season. Blended wax can be poured into sheets or containers and used when cool.

3. Warm the wax. This can be done several ways. The wax block or a sheet of wax can be placed under a clamp light, on a hot water heater, on a heating pad, in the sun or against any other source of low level heat. Using a tray or foil under the wax will guard against over melting. The warmed wax can then be cut, scraped or torn off in pieces. Chunks and pieces of wax can be placed in warm water. With this method care must be taken to dry the pieces so as not to incorporate water into your sculpture. Pieces of wax can be stacked in the center of an electric crock pot. If they do not touch the sides of the pot, they will not melt but soften as the heat circulates around them. Sheet wax can also be warmed with an adjustable heat gun or propane torch.

#### Tools:

Metal or wooden tools work well for modeling. Sculpture supply warehouse catalogs and jewelers supply catalogs are the best sources for tools. Metal and wooden tools can also be fabricated. X-acto knives are great for cutting sheets of wax. A hand held propane torch and a adjustable heat gun are very useful.

#### Fabrication:

It is possible to fabricate using wax. Wax sheets or pieces can be "welded" together using hot metal tools, soldiering irons or commercially available wax welders.

#### Assemblage:

Another possibility for working on wax originals is to use a cast wax as a starting point. Simple molds can be made to supply you with any forms you may want to fabricate together, cut apart or model over.

### Organic Materials:

Combustible materials (thin pieces of wood, cardboard, organic material, cloth, etc.) can be used to support the piece or as part of the work.

### Thickness and structure of Pattern for Casting:

Keep in mind that solid wax patterns should not exceed 2" if they are to be cast directly into metal. The structure of the pattern must be strong if it is to survive the ceramic shell process.

### Dipping into Molten Wax:

Modeled and fabricated patterns can be dipped into molten wax to help solidify the structure or as a modeling technique.