

## **LOST WAX RECIPE'S FOR BASIC INVESTMENT CASTING.**

The wax used to make moulds for investment casting requires special properties, it needs to be neither too soft or pliable nor too brittle, it needs to be solid at room temperature...this part is tricky ...depends entirely on where you live.

Some types of wax will appear to have a memory i.e.; after forming, it may tend to return to its original shape. It is important to be able to work the Wax, eg carve...model.... cut and twist, without it breaking or cracking.

It must also be able to stick to itself; especially if you want to build up your model with several layers of wax...you do not want it to delaminate.

Another property required of this wax material is colour, don't be fooled into making a nice clear wax...you need an opaque look about it, so that as you model and work with it you can see what you are doing.

For beginners and semi advanced people wishing to try their hand at this metal casting art, a good wax can be easily made from:

- Beeswax.
- Paraffin Wax.
- Petroleum.

As with all types of casting, considerable trial and error will be entered into, you will have to experiment with different ratios of mixes and the temperature of your region will have a large bearing on your success or otherwise with lost wax, or investment casting...it is not as easy as some people will have you believe.

If you are already a well-practiced green sand caster, you should not have too much trouble learning the tricks required for this very ancient, and fairly technical form of metal casting.

Investment or lost wax casting, is the oldest known form of metal casting on earth, the ancients were the real masters at it, perhaps you should do some research on how these old masters applied the techniques.

Many superb bronze castings are still made in third world countries using primitive methods, the equipment, materials and tools used to melt and pour these castings is simple beyond belief.

The techniques have been handed down from father to son over many generations; every step of the mould making process is done according to well-trying & proven methods. No sophisticated temperature measuring equipment, nor any scientific metal analysis exists in most of these small third world foundries, every step is judged by eye alone.

Their basic skill levels and well-rehearsed methods enable them to produce some incredibly detailed art castings, as well castings to be used in light

industry, eg, machine components etc.

A simple wax recipe.

Paraffin wax. (needs to be in the 60 to 65 C range)	4 parts.
Refined bees wax	1 part.

Blend into the mix one of the following:  
Copal.  
Damar 10 to 15% by volume  
Add some crayon chips to give an opaque colour.  
Melt into the mix about 5% by volume of polythene (plastic) bags,  
The polythene adds strength and will improve the smoothness of your wax models.

An advanced wax recipe.

Paraffin wax	27.5%
Refined bees wax	27.5%
Petroleum oil	15%
Petroleum jelly	15%
Clarified animal fat or lard etc (Dripping)	10%
Melt polythene bags into the mix	5%.

Experimentation is the key to your success.

The equipment you use for your general sand casting will be OK.

You will need another mould drying & burn out oven, you may need to practice melting your metal, and burning out your wax mould.

The tow operations are intertwined during the final phase of casting.

Note that the mould needs to be hot when you pour, selecting the correct time for this will be arrived at with much experimenting.

If you pour too hot, the metal will boil in the mould and most likely destroy all the good work you have done.

Making and preparing moulds may take you days... perhaps weeks to get to the point where you are ready to pour...investment casting is very time consuming.

On the other hand with green sand casting it is possible to ram up a mould, melt your metal and pour, all within the hour if everything is going your way.  
Not so with investment casting.

The BIG advantage with investment casting is the incredibly intricate

shapes that can be cast. No other form of casting can replicate like lost wax or investment casting.  
Providing you have the skills and know-how to manage the craft.

There are many good books around, dealing in great depth with lost wax casting, search for these and read them, and practice until you feel you know enough to succeed with whatever project you have in mind.

Good Luck.

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