

## **WillowProducts POB 1375 Tullahoma , TN 37388**

Please read all the following notes on using the wax before making your first melt.

### **Some quick notes on casting "ICE" tooling wax.**

- 1) Firstly all casting waxes and most modeling waxes are flammable. This means they can catch fire if not melted properly and safely. A double boiler is the safest because it ensures a maximum temperature of 212f ( boiling point of water) provided it does not "boil out" of water. Any other method is used at your own risk and never leave the melt unattended. A fire extinguisher and smoke detector should be close-by as well.
- 2) ICE, like it's namesake melts at a low temperature. Around 190f should be plenty enough heat to melt it. 200f and it is very liquid... but the lower temperature will mean a)less shrinkage, b) less separation and c) less sticking to the mold.
- 3) If you see any bubbling or smoke... or smell any strong odors... or hear any sizzling or bubbling sounds, then you're too high on temperature. Immediately remove the pot, allow to cool and adjust melter down.
- 4) Don't get in a rush here. You want a nice smooth and slow melt. I've found it helpful to treat these waxes less like an industrial material and more like a fine chocolate. I know that may sound corny, but believe me... you'll see a difference in the quality of your castings if you go slow and careful.
- 5) While in melted state and left unstirred, ICE can separate in the melting pot. This issue is compounded by higher temperatures. Be sure to stir wax occasionally while melted and especially right before the pour. A wooden spoon will work fine.
- 6) If you do melt at too high of a temperature you'll get bubbles in the melt. They should disappear as the wax cools down, but it's a lot easier to avoid them in the first place. This is accomplished by #4 above.
- 7) To avoid sticky to some mold materials. ICE was tested with several mold materials. Some exhibited no sticking at all, while others had a slight problem. This is due to the fact that ICE has high fidelity and little shrinkage. Higher temperature melts showed more of a problem. Please use a mold release in your mold for first tests. Over time it may be proven that you don't need any release, but better safe than sorry when starting out. I find that PAM works ok. A better solution for me has been the polishing compound I give below. It also works great as a mold release. I just pour it into the mold, pour it out. Then I let it air dry. It dries VERY quickly. Then I use a soft brush on any visible residue.
- 8) Here's the recipe for a great homemade polish for any wax. With a little effort, when applied to a soft cotton cloth, it will remove scratches and give you a very smooth and shiny sheen.  
Denatured alcohol 4-5 parts  
Castor oil 1 part  
Castor oil can be purchase at health food stores or pharmacy. It's very inexpensive. PGA or Everclear can be substituted for the denatured alcohol and is available from liquor stores.

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### **Notes on Casting ANY wax !**

#### **Warning- If you decide to melt and cast any of these products:**

- 1) Remember that all waxes are flammable by nature. Melt this product at your own risk. Do not use with or near an open flame. Always melt the least amount needed for the task. A double boiler or special wax- melter is highly recommended.
- (2) Melted wax can cause serious burns. Always protect yourself adequately. Keep children AND pets away from pots of hot wax.
- (3) Any custom blended wax can separate if not stirred properly when melted. Melt over lowest heat needed to achieve melt, starting with "Low" temperature. Stir frequently right up until moment of pouring.
- (4) When pouring a thick cross-section, the following process will achieve the best results: Pour mold full of melted wax, shake or vibrate slightly, wait 30 seconds, empty mold, wait 30 seconds and repeat until casting is complete. This method will provide the best casting with least shrinkage and distortion.
- 5) If you do not stir thoroughly right before the pour , it is possible for components to separate and change the working properties of the entire melt ( not just what you poured ) as a result of the separation. While you may not think this could be much of an issue, some of the constituents of the waxes are used in amounts as small as 1% overall. Just a fraction of a change could make a noticeable difference.
- 6) Most of the shrinkage in wax comes from the core of un-melted wax pulling the outside inward, not from the ingredients of the wax itself. If it was totally the wax formulation causing the shrinkage deformation, it would be a more a total reduction in size, not a distortion or thinning in one "axis". The geometry of a casting can cause strange distortions if the wax cools unevenly...the un-melted wax drawing the cooled wax inward in an ever-changing pattern, thus resulting in uneven shrinkage and distortion.
- 7) Some shrinkage and minor distortions can be expected in nearly any wax , but try this to minimize it:
  - a) heat wax till totally melted. Stirring occasionally ensuring that there is no boiling or scorching of wax. There should be no sounds at all!
  - b) Once melt is final ,allow wax to cool in pot until a faint film forms on the surface of the wax.
  - c) briskly stir the wax with wooden spoon. The film will either stick to the spoon or quickly re-melt back into the wax. This will ensure that wax is thoroughly mixed AND poured at lowest temperature possible.
  - d) quickly make your pour into the mold. Rotate and vibrate mold if possible.
  - e) Pour out to leave a thin wall as mentioned above. This is commonly called slush casting.
  - f) Repeat the casting of the ever-cooling wax until a descent wall is formed.
  - g) Once a sturdy wall is achieved, fill the mold with chunks ( pea-sized or bigger) of un-melted wax. Then fill remaining spaces with barely melted wax.

The goal is to not have a large mass of un-melted wax in the center of a casting acting as a magnet to draw the outer shell inward creating distortions and un-even shrinkage.

Hope this helps in your wax adventure!

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