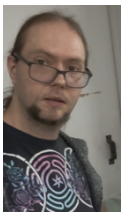
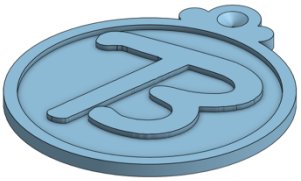
Lost Wax Process - - Pewter Medallion

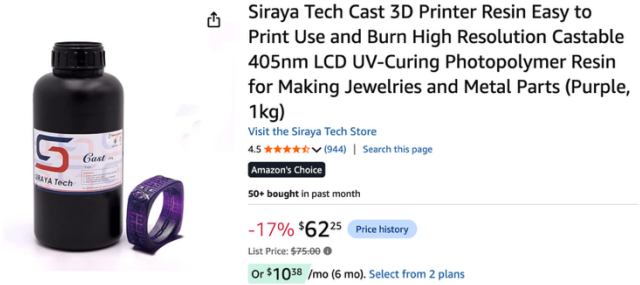
I was introduced to the lost wax process by Jesse, and his sibling Aeryn. Both are ex-Navy. Jesse brought the vacuum machine to the maker-space along with the flasks, the small kiln, and most of the supplies.





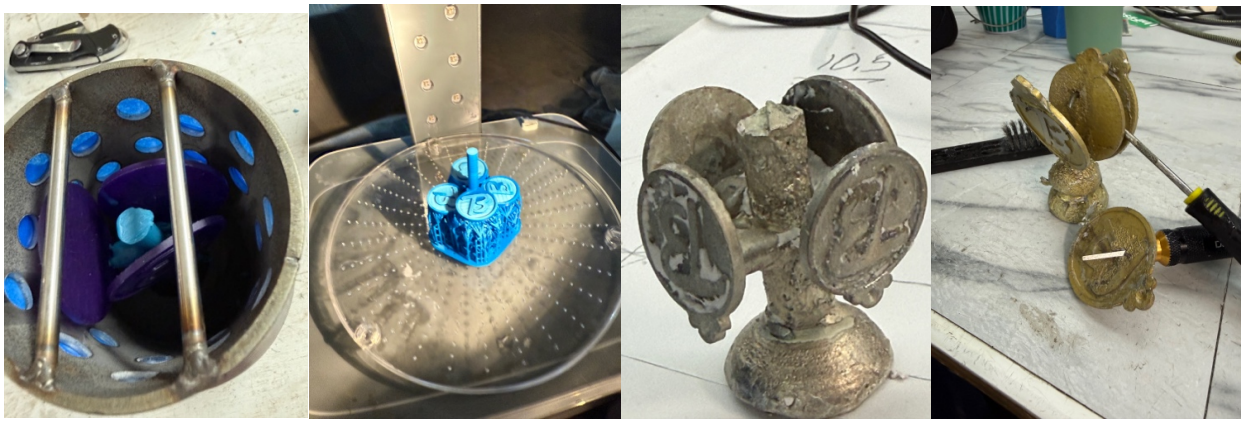
The lost wax process starts with a 3D-model of the finished piece. I used Onshape for the CAD work. The file name “MargBrand” is available in “Public”. The artwork is a registered cattle brand of Margarita’s Benavidez family ranch. It is a stylized “7B”. There were 7 siblings.

One needs to make wax models in preparation for using the lost wax process. The 3D model was exported in .stl file format and 3D resin printed using a waxy resin. The slicing software was AnyCubicPhotonWorkshop.



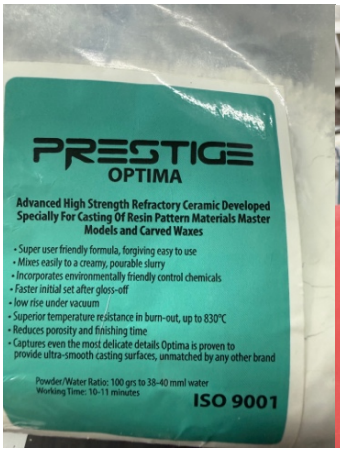
The resin printer was an AnyCubic Photon Mono M7 Pro. There are 2 post processing steps: A. 99% Isopropyl alcohol wash and B. UV cure AnyCubic makes the gear. HEB sells 99%-IA.

Several wax medallions can be assembled onto a wax tree. Some trees are better than others. The trees must fit into the flask with room to spare.



The flask is poured full of refractory ceramic sometimes called “investment”. It is a white powder that is mixed with water in exact proportions. The holes in the side of the flask are temporarily plugged with tape. Then the air bubbles are encouraged to

leave using a vacuum under a clear dome on the left side of the vacuum machine. The ceramic is allowed to set for a few hours.



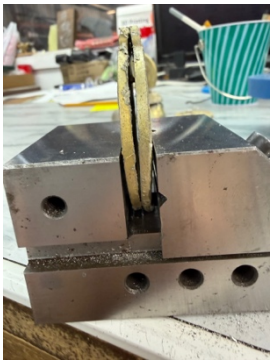


Next the tape is removed from the flask. The flask, ceramic, and wax tree are placed into a kiln so that the ceramic will harden further. The flask is positioned upside down and tilted a bit. The wax will melt and run down-and-out and burn up. This is a fiery, smokey process that needs to be done under a hood vent. The times and temperatures for this phase are a science.

What comes out of the kiln is the mold, still in the flask.

While the mold is still hot, molten metal can be poured in. These medallions were made of pewter, a low melt soft metal. The enemy of metal casting is air trapped in the mold. The beauty of the refractory ceramic is that it is porous. The air bubbles can be sucked out by placing the flask into the right side of the vacuum machine.

After cooling, the ceramic needs to be removed from around the metal. This is done in a bucket of water with picks and scraper tools and scrub brushes and whatnot. The “investment” is lost. It’s a one-time-use thing. The yellow color is only on the surface, but it can be scraped off. It a sign that the metal was too hot.



The last phase is to separate the medallions from the tree. Hack saws, die grinders, files, sanding tools, wire brushes, polishing tools. The medallion has a thick strong back and a less strong front. This causes it to warp when it is cooling. It was necessary to flatten the medallions. I used a little vice to flatten two at a time. Drill a hole and voila, lots of 7B medallions.