



From left to right: Robert Ebendorf, Ginger Meek Allen, Jim Chameski, Joanna Goldberg, Mary Filapek, Linda K. Darty, Geoffrey Giles

## TECHNICAL ARTICLE .....

### Mold-Making & Resin Casting for Jewelry

By James Thurman

*This past year as Editor for the technical articles has been busy and rewarding, working with lots of great people and also releasing SNAG's first Blurb book, **Tech Text: A Compilation of SNAG Technical Articles 1975-2010**. Inspired by my work with various article authors, I've finally decided to write an article myself. There is a fair amount of information and interest in the use of resin for jewelry-making and I believe that this article will be a useful addition to it.*

*-James Thurman*

This article focuses on the use of very specific products for mold-making and resin casting for jewelry that can result in optically clear castings of extremely high quality. They are manufactured by Polytek and available from <http://www.brickintheyard.com/>.

I would like to graciously thank Mitch at BITY Mold Supply for all of his patience and creative problem-solving related to using these products. There is a huge variety of products available but I have been extremely happy with the results for these particular applications.

[IMAGE: James Thurman, Mokume-Kami bracelets]

[IMAGE: James Thurman and Sandie Zilker, Frosty Finial Necklace]





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#### Getting started

Please take appropriate safety precautions (eye protection, chemically-resistant gloves and apron, respirator, ventilation, etc.). Personally, I prefer disposable nitrile gloves combined with barrier skin cream, like Invisible Gloves. The barrier cream is helpful in the event that the gloves tear. Have all materials that you might need prepared because the mold-making materials and resin are time sensitive and you don't want to have to go hunting around for stirring sticks while your expensive resin sets up. Be sure that all work surfaces are covered in plastic in the event of a drip or spill. Temperature and humidity dramatically affect curing times and overall quality. Follow all manufacturer's guidelines (provided with the products) as closely as possible. I keep all the different resins and mold materials (even parts A & B) in separate plastic bins to prevent possible contamination.



#### Pressure versus vacuum

Although not required, I will be curing all of the materials in a pressurized environment a little under 50 psi. Most everyone reading is probably aware of the variety of uses of a vacuum in a metalsmithing studio, most commonly for casting but even for small vacuum forming. However, before using these new products and processes, I was certainly unaware of working with a pressurized environment or what a pressure pot even was! The pressure pot pictured here (available for under \$100 from Harbor Freight) is typically used with an air compressor and paint for house painting. It sounds strange and obvious now but it is important to realize that using a pressure pot is the OPPOSITE from using a vacuum. I'll explain more at relevant stages.





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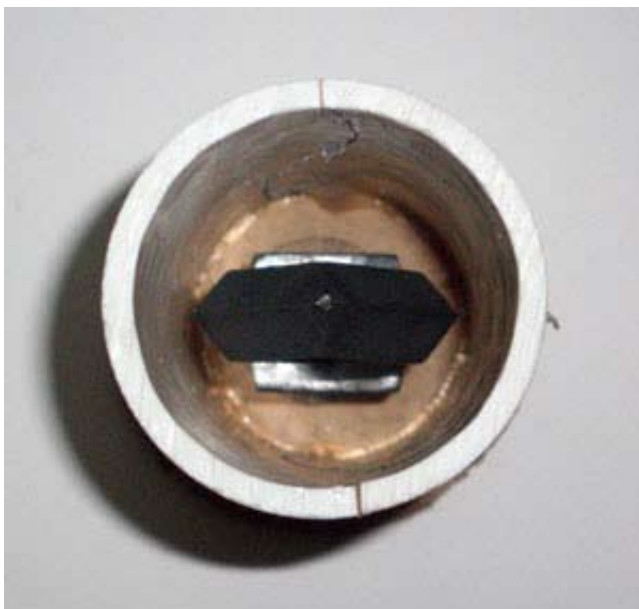
By James Thurman *continued*

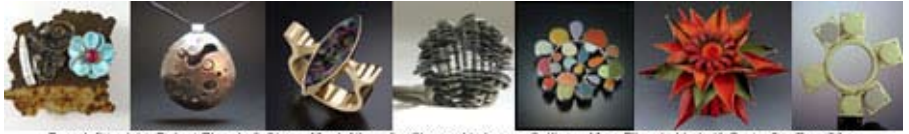
#### Mold-making



For this article, I will be making molds of a glass perfume bottle and a cast iron fence finial. I have chosen these because they have a variety of surface textures and will produce components that will be used in future pieces, probably as part of the TeeZ collection (collaborative work I make with Sandie Zilker). I use PlatSil 73-15 because it is somewhat clear (easier to cut open molds) and is very durable (I've gotten more than 75 castings from a single mold without using a release agent). Although somewhat expensive (about \$1 per cured ounce), it is accurate enough to pick up fingerprints from your molded object. I usually hotglue the object to a dowel, which becomes the pour cup, and then attach a cut PVC pipe and plastic disk, which becomes the mold support to help maintain accuracy.

Be very aware of the placement within the PVC pipe. If the object is too close to the edge of the mold, it will tear through later. Line up where you plan to cut your parting lines in the mold perpendicular to the edges of the PVC to reduce leaking/flashing in your molds when casting resin later. Although it doesn't apply to my examples, be careful of any hollow sections since the pressure can crush them or force mold material into them.





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Place your prepared molds in the pressure pot, mix the PlatSil according to manufacturer instructions, and pour. Fasten the lid and pressurize. I usually keep it pressurized longer than recommended to be sure the material is fully cured. After curing, I cut the mold similar to wax injection rubber molds. This particular finial has a core that also needed to be carefully cut.



There are two main ways to more efficiently use the mold material. Several smaller parts can be ganged together in a single mold, as in this example of small lathe-turned components. The PVC can also be heat formed to more closely follow the original object, as in this example of the fleur-de-lis finial and its oval mold.







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#### Resin Casting

Again, please be sure that you have all tools and materials you need and you are taking all relevant safety precautions. I would also suggest using completely different materials (mixing cups, work surfaces, etc.) for resin casting than for mold-making. Here is where using the pressure pot REALLY makes a difference. As I understand it, the increased air pressure forces most all trapped air out of the mixed resin and mold as well as preventing any remaining air from forming visible bubbles. All I know is that it works great! Before mixing any resin, I place all molds in the pressure pot, including a couple extra molds because I prefer to overestimate and mix extra resin rather than not having enough. There are also a wide variety of pre-made molds available. I would always suggest using a mold release with them.

Pictured is a silicon ice cube tray along with several molds I've made.





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In all examples for this article, I have used Poly-Optic 1411 for maximum clarity. Mix according to manufacturer instructions and pour. Again, I leave the castings under pressure longer than recommended to be sure they are sufficiently cured. Often the Poly-Optic 1411 castings remain flexible for some time so be very careful while demolding. Even after total curing, the castings can be placed in hot water and bent (although I have found its heat bending qualities inconsistent, probably due to very slight variations in mixed resin proportions). I would also recommend letting the castings cure for at least 24 hours before cutting, sanding, or drilling.

The following examples are directly out of the molds and unfinished in any way:





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#### Tips and notes from the author:

The optical clarity of the resin is best seen in the stopper of the bottle casting and the faceted drawer pull casting. There is so much potential with these materials and processes that there simply isn't the space to get into.

Dyes are available to tint the resin. Alteration of the castings through heat bending or various subtractive machining processes has great possibilities too.

I look forward to seeing how others will apply these products and techniques. If you would like to learn more in person, Sandie Zilker and I will be teaching the workshop, *Colormania: Hue and You*, at Penland this spring, March 27-April 2, which will include coloring resin along with a variety of other techniques. I will also be teaching the workshop, *Jewelry & Resin*, at Arrowmont this summer, July 10-16.

*James Thurman is an Assistant Professor for the College of Visual Arts & Design at the University of North Texas, where he is the Coordinator of 3D Design foundations as well as Metalsmithing & Jewelry faculty.*

*He received his MFA in Metalsmithing from Cranbrook Academy of Art and his BFA in Sculpture from Carnegie Mellon University. His work is shown nationally and internationally and often incorporates a resin lamination process ("mokume-kami") that he developed. <[www.jamesthurman.com](http://www.jamesthurman.com)>*

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