

Kurt's clinic

Kurt Hertzog answers readers' questions

I am having a terrible time getting my castings to release from my moulds. I'm using 2in PVC pipe and I've tried clear PVC too. Regardless of the different mould releases I've tried in either PVC, I often have to freeze the mould after casting, then pound out the casting. Is there an easy way to fix this?

Any non-flexible mould with insufficient draft angle will always be difficult to demould. The deeper the mould, the more difficult demoulding will be. Your PVC moulds, with zero draft angle and inflexible side walls, will be problematic at best. Especially if the aspect ratio, depth to width, is high. From good mould design perspective, probably only rough side walls would add much more to your woes. I'm assuming your selection of 2in PVC is based on it being the closest to your needed size and you aren't relying on the as-cast sidewall for exact sizing, shape, or surface finish. If you'll be cutting away some of it for final sizing and shaping, I can suggest several simple ways to solve your current mould release problems. The quickest and easiest solution I can offer is to line your pipe moulds with a throw away liner for each use.

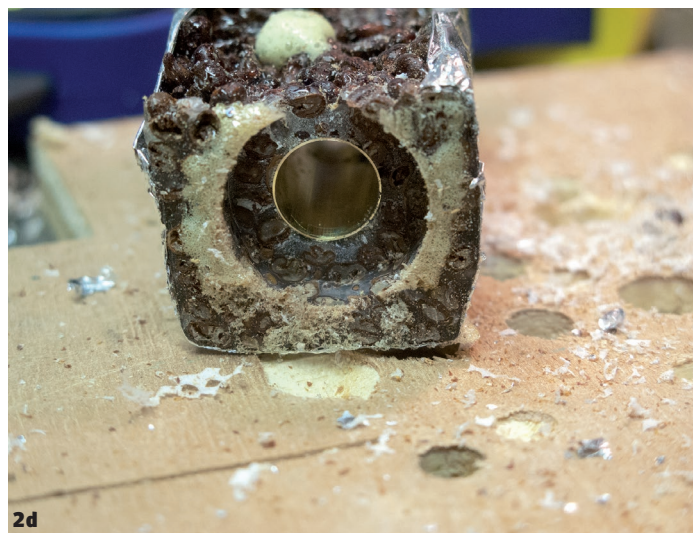
Aluminium foil will work wonderfully. Use it inside your cut-off pipe mould to contain the resin while being poured and cured. Obviously,



you can have no seams that will allow leakage when you are forming your aluminium foil liner. Essentially, you'll be putting an aluminium foil cup that is sized to sit inside your PVC pipe. With no resin leakage, only the friction between the outside surface of the foil and the pipe inside wall is holding it in place before, during, and after curing. The foil is now acting as the mould with the PVC merely providing extra side wall support for the foil. If you are a pressure pot caster, a matrix of PVC pipe mould 'supports' can be hot-melt glued together or directly to a board that fits into your pot for mass production. Leave long enough 'tails' on your aluminium foil mould to lift the cured castings out of your support pieces on completion. I doubt you'd ever need them, but you could drill a small hole through the bottom of the board in the centre of each mould location just in case a dowel or punch is needed to assist with any difficult removals.



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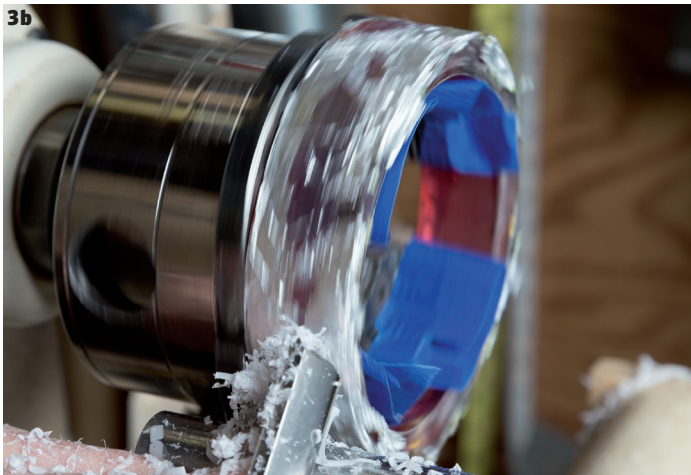
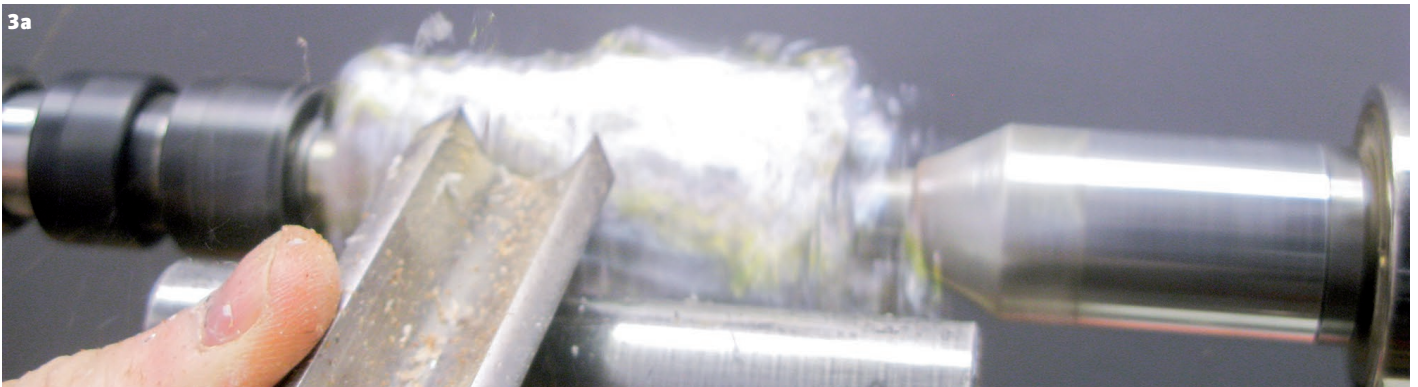


1 A cup (or whatever) used as a form, that formed foil mould as a liner, a stand-alone mould reinforced with some tape, and a sacrificial mould (after testing for inertness) of the desired size. **2** No need to remove the foil mould from the casting. Continue to process your blanks as if it wasn't there

I own an assortment of flexible moulds, properly draft walled polyethylene moulds, and cobbled up plastic food service items I use as moulds. Even having all of those other moulds available, I almost always use just aluminium foil alone. It's fast, easy, infinitely adaptable, and inexpensive. Personally, I'd suggest you skip the PVC supports altogether and just use some masking tape around the foil formed as a mould to maintain shape while casting. Use a bottle, cup, piece of pipe or something of the correct size as a pattern, form the foil around it, tape around the outside of the foil for support, and slide it off to use as a stand-alone mould. Better yet, put the foil into the cup and use it as the mould. For your round castings, you can use a coffee or drink cup of the proper size as a wall support for your foil mould if you wish. There is certainly a cup size available that suits your needs. You'll be able to mould 2in or any other size you wish. The draft angle on the side of the cup makes removal easy. Sliding out the foil with the casting allows you to reuse the cup. You can skip the foil altogether if you find a cup material that won't be attacked by the resin you are using.

Something like wax-lined paper cups might work depending on your specific casting resin chemistry. Test this on a small scale before you bet the ranch. In my opinion, peeling off the foil and/or the cup after casting solidification accomplishes nothing other than wasting time. Pretend the foil isn't there and simply work with the casting as you normally would through the rest of your process. When the time comes, turn the foil away with your regular woodturning tools once you mount your blank on the lathe and do the rest of the shaping.

I cast a variety of materials and shapes but tend to do more pen blanks than other items. Because of their aspect ratio, foil pen blank mould side walls want to flex out from the weight of the resin. I usually stack my pen blank moulds side by side to support each other or stack them in a shoe box or the like. I also have a support jig made of pen blanks I've hot-melt glued on to a board. I use this foil casting method almost exclusively except when I want to cast in brass tubes. Then, the silicone moulds designed expressly for that purpose work best.



3 Aluminium foil cuts away so easily, I never waste time removing it prior to turning on the lathe. **4** What size blank do you need? You can make any size you want with no investment but pennies-worth of aluminium foil. **5** Just some of my moulds. These, my purchased moulds, and my 'on-demand' create my own foil moulds, and let me cast any resin material we hobbyists might use in any size desired. **6** When I'm casting pen blanks, I use the desired size blank as the pattern to fold my foil around when making the mould

While certainly the least attractive alternative from my perspective, you can continue to use your existing method of casting directly into the PVC pipe. Castings that release properly get processed and those that are stuck get processed with the PVC stuck in place. You could also just skip the release and let each moulding stay stuck in the mould.

The PVC will turn away quite nicely in only moments on your lathe. Or you could make a few bandsaw cuts to remove the stuck mould sections like staved barrel pieces. Either way, that length of PVC mould is now a perishable in your process so simply factor it in as material cost. Where I live, the retail price for a 10-foot length of 2in

diameter, schedule 40 PVC is \$8.84. At less than 90 cents a foot, you can turn away any stuck PVC mould sections without breaking the bank. I think it would be quite silly and certainly extra work using this method compared to a roll of aluminium foil, but it's your call. See my column in *WT275*, January 2015 for a more exhaustive coverage of casting resins.

The available casting materials continue to change over the years but the principles of mould design, mould release agent use and techniques, workable draft angles, and good casting practices all still follow the same fundamentals.



7 Foil pen blank moulds want to bow out in the middle. An easy way to support the side walls of pen blank moulds while casting. **8** The silicone mould works great but only does one size. Can you see the infinite flexibility of using the foil mould idea for diameter, wall sizing, and depth of casting for any application size? **9** I usually post mould bake my polyester resin castings. Not required but it reduces tackiness of the outside of the blank. Done outside in an old, shop only, toaster oven at minimum temp. **10** Ready for cutting and drilling. Foil left on until it gets turned away on the lathe. Notice the cut marks, interface indication, and blank matching. Just a good habit regardless of material

You often include other material sources in your answers. Most of it is from years ago. How am I supposed to find that stuff?

I include those references for convenience for those who want to follow for more information on a specific topic. For the most part, the references are for my material. I know what content is pertinent and support it as accurate and safe (always provided the reader does follow safety protocols).


There are a variety of sources for you to follow up with. Your club or club members may have a collection of the turning magazines and books I point you to. Back issues of *Woodturning* magazine are available through its website. My local public library has a collection of various magazines but purges them every few years. The AAW references are always available online for members.

As an effort to continue sharing the information, I keep all my created content on my website after it has been published. I don't monetize or get any benefit from the site traffic. You can find my 250 or so as published woodturning-related articles on my website at <http://www.kurthertzog.com>.


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