

Pewter Cast Collar and Threaded Finial

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Pewter is a malleable metal alloy. It is traditionally composed of 85–99% tin, mixed with copper, antimony, bismuth, and sometimes lead, although the use of lead is less common today due to health concerns. Copper and antimony act as hardeners while lead is more common in the lower grades of pewter, which have a bluish tint. Pewter has a low melting point, around 170–230 °C (338–446 °F), depending on the exact mixture of metals.

The low melting point and the non-ferrous status, make pewter a great metal for casting into turned pieces. A regular propane torch can melt it. Even your kitchen stove will heat it up to do castings. It cuts, drills and can be worked easily, plus it looks fantastic with its shiny Silver appearance.

Pewter can be purchased online for around \$20 per pound. I have regularly found ingots of the metal on Ebay for \$10.00 a pound. If one wants to be more frugal, check your local Goodwill stores or garage sales where you often can find mugs, dishes, and cups made of solid Pewter that can be bought for under \$2.00 and melted down easily.

I use a small electric casting pot made by Lee Precision Engineering that I had back from the days when I used to cast my own bullets for reloading. If you type in “Pewter Casting” on a YouTube search, you will see the many other techniques that others use for melting the metal.

Molds can be made from a variety of materials. I use either solid wood or MDF. I like the MDF more because it is cheap to use and comes in larger sizes if needed. Also, most molds that I make for mortise and tenon type joints are one time only use molds. The Pewter casting will not just fall out of the mold when cooled and one must mount it back on the lathe and cut it out using a parting tool. The molds I use for my collars are reusable and the Pewter casting usually pops out when the metal is cool without damaging the wooden mold. If using solid wood for molds, make sure the wood is kiln dried. Any moisture in the wood reacting with the molten hot Pewter can result in injury (Steam Expands).

Safety is an utmost when working with molten hot Pewter. If hot Pewter gets on you, only your blood will cool it. Please take all safety precautions.

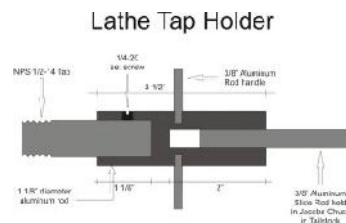
1. Use a ceramic tile as a protective surface in case any hot Pewter spills.
2. Wear thick gloves and safety glasses when pouring
3. Never leave a melting pot unattended while plugged in.
4. Always allow Pewter to cool fully before trying to remove it from a mold. It may appear solid on the surface like an egg, but the inside is still molten hot.

5. Do not get distracted when casting, pay attention to what you are doing.

I typically make my collars between 2 and 2 ½" in diameter. This diameter works well for most hollow forms between 6 to 12" inches in height.

The cast collars of this size can be mounted in a 4-jaw chuck very easily on your lathe for finish turning.

Finishing your collar on the lathe is easy and your 4-jaw chuck can very easily hold the collars. After mounting the collar securely in your chuck, drill a starting center hole with a center drill. This will allow your twist drill to center itself accurately for the drilling operation. The first step is to drill a ¾" hole through the collar using a twist drill mounted in your Jacobs chuck. Technically the size of the hole to fit a ½" NPS tap would be 47/64". You do not have to spend the money for this odd sized specialty drill. A ¾" drill works just as well and the 1/64" difference will not make a difference. Once the hole is drilled through, use a NPS ½" -14tpi tap to thread the collar. In case your not familiar with the NPS tape, it's a standard pipe thread, but the threads do not taper, they are straight.



To thread on the lathe with this tap, I use a Lathe Tap holder. These are available for purchase and are fairly expensive. These can be simply made from 1 1/8" round Aluminum stock which you can easily drill out on your lathe to fit the tap. The idea behind threading on the lathe is to keep everything centered on the centerline axis of the lathe. Trying to hand tap will result in your threads being crooked no matter how careful you are. Remember, your finial will be attaching to this thread and a crooked finial will look awful.

Even though Pewter is a soft metal and cuts easily, using oil for the tapping procedure will assure you of a nice shiny smooth cut thread. Just some regular motor oil or 3 in 1 oil will work fine. Wipe threads off with mineral spirits to get rid of any oil that may contaminate later on.

Mount the now threaded collar using a ½" PVC male electrical terminal adaptor. These can be purchased at Home Depot or Lowes for about 30¢ each. These can be held in your chuck and the collar screwed onto it to enable you to do all your final turning of the collar.

I turn the top side of the collar first giving it a nice taper to match the top of your hollow form. Use your standard wood cutting gouges for the cuts. I like to use a ½" swept back grind bowl gouge. Sand to 600 grit and then give a final polish with 0000 steel wool. At this point I like to apply some texture to the surface of the collar. I use a Sorby Micro texturing tool to do this. Elf or Wager tools work equally well.

Reverse your collar onto your PVC terminal adaptor threaded chuck. You will now be ready to turn the underside of the collar. Layout the diameter of your hollow form hole using the points on your Vernier Calipers to score a circle. You will want to make gradual tapered cuts stopping at your scored circle. The tenon that is left will fit into the hole on your hollow form. Using your ½" bowl gouge or tool of your choice, begin tapering the underside inwards once again following the contour of your hollow form shape. Take very light cuts and as you progress downwards, check the fit using a contour gage. I also take a straight in cut along side the scribed circle with my parting tool to insure a nice straight side. The many little fingers of the contour gage will guide you to getting a fairly accurate cut. As you progress with your cuts, hold up your hollow form onto the collar and check its fit. Because the collar is held to the lathe by means of a PVC adaptor, I can cut right to the plastic threads and into the PVC collar without worrying about damaging the gouge.

Now that the collar is complete and you have a snug fit onto the hollow form, it's time to attach the collar to the hollow form. I use 5 minute epoxy and put it around the opening of the hollow form. I then insert the collar into the hollow form and place some weight on the top. This now completes the process of making the Pewter collar.

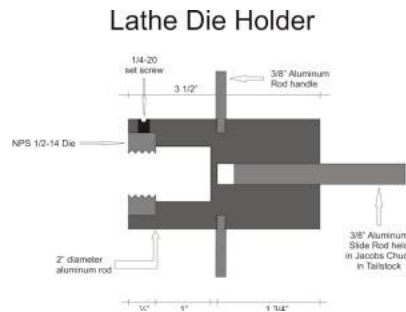
Turn the Finial

Now it's time to turn yourself a finial and attach a threaded ring out of Pewter to it. Turn a finial of your design and leave a ½" tenon about 7/16" long at the end. This will be for attaching your threaded ring when your finished.

Make yourself a mold for the ring by drilling a 7/8" hole in a block of wood a couple of inches deep. The pewter is then poured into this mold and allowed to cool completely. To remove the pewter from the mold, drill a hole in the block of wood from the underside and use a knock out bar to push the Pewter casting out of the hole. Mount the Pewter casting in your 4 jaw chuck and turn the outside diameter to 53/64" to prepare for threading. Also

take a 1/2" twist drill and drill a hole about 3/4" into the casting. This hole will be to accept your finished finial later.

Using a NPS 1/2" – 14 die held in a lathe die holder(see drawing) begin threading the casting about 1/2" down. Use some oil once again to obtain a better finish on the threads. The threads will be visible when you unscrew the finial and you will want a nice shiny threaded surface.



When finished threading, part off about 3/8" of the threaded portion to be used with your finial. The threaded Pewter ring is then attached to the tenon on the finial using 5 minute epoxy.

The final step is to clean up the underside of the tenon on the finial. Make a finial holder shown below. Mount the length of 2" PVC pipe using your chuck jaws in expansion mode. In the open end of the PVC pipe, place a piece of scrap wood with an appropriately sized tenon to jam fit into the PVC pipe. The wooden insert is drilled and threaded (1/2"-14 NPS) so that the finial can be screwed into it. This will now allow you to turn the underside of the tenon true.

