How to Make an Opal Inlay Ring with UV Resin

Follow these directions and you'll learn a quick and easy way to create a stunning ring using a pre-channeled ring blank, crushed opal, UV-cure resin, and simple tools. Click for links to purchase recommended products at Easy Inlay or Amazon (affiliate links). **Caution: Wear all required safety gear when using cleaners/glues and when sanding/polishing.**

DIY RING WORKSTATION: download plans to make a workstation from scrap ¾" plywood or MDF. Visit https://www.easyinlay.com/how-to

DIY RING MANDREL: download an easy-to-make mandrel to hold your ring securely while you work. Visit https://www.easyinlay.com/how-to

DIY MORTAR AND PESTEL RAM: download a pipe ram used to crush opal and other inlay materials. Visit https://www.easyinlay.com/how-to

First, gather these tools and materials, below. You may have many of them in your shop.

TOOLS
A rotary tool like a Dremel® or hand drill
Heat gun
Fine Tweezers (I prefer an offset one with a 45-degree end)
Popsicle sticks
Toothpicks
Mesh screen
Magnifying Visor (helpful but not required)
UV-protective sunglasses

MATERIALS
Ring Channel Blanks
Cultured Opal - (at least ~.3 grams required for a 9.5 size ring)
Solarez Flex/Hard UV doming resin
UV flashlight – calibrated to Solarez resin – 285 nm (
CA glue (thin) – I like GluBoost Ultra Thin
Acetone, nail polish remover, or other solvent
Denatured alcohol
Shellac
Blendal pigment or other ink/stain
Wax paper or small paper plates
Sand paper – 80, 120, 240, 320, 400, 600
Micro mesh sanding pads 1500 – 14000 microns
Gloves, safety glasses, and safety mask

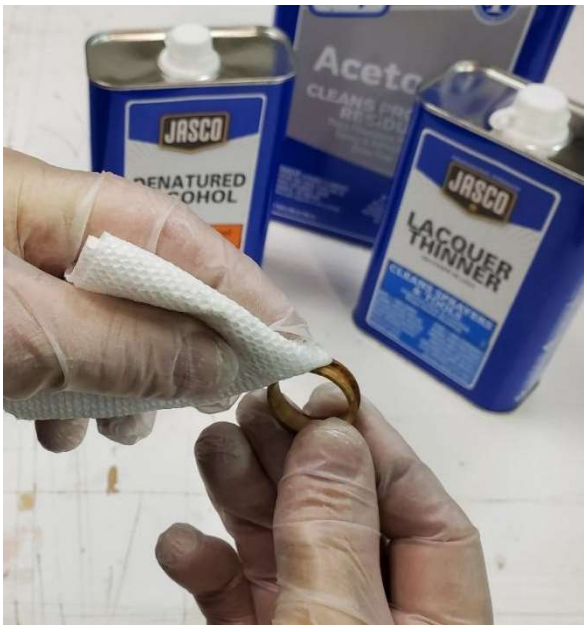
EASY INLAY

Wooden and ceramic rings are designed to break away (for people who are concerned with catching their rings on equipment), so if you're working with a wood ring blank, start by soaking it with thin CA glue to help strengthen the wood fibers. This step makes the rings stronger but still allows for a breakaway.

Shake off excess glue and set on wax paper to dry. Do not use any accelerator. This step is not necessary for ceramic or metal ring cores, and/or if you do not wish to strengthen a wooden ring with CA.

Take your ring and clean it with acetone, nail polish remover, or other strong solvent to remove any existing wax or oils.

Make sure you clean the groove to prepare it for inlay materials.



EASY INLAY

Install your ring onto the mandrel and gently tighten the nut to compress and expand the faucet washer. Turn the nut ¼ turns at a time and test the grab of the ring. Do not over tighten as you risk breaking the ring from too much tension.

After the CA is completely dry, scuff sand the entire ring and sand out any hardened glue drops. (I use a tongue depressor or popsicle stick wrapped with 120 grit sand paper.) Clean dust off with denatured alcohol. Do not use acetone as this will dissolve the CA glue.

Paint the groove black with a mixture of clear shellac and Blendal pigment. Dip your brush into the shellac first, then the powder and mix in a separate cup. Any black paint will work: stain, dye, India ink, nail polish. I like the Blendal for its rich deep blackness.

EASY INLAY

Although you can inlay almost any time of powder or grained aggregate, I like to use Easy Inlay® opal because it has a larger granule size than other suppliers. The 2-3mm particles have bigger facets, therefore they exhibit more fiery elements.

Next take some grains and crush them to make them smaller, to use for filling in any voids left by the large bits. You can use a hammer: apply pressure and roll the head over the particles to break them up. Don't bang the hammer onto the bits because they'll fly everywhere. Or make a DIY mortar and pestle.

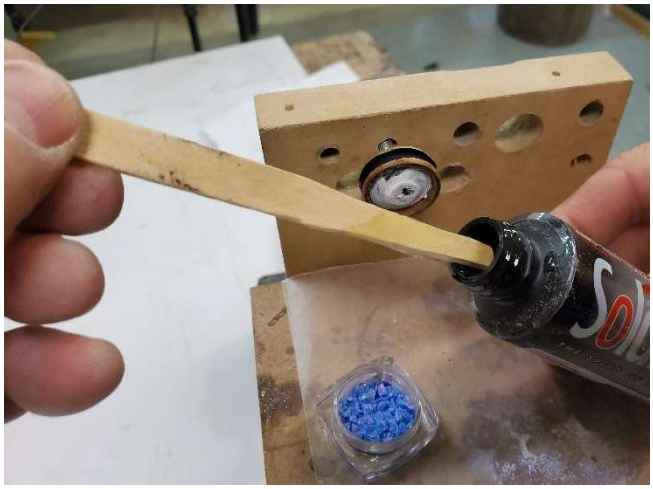
After crushing the opal, I sift it through a few screens, first using a kitchen sink strainer and then a finer one I purchased from a fishing store. I keep the mid-sized bits and finer dust. The larger bits go back in the jar.

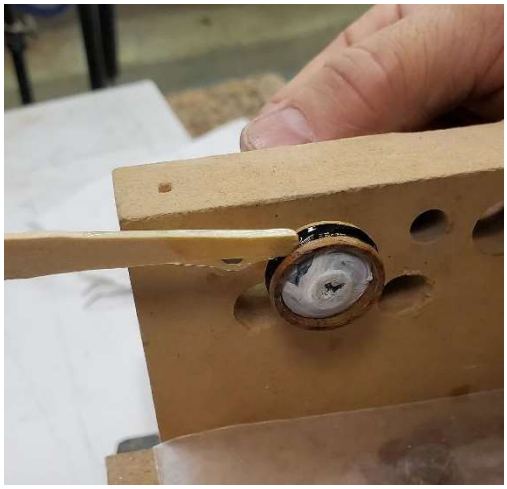
While not critical, a magnifying visor helps you see the inlay process more closely. I like the kind that had interchangeable lenses with different magnifications; this style allows for two lenses to be install and flipped up and down for a closer look when needed.

EASY INLAY

Resin: I love Solarez Hard / Flex Doming Resin—it cures in seconds using a special flashlight or sunlight, and it lets me work fast. It also has high surface tension which holds its shape and won't run and drip everywhere. It also has a surfactant that allows air bubbles to escape.

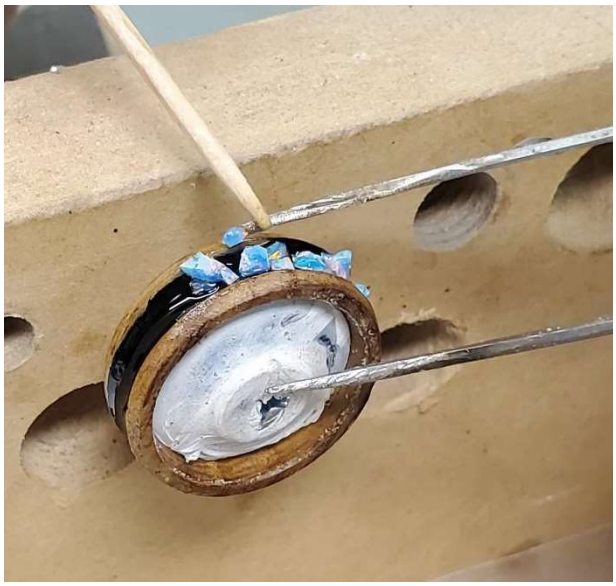
To thin or reduce the viscosity of any resin, heat it in hot water, and sometimes I use a syringe to accurately dispense it. I also wrap the syringe with black electrical tape to prevent light from reaching the resin and catalyzing it. I use a toothpick as an end cap.



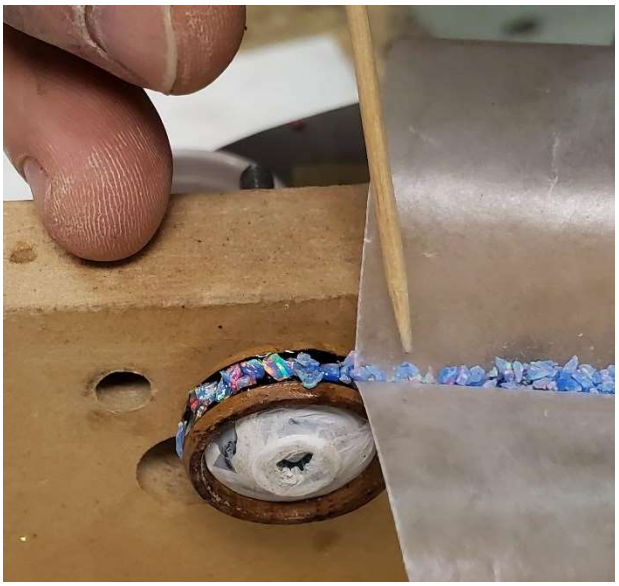


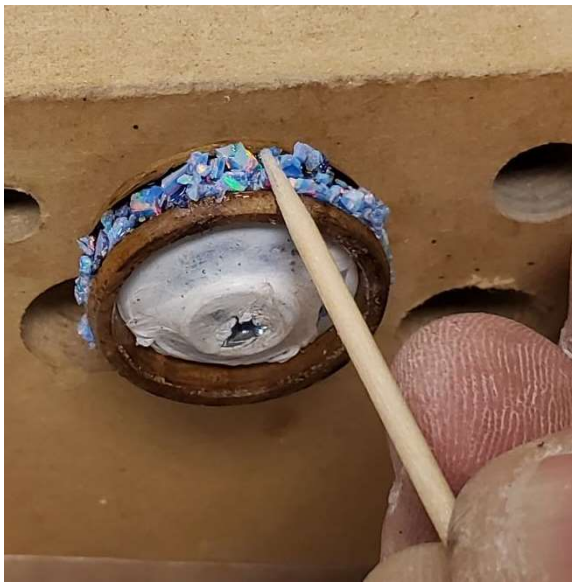
Cut a popsicle stick on one end and use it to apply a small amount of resin into the channel. Coat the channel completely around and make sure it gets into the bottom corners all the way around the ring.

EASY INLAY



Place the opal bits using tweeters and a tooth pick, keeping the pieces as close together as possible. After a few pieces are in place, slide and compress the pieces tighter together. Keep wax paper or a paper plate below your workspace to capture any opal bits that don't make it into the ring channel.





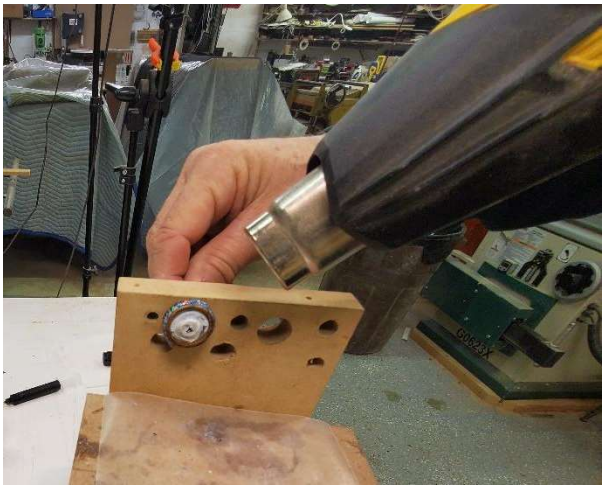
After the entire ring channel is filled with the larger pieces, go back and fill the remaining voids with the smaller sifted bits. Compact everything down with a toothpick.

EASY INLAY

Set the resin using the UV flashlight that is especially calibrated to the resin; Solarez is 385 nm.
Be sure to wear good UV protective glasses. DO NOT LOOK DIRECTLY OR INDIRECTLY at the reflected UV light. Set the resin by putting the light on for 15 seconds, 15 seconds off, then 15 second on again. Keep rotating the ring with the light on for a minute or so.

Be sure to wear UV-protective glasses. Even the reflected UV light can harm your eyes.

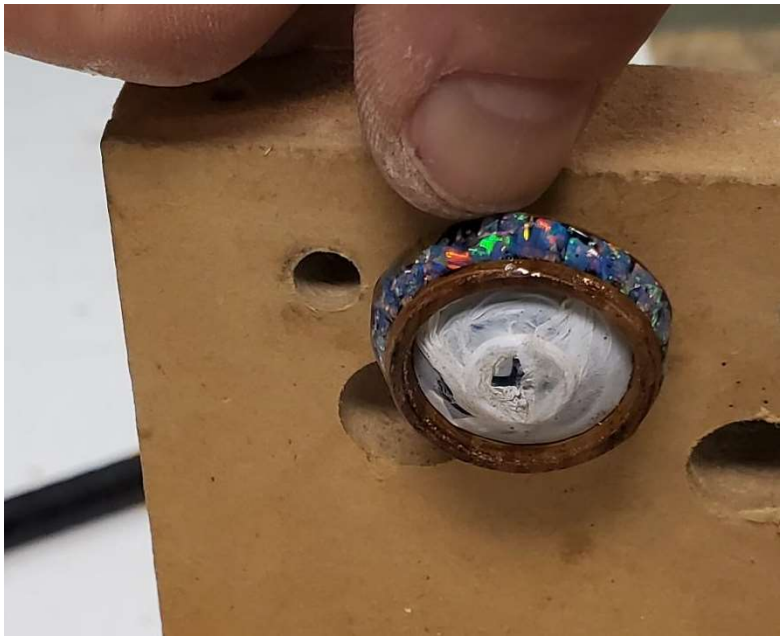
EASY INLAY



Using the syringe, dispense a second, even bead around the entire ring, and keep the ring rotating, much like a glass blower. I heat the resin slightly using a heat gun to help flow out the surface tension and release any bubbles. It is important to keep the ring moving and have your flashlight handy.

Follow the same steps above to set the resin with the UV flashlight.

EASY INLAY



The UV light cures the resin very quickly and a thumb nail check confirms hardness. For a little extra curing insurance, IF it is sunny outside, set the ring in direct sunlight for 10 minutes or so. Sunlight has the broadest spectrum of light and is the best source for curing any UV resin.

The process of inlaying opal along with resin coating should take roughly 15 min. Add an additional 10 min for crushing and screening opal into smaller bits.

Once the resin is completely set, use a rotary tool like a Dremel or Fordham Flexible Shaft with a coarse grit drum sander on it to grind off any high spots that may exist from drops or uneven resin application.

Pay special attention not to sand too deep; a light touch is required to just kiss the wood surface. Set the speed at medium to low, because a higher speed can melt the resin and clog the sandpaper quickly.

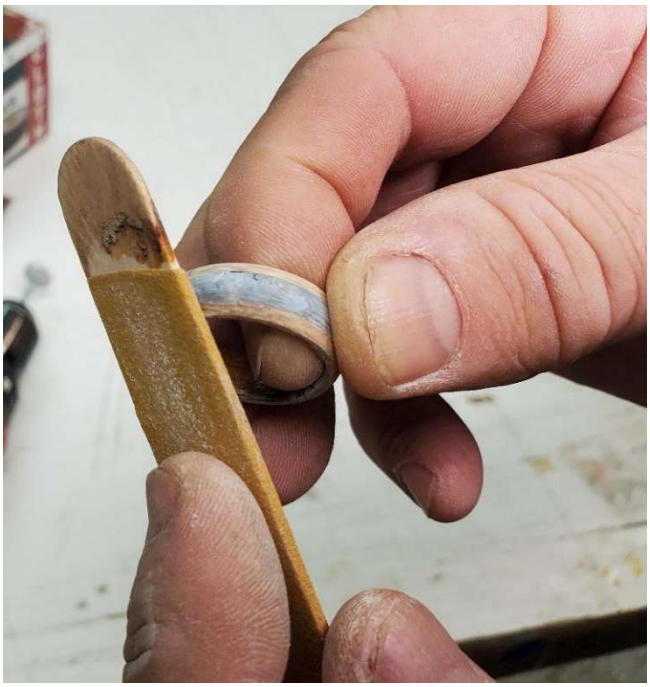
EASY INLAY

I use my work station to rest my hand and stabilize the grinding process. I easily angle the grind to kiss the edges while turning the mandrel with my other hand. (I am left-handed; right handers might turn the station around 180 degrees.)

EASY INLAY

Once the resin is completely hardened, mount the mandrel into a drill or lathe and sand through grits 120, 240, 320, 400, 600, working the shape of the resin. You can leave it slightly domed or sanded flush. A popsicle stick makes a great sandpaper backer for the process. Be sure the sand the edges of the ring too.

EASY INLAY

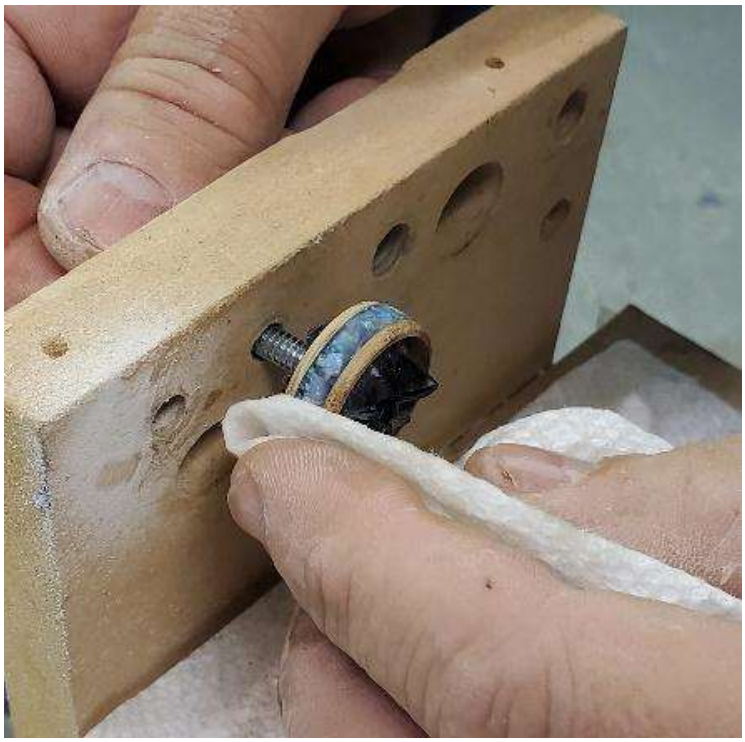


I sometimes remove the ring from the mandrel and hand sand the ring to refine the shape. I pay special attention to the wood seam, making sure it's crisp and straight.

One of the most important tools to have during any sanding operation is a garbage can. It is important to stop sanding and throw away used and clogged sandpaper or else you risk burnishing the surface, which can create excessive heat and melt the resin.

After this sanding step, I inspect the surface for any minor air bubble holes that are easily be seen by the white sanding dust. Blow the divot clean with canned or compressed air, fill it with a dab of UV resin, and cure with light. Then sand flush using the steps above.

EASY INLAY

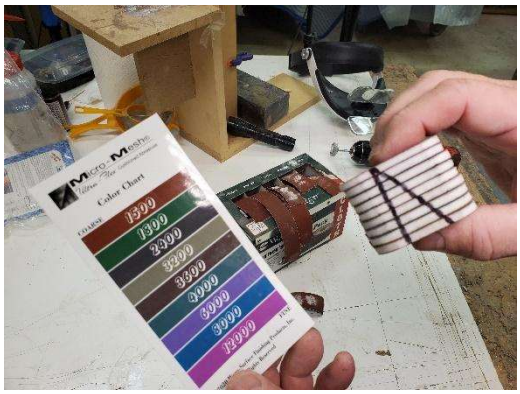


I clean the dust off with alcohol and this gives me the first look at the inlay. I love this step.

Next, apply a coat of thin CA glue and quickly and lightly wipe it once with a paper towel. I like using GluBoost brand CA because their accelerator doesn't cause any blush in the wood.

EASY INLAY

Apply and wipe off a second coat of medium thickness CA. These CA glue application steps help fill any minor pin holes or coarse sanding scratches.



For finish sanding use micro mesh wet sanding pads: 1500, 1800, 2400, 3200, 3600, 4000, 6000, 8000, 12000 grits and rinse the pads thoroughly a few times during the sanding process to wash away particles and prevent the pads from clogging.

TIP: After stacking the pads in proper sequence I draw a triangle shape on the side which lets me graphically see if they are in order.

EASY INLAY

Remove the ring from the mandrel. Lightly sand the interior with 600 grit and wipe with a coat of thin CA glue.

With my Dremel, polish the inside and outside of the rim with red rouge, then white diamond polishing compound, then a dry buffing for a final cleaning.

EASY INLAY

You’re done! Now you can present this beautiful ring to your family members or friends with pride and satisfaction of creating it yourself. Enjoy!