



Feat of clay

Kurt Hertzog is clear: it's time to play with clay

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One of the beauties of being a woodturner is that the tools and equipment lend themselves to so many materials. The lathe, various workholding devices, tools and techniques really don't care if you are turning wood or not. Properly configured, you can turn a variety of items and materials. In fact, you'd be hard pressed not to find a way if you are determined.

Using high-speed steel tools, you can cut nearly anything that isn't hardened, although there are a few exceptions. Obviously glass and the like doesn't lend itself to cutting with our tools but wood, metals, plastics, bone, antler, clays and others can be cut nicely.

This month, I'd like to branch away from wood and explore using clay. I am speaking of polymer clay, sometimes known as 'make-and-bake clay'. It is a soft, malleable material that you transform to a hardened state by baking it. Like standard school art clay, it can be formed, rolled, mixed, shaped, stuck together and conforms to your will while soft. Having achieved what you want, you bake it to drive off the softening agents, turning it hard forever. Once cooled into its fully hardened state, you can alter it again, but it will need drilling, sanding, cutting or otherwise mechanically abrading. Polymer clay comes in so many colours that we have a virtual rainbow at our disposal. Let's see how we might enjoy this capability.

HEALTH AND SAFETY

The various manufacturers of polymer clay all certify their materials as 'non-toxic'. I bake my clays and various cast materials in a toaster oven that has been permanently assigned to this use in the shop. When size demands, I use our kitchen oven for baking. Please make your own informed choice by visiting the websites of the various clay manufacturers. For cleanliness, I work on the kitchen table and always use disposable coverings. I have craft-dedicated tools and work surfaces to use.

A few other tips for your safety list: you are working with ovens and hot things, so be careful; never, ever leave your materials baking in an unattended oven of any sort. Should the materials overheat or your oven fails, you can be presented with problems; set your baking temperatures as per the manufacturer's instructions.

You can work the polymer clay without buying anything special, using only a few of your standard bench items. That said, if you get enthused, you'll likely purchase some of the specialty cutters and tools available for the material along with many other tempting accessories. The thin cutting clay knives are particularly deceiving. They appear to be a thin piece of spring steel, sharpened usually on one long edge. It doesn't even look very well ground or even that sharp; they are deceptively sharp. Use extreme caution when handling these, the corrugated cutters, or any other edges that can be used for working with clay.



Polymer clay blades are deceptively sharp. Use extreme caution when handling or cleaning.

What is polymer clay?

This is a mouldable plastic – a plastigel – with colourants, plasticisers and other chemicals to extend its shelf life and help its workability. External heat, from your hands or a very warm day, softens the clay and it becomes mouldable to your wishes. In higher temperatures, ranging from 215 to 275°F depending on the manufacturer, the softeners and plasticiser's bake out, the clay fuses together permanently. If it is baked properly, at the right temperature and for the correct time based on thickness, you will get a hardened final result. It will, however, continue to accept changes using woodworking type tools such as drills, files,



A few of the brands and sizes of polymer clays available in my local craft store

sandpaper, saws, etc. Baking it is a one-way street. Once hardened, it's done. There are polymer clay manufacturers in Germany, Belgium, Brazil, South Africa, the Far East and the US, so there will almost certainly be suppliers in your region. And you'll see product names such as Sculpey 3, Cernit, Fimo, Premo!, PVClay, Filani, Kato and Play Clay among others in your local craft supplies retailer and online. Some craft supply retail chains have their own house brands such as Craftsmart and Shape It! Make & Bake Clay. Note that each has its own specific baking instructions.



Notice the difference in baking temperatures and instructions, even between new and old stock

How can we use polymer clays?

Most turners have relegated polymer clay to pen turners. In those applications, the pens use simple mixtures of colours, swirled or patterned, as a replacement for wood. You can create the clay barrel that is ready for assembly after cooling or you can create a barrel that requires some turning. Either way, you wind up with a colourful pattern as your pen barrel. These can be kit pens or cladding for the inexpensive throwaway ballpoint pens from the discount house. For the more artistic, you can take polymer clay pen creations to extreme limits with incredible scenes and stunning creations with cane work. The sky is the limit since you will have opened a whole new art form that you can explore for decades and continue to grow. Beyond the pen world, you can use polymer clay as a fill for woodturnings. You can install a single colour or any level of creation into gaps, whether natural or created. The clay can be packed in and baked with simple sanding at completion or turning if needed. As you might embed a cabochon on a lidded box lid, you can embed a polymer clay creation created, baked, finished, and installed into that opening. Alternatively, you can pack the clay creation into the pocket cut into the turning for that purpose, baked, and then turn, sand, and finish as desired once hardened. Either way will work nicely depending on your workflow preferences. Another method of using clay would be to create the material to be turned from clay, for example,

a lidded box in its entirety or, perhaps, just the top. The clay can be created, formed, baked and turned much like you would with a block of plastic or wood. The only difference is the colour palette available and your creative flexibility. You certainly can turn your lidded box and then clad it in your polymer clay. Once done, you can bake the clay. Turn and finish as needed with the clay as a cladding permanently installed on your wood mandrel. Whether you use a woodturning as a mandrel to form your clay for shape, size, baking, and then finishing or leaving it as part of the final product is your choice. Decorations, beads, inlays, structural parts, or component parts such as finials or pulls: you have considerable flexibility. Nearly any species of dry wood will stand up to the heat of baking with little or no detriment. You might even take advantage of the bending and twisting that wet wood might



Once warmed up, the clay is easily manipulated, rolled, and twisted to size

provide if you were interested in experimenting. Other applications are presentation techniques that don't lend themselves to turning, but you can create shapes that don't follow the regular curves and roundness that you obtain by turning.



Grooves, relieved areas, cracks or flaws and drilled holes are all candidates for clay insertion



Pack into the grooves and recesses good and tight to prepare for baking

SUGGESTED DOS AND DON'TS

None of the listed 'dos and don'ts' presented here are anything except helpful suggestions to clay newcomers. Many can be violated with sufficient knowledge and skills. If you are an old hand, feel free to scoff at me and ignore them. If you are relatively new to polymer clay, you will do well to heed them until your skills and experience progress. Following them until you gain experience will increase your success rates markedly.

DO:

- Keep your work area clean. Dust, lint, hair, crumbs, etc. are unbecoming in polymer clay and extremely difficult to remove. Glass, tile, marble or other non-porous hard surfaces work great.
- Use an accurate thermometer to set your baking temperature accurately and continue to monitor your oven. The dials and readouts are nearly always incorrect. The baking temperature called for by the manufacturer isn't a suggestion! Be certain your oven is providing what is called for and it remains there. Depending on the oven, there can be wild swings as the thermostat turns on and off.
- Err on baking too long. There is little harm in baking for longer than needed PROVIDED the temperature is maintained as specified. You can do progressive assemblies by baking components, adding items and baking the new and old together. Repeated and longer than needed baking brings only the risk of some discoloration of sensitive colours.
- Clean your work area between colours. Unless you intend to mix colours, don't accidentally contaminate them. Baby wipes or denatured alcohol work wonderfully. Don't forget your hands.
- When possible, work from lightest to darkest colours in your work area. If unintentional colour contamination does occur, it will be least noticeable with this work flow.
- Work on a non-absorbent work surface. Chemicals in the clay will tend to leech out if on an absorbent surface with potential surface damage and also clay performance shortcomings.



A sealable plastic storage container works well for clay. Recycle #5 plastic material is 'clay resistant'



In addition to the clay manufacturers' finishes, these have worked well on polymer clay



All temperature dials or displays are inaccurate. Use a digital thermometer to set temperatures



Keep your clay working area spotless. Make sure handy items are nearby to help keep things continuously clean



You can work on waxed paper, but solid, smooth, cool, and cutproof is ideal.

DON'T:

- Don't mix brands of clay until you are more experienced. Differences in baking temperatures and potential different chemistries may cause problems. If you are required to mix brands because of colour needs or inventory, do test pieces first before betting the ranch.
- Don't store clay in any potential food service containers. Get plastic containers dedicated to the purpose. Store clay in airtight containers away from heat and sunlight. You can refrigerate or freeze clay for longer storage.
- Don't leave clay baking in an oven unattended. If things go awry, burned clay gives off fowl smelling and noxious fumes.
- Let baked clay cool gradually as the oven cools for maximum properties and minimizing the potential for thermal shock cracking. As you get more involved, you'll begin 'tenting' your baking to maintain even heating and prevent rapid changes as well.
- Select finishes carefully. There are several clay safe finishes available. Not all of our standard acrylic sprays and lacquers used on wood will cure on clay without leaving ongoing tackiness. Test your finish on some scrap pieces if needed.

Getting started

If you are launching into polymer clay from ground zero, what are you going to need? To begin with minimal expense, buy a couple of blocks of clay from your local craft retailer. Pick the same brand and buy a few different colours. Using the same brand lets you mix and bake them properly at the same temperature. Small blocks are available in 2oz packages and are very modestly priced. You'll need a tabletop in a clean area where you can tape down a piece of waxed paper to work on. To work the clay, you'll simply need your hands and a roller of sorts. Don't use a wooden roller. Get a piece of plastic whether clear or not. A smooth, plastic roller or clean brayer will

help you rolling out your materials. In a pinch, you can use a straight-sided glass jar (any labels removed). For cutting the clay, you can use a Xacto knife or painter's palette knife. At this point, you have all you need to begin. After creating, you'll need to bake in your preferred oven with an accurate temperature measurement. That's it for now. If you do get bit by the bug, you'll likely have a granite surface plate to work on along with your motor-driven pasta-making machine and industrial level clay extruder. Trust me. It's very hard not to get carried away with the available gear, gadgets, and goodies if you get enthused.



The basics to get started: waxed paper, a craft knife, clay and a round piece of plastic



Like all hobbies and crafts, there are upscale options available for polymer clay work

The process

Let's run through an example of the basic polymer clay process. Please bear in mind that this is the absolute basics and only the tip of the iceberg. If you get hooked, you'll have the world before you to learn a new craft. With your selected clays, figure out what your application is going to be. It can be a pen barrel, an inlay into an existing turning, an accent stripe proud or inset into a platter, bowl, or other turning. Whatever your choice, decide on how best to draw interest with the colours you've chosen and the method you've selected to add the clay. Open your clay and begin to knead it and roll it in your hands. Work with one colour at a time and only work the amount you think you'll need. As it warms, you'll be able to flatten, roll, and stretch it using your waxed paper work surface and roller. Once flattened into a sheet, work your other colours in the same manner in an open area of the work surface. Now comes the creative part. If you want swirls, lay all of the colours on top of each other, roll them up, and twist them like a corkscrew. After mixing to your satisfaction, flatten and roll the entire clay block. Once rolled, cut out the shape to fit your opening or slice off belts of the colour to wrap around your turning. Use a straight edge for neatness as needed. Feather out the clay smoothly with your fingertips to blend seams together or fit to the edges of your opening. If you have cut

pockets for the clay, whether shaped designs or simply grooves, leave the wood with some tooth. The clay will adhere much better. Depending on the aspect ratio, I sometimes make undercuts in my channels much like inlaying metal uses. With your clay pressed into place, you are ready for firing. Preheat your oven to the manufacturer's specified baking instructions. Once preheated to the correct temperature, insert your piece to be baked – try to avoid being close to any of the heating elements – and use a tile, aluminium

foil sheet, or other carrier for your clay or clayed piece. Close the oven door. Now wait until it returns to the set temperature before you begin your timing of the bake. Most manufacturers recommend a certain number of minutes per 1/4in of thickness. You can always bake longer than instructed provided you maintain the desired temperature. After you've completed the bake, turn off the oven and let everything cool. Your clay will still be pliable and somewhat soft until it cools. When cool enough to handle, you're done!



Working the clay to warm and soften it. Once ready, you can work it to your vision



Here are two simple colours. The colors and options available for your palette will keep you creating for years



Ready for baking. I use ceramic tiles from the home improvement store as baking platforms



Filling the oven with tiles will add to the thermal mass, shield the clay from the heaters, and moderate temperature variation

Turning and finishing

If you've created something that requires additional turning or fine-tuning of the fit, you can turn or cut and then sand just as you would when working with wood: sharp tools and a light touch. When you are ready to apply a finish, you can use one of the clay-safe finishes or your standard wood finish provided you've tested it and are certain it is not going to be a problem over the clay. The clay itself usually requires no finish. A finish will punch up the colours a bit and add some gloss

if you wish. Well done. You've just opened Pandora's Box.

Think of the things you can do with this material, either alone or in combination with wood. Wait until you learn to make Skinner blends, simple to exotic canes, millefiori, artistic patterns, and incorporate the glow in the dark clays. All of this is just a taste of where you can go. There isn't a limit. Visit the library, YouTube, or your craft store for clay classes for more ideas. You'll see more of clay in the future when it fits the topic.



Baked polymer clay turns and sands just like plastic because that's what it is



Whether it's a pen, lidded box, pull, finial or gap fillers, give polymer clay a try

Conclusions

Why cut a recess or hole for a cabochon and then pack clay into it? Why not just get a cabochon? Exploring clay will open a whole new horizon for your creativity. Buying and inseting a cabochon is fine but doesn't have the potential you have with clay. Create your own cabochon. You can carve in irregular pockets, fill voids, turn entire pieces or just add accents with clay. "Heresy", you say. Why not? Whether you use clay as an accent, a component, or the entire material, you now have a whole new material to express yourself. When some folks are given a brush and paints, they paint the porch while others run with the opportunity and paint a painting. Don't shrug off the artsy stuff as not befitting a 'real' woodturner. Look at some of the artsy turnings being created, bought and collected if you need any incentive. Not your interest? Why not collaborate with someone? A fellow club member, spouse, local artist, or other person can bring added skills to the party. Turning and finishing clay can be a joy; creating with it can be a lifelong challenge to enjoy both alongside and as part of your woodturning ●