

A Newbie's Guide to Mastering Skills for Creating Solid Rod Sculptures

by Helen Starkweather

Let me start by saying that I have only worked with glass since January of 2008. By most measures, that makes me new enough that I should be taking classes to make glassy goodies instead of writing articles about creating them. So why am I writing an article about glass sculptures? Well, the fact that I'm new means that everything I know I learned in a very short time. In other words, I haven't forgotten a thing. I remember every question I had to ask and every step I needed to know to make something. I know which steps I had to get past to be able to go on to the next step. And as I have created the pieces, I know what the next step is, too.

Glass pros of ten to thirty years don't necessarily remember what steps they had to go through to *learn*. They mastered the basics so long ago that they often cannot explain or even remember the core skills. I'm not talking about the technique for a given piece but the core skills they needed to apply their techniques. For example, how do I spin a one-inch rod properly? What is properly? You get a tutorial or a video and you see them spinning the rod. When you haven't done this before, it's daunting. I see people newer than myself collecting tutorials and articles for "the day" that they are good enough in basics to try them, because they are not even sure of the questions to ask. What *are* the core techniques, anyway?

When I first started, I was told practice, practice, practice. Well, okay; practice what? Those were literally the most aggravating words I have ever heard. The steps from Point A to Point B are not always as easy as someone who has done it for years makes it look. It surely wasn't for me mostly, I think, because people who've done anything for a long time go right to it and don't explain what it takes to get to that point.

I have noticed a recent surge in interest about solid sculpture and borosilicate glass. Soft glass friends are buying up boro to try, upgrading their torches, and looking for larger concentrators. While many of them are better bead makers than I am—sometimes by quite a large margin—the skills for boro are a bit different than a soft glass person may be used to.

Here are some things I have learned that may help you on your journey toward solid rod sculpture. These are not helpful because I've been an expert for years, but exactly because I have not.



Skill 1: Rod Spinning

Those who have made a bead know that they have to spin the mandrel smoothly and evenly to shape the glass. I have seen bead makers spinning their mandrels with their fingertips—forward, then backwards—never making a full rotation. They can get away with this because the mandrel is so small that just rolling it between your fingers or along the first finger joint equals about five to ten full rotations of the bead. I do it myself; it's fast and easy. Spinning a thick, solid rod, however, requires the ability to spin it evenly in a continuous motion. You are not going to make four to five rotations with a simple finger motion. You will not even manage one rotation with the same finger effort, depending on the size of the rod. You need to learn how to spin a one-inch rod levelly and fast or slow. This core ability will open the door to better marbles, sculptures, pendants, and blown glass.

There is no set method that I've seen. I've watched many boro masters at work, and each has his or her own technique. How you hold the rod should be what is most comfortable for you. The key is that you are able to eventually spin *two* rods evenly in the same spot at the same time. I'm no pro at this yet either but I get better every day, and I see the difference in my glass work as I improve. You will too.

A fantastic practice, shared by Chad Trent, is to "hook" the end of two same-sized boro rods. Then stretch a rubber band between the rods on the hooks. This gives you an observable tension. If the rubber band twists, you are spinning one hand too quickly. If it stretches, you are pulling your hands apart. If it sags, you are pushing your hands together. Without wasting glass, you can see where you need to improve. If you practice rolling the rods in each hand at the same time, you will quickly see what you need to work on. It's a *lot* harder than it sounds, but by the time you have this mastered, you can make anything you want in boro, from marbles to goblet feet. Not fully mastering this doesn't mean you can't make sculptures but it will help a lot, so know that you should work on it.



Skill 2: Working in One Direction

- Boro cools down faster than soft glass.
- Boro takes more heat to melt than soft glass.
- Boro is less brittle than soft glass.
- Boro needs to work hotter in the flame than soft glass.

All the above factors make boro an easier medium to sculpt in, either with tools or gravity. You will have the time to make small changes that you don't have working in soft, which can get away from you faster. If you plan your piece properly, you should always be able to work in only one direction, bottom to top, side to side, or however you want. Just do not reheat sections that have had the heat taken away. Remember, boro cools faster. While it is not as shocky as soft glass, reheating a cold and unannealed section will crack any glass. The larger your piece gets, the higher the risk of shock. Do not reheat. Plan ahead and finish two-inch sections at a time, then move forward so you need not reheat that section again. If you are making something with many components, have them annealed and ready to add to the base piece as you are making it. If you hear a PING sound at any point, which means you have a crack, you have reheated a cooler section. You cannot anneal your piece until you fix the crack, because it will destabilize your entire piece. The exception to this will be explained in the kiln section below.

Skill 3: Working with Your Kiln

Bet you thought I would talk about annealing here. Nope. If you want to make sculptures, you need to work with your kiln *during* the making of your piece. If you are making multipart pieces, this is the easiest way to do it—let the kiln do your work. If your sculpture has several parts, pop them into the kiln to evenly heat up and anneal at 1050°F while you are making other parts. When you are ready to assemble, put your base in there, too, for half an hour or so (depending on the thickness of the piece), then pull out two pieces and fuse them together. You want to do it this way because both pieces are annealed already, so they are stronger and attaching is easier. It is a huge exercise in frustration to do it any other way, and I've spent hours chasing cracks around a piece before I "got it." Save yourself some frustration; take some breaks and let your kiln do your work for you. This doesn't change the need to anneal the piece when done, since you ruffled up the molecules each time you attached another piece.

Skill 4: Working with Your Torch

For sculpture, understanding your torch and its chemistry is more important than for soft glass because of the mixed types of uses you will put it to. Boro takes a while to melt, but certain boro glass can be very bubbly and tricky to work with and must be melted even slower and more carefully. Ideally you want to set the torch to *just* neutral, not over or under, for melting all your glass. A propane-rich flame is particularly bad for silvered boro glass, because it will bring all the metals to the surface, muddying up your colors. One of the best bennies of working boro—cheap silver glass! You don't want an oxygen-rich flame either, because it produces less "bush" effect, not heating your piece as evenly.

Once you get into sculpting your piece, you will want to be able to change the flame size and composition. An oxygen-rich flame will help burn the haze off of silvered boro glass to keep the colors from getting muddy or cloudy. A small, pinpoint flame is best used for spot work such as fusing very small parts on where you do not want excess undirected heat. Since every torch is different, you will want to play with the settings using a boro silver glass rod that can act as a gauge of your torch's chemistry (mix of propane

and oxygen). Setting this flame is a bigger deal for boro, because so much of the glass you will work with will contain metals. It's impossible to put into a simple article all you can learn about flame chemistry, since the settings on every torch differ. It's an important factor in sculpture, and you should learn as much about your own model torch as you can from all sources.

Glass Alchemy has a glass that they recommend for setting a neutral flame called Amazon Night. It's very helpful and a beautiful glass on its own. You can read more about this on Glass Alchemy's site.

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