
Subject: Re: Fordite & Flame Blued Steel (Custom Dial Project in Process)

Posted by [dpm](#) on Fri, 02 Oct 2020 04:54:11 GMT

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Process Improvement Serendipity

A jeweler I know was happy to lend me a “model-making lathe”, but he suggested that I skip the lathe step entirely and use a hole saw of the correct diameter instead. This was a great suggestion, as the fordite is tough enough to tolerate working, but still soft enough to cut with common tools. I bought an inexpensive bench-mounted drill press and a diamond-bladed hole saw and went to town. In short order, I cut several 29.5mm diameter cylindrical cores of fordite. These are great; they were easy to cut, they’re nicely straight, and the core diameter is really close to my final diameter of 28.5mm (for Seiko-compatible dials).

I found a supplier of half-height (0.2mm high) Seiko-compatible blank brass dials. These already have dial feet soldered on, compatible with both 3 o’clock and 4 o’clock Seiko dials. I bought 10 of these dials, enough to complete my first run of dials.

Most importantly, I was talking about this project with an archaeologist friend of mine. He mentioned that he had a very special saw, a Buehler IsoMet 1000 Precision Cutter, which he uses to cut 0.1mm (and thinner) slices of bone and teeth for microscopic analysis. This machine is specifically intended to cut extremely thin sections of delicate materials without causing fractures or deformation; it’s very low-rpm, has a constant water feed, and is gravity fed. It does take a long time to cut, but it should have a very high success rate with fordite. This saw isn’t cheap -- a Buehler IsoMet 1000 is \$8,900 new, and each 5" blade is \$438. If I didn’t have a friend with a lot of experience with this saw, I wouldn’t have thought it possible to reliably cut thin fordite sections. And if my buddy wasn’t interested in this project and willing to let me use his saw, then this project would have stalled out completely.

With these process improvements, my manufacturing process becomes much simpler:

Use a drill press and a hole saw to cut a 30mm core of fordite;

Use the Buehler to cut a 0.3mm thick disk of the fordite;

Use adhesive (thinned jeweler’s epoxy) to glue the fordite to the 0.2mm half-height brass dial blank;

Drill a central hole using a pin vise and the dial template’s hole to guide me; and,

Final polish of the fordite to remove any “overhang” over the edges of the dial blank, and to get the final total height to the required 0.4mm.

Chapter Rings, Half-Height Dials & Next Steps

Right now, I’m assembling my first 10 Seiko dials, setting up my web store, getting my required business and sale licenses, etc. I’m still slicing the dial sections out of the fordite cores I’ve cut with the hole saw, and I’ll post the first finished dials here when I can.

The first two example watches I'm building will have "plain" fordite dials. I'm using an SRPE69K1 and an SRPE51K1 for my first two model watches, since they have nice chapter rings but don't have diving bezels.

I will be constructing at least one example watch with a heat-blued chapter ring, since I believe folks might like having hour indices (especially if they're a pretty electric blue). I'll need to align these chapter rings by hand, which is something I'm not particularly looking forward to. I believe that I've found an adhesive that will give me enough time to make sure the chapter rings are aligned correctly, but won't take too long to set that I'm stuck holding the chapter rings in place for an extended period of time.

I was lucky enough to find and buy ten half-height (0.2mm thick) Seiko brass dial blanks when I started this project. Indeed, but for the availability of these half-height brass dial blanks this project would not have been feasible. Unfortunately, my supplier of these blank half-height dial blanks is out of stock, and he switched to a 0.3mm blank brass dial blank in his next production run. Because of this, I need to source a supply of 0.2mm thick Seiko brass dial blanks. Luckily, I've connected with a Chinese factory for this.

I connected with a Chinese factory via Alibaba, and they are currently producing a small (200-piece) run of ETA/Unitas 6498 half-height (0.2mm thick) dials with a diameter of 38.0mm. For the last month, I've been going back and forth with them on the design. I should be receiving the first prototype in the mail soon, and I'll okay the full run of 200. I really hope that this factory does a good job, since I really need to have a run of 0.2mm thick Seiko brass dials made!

Also, I need to design and have laser-cut a chapter ring for the ETA/Unitas 6498 dials. Unlike Seikos, which have a lot of cases with chapter rings available, my 6498 dials will absolutely need an applied chapter ring. I'm looking forward to designing this -- I'm looking forward to finding a minimalist design that highlights the 6498's small seconds.

I'm absolutely focused on getting my first run of fordite Seiko dials finished, but I'd love to experiment with other exotic materials like "surfite" (made out of surfboard resin), "bowlerite" (made out of the interior of bowling balls), and semiprecious stone like turquoise, bloodstone, labradorite, sugilite, bumblebee jasper, etc. Here, I would be competing with Chinese manufacturers who already cut stone dials, so I'm less optimistic about this unless I can find and specialize in some really unusual materials. (Sugilite, for example, is beautiful and not super well known.)
