BACKGROUND INFORMATION

Silicon mold making is the least destructive means of making copies of museum materials. The silicon is a non adhesive and abrasive material that will not negatively impact many museum objects. It is best used for lithic or metal objects but could also potentially be used for bone and ceramic, depending on the object.

MATERIALS NEEDED

There are many different versions and types of silicon molding and casting materials that can be purchased and used for this project. The differences include pot life (how long you can work with and pour your material), cure time (how long it takes the materials to set) and mixing ratios. For this project I have used SR-30 for the silicon molds and a liquid plastic #305 for the casts. These materials have the optimal pot life, cure time and mixing ratios of the ones available. The materials required for making the molds are listed below.

**Specialty Materials:**
- Mold Max 30 – two parts, A and B, combine to form the mold
- Ease Release 200 spray bottle
- Smooth Cast 305 – liquid plastic, 2 parts, for casting

**Common Materials:**
- Moldable clay
- Containers for making 2 part cast (we made an adjustable container from wood, but dishes or tubs can work as well)
- Containers for mixing materials – disposable
- Mixing sticks
- Scale for measuring silicone Mold Max 30 parts
- Knife/box knife
- Marbles/acorn nuts
- Small Paintbrush

**Safety Equipment:**
- Latex Gloves
- Dust Mask
- Safety Goggles
- Clothes you don’t mind getting messed up
STEP BY STEP INSTRUCTIONS

Step 1 - with your container in front of you, embed the bottom of your container with clay and press down the item you are casting halfway down into the clay. You will be casting the half sticking out of the clay first. Make sure your container is water tight and secure.

Step 2 - Embed your aligners (marbles/acorn nuts) around the clay, they will later insure that the mold comes together for casting.
**Step 3** – Measure out and combine parts A and B of Mold Max 30 in a 10 to 1 weight measurement. Stir completely until all white streaks have gone from the mixture. Then, pour on top of prepared item in clay. Make sure to fill the container at least 1, preferably 2, inches above the top of the item, to ensure a thick complete mold for casting. The silicon then cures for 24 hours.
Step 4 – Remove the cured mold from the container. Remove the clay from the bottom of the hardened silicon and the marbles from the clay and silicone. That is now your base. Turn the hardened silicon over and embed the item where it was sitting before, you will now cast the other half of the item.

Step 5 – With the first mold half and item in place, spray the Ease Release 200 over the mold half and item at a distance of 1 foot above. This is where you will want your safety goggles and dust mask. Brush the surface of the item and the silicon, and spray again. Wait 5 minutes before applying the second half of the silicon mold. This will ensure that two mold halves will release after the second half is cured.
Step 6 – To create a hole that will be used to pour casting material into you can do one of two things. (1) You can embed on top of your item a funnel shaped piece of clay that will create a hole when you pour the second half of the silicon over. (2) You can pour the silicone straight on and then drill a hole on top of the mold that you will pour casting materials through. It is up to you. I prefer to drill 2 holes, one for pouring and one as a air release, that way fewer bubbles form. Measure and mix the same amount of Mold Max 30 parts A and B and pour over the prepared mold and item. Let cure for 24 hours.

Step 7 – Remove mold from container and pry apart. It may be hard along the edges to get the mold apart, but you may cut a small vertical strip along the edge of the mold to find the center and pry apart from there, it will come. And you have your two part mold.
**Step 8** - Begin casting. Take your Smooth Cast 305 bottles and pour equal amounts by volume separately into disposable cups. Combine and mix thoroughly. The casting material begins to cure in about 10 minutes so you must work quickly. Pour the mixed casting liquid into the prepared mold. Tap the top to encourage any air bubbles to raise to the top.
Step 9 – The curing time is 20-30 minutes, but I like to remove the casts from the molds as soon as they cure so they can easily have the mold lines and pour spouts cut off when the plastic is still malleable. Congratulations you have your cast!
Step 10 – Painting the cast.

- Before painting your cast, be sure to wipe it down with a damp cloth so that the paint can adhere properly.
- We have found that acrylic paint works the best for painting. You’ll likely have to do 3 layers of paint to get a thick coating, don’t put the paint on too thick or the drying time will take longer.
- For the first two layers of paint, just use a base color (ie. the primary colour of the lithic), and on the third coat add in different shades of colour and recreate any detail on the actual lithic. For accuracy in color, try to find the undertones in the original lithic. Although it might seem like the lithic is one colour (ex. black), often it is actually a few different shades of one colour (ex. black, blue-black, dark grey).
- For applying the paint, I found that instead of using normal paint strokes, a quick dabbing gesture with a hard-bristled brush gave the paint a more grainy texture similar to real stone.
- When you’re happy with the end product, let the casts air dry for at least 3 days. During this time the paint will be delicate and can easily be scratched off, so it’s best to leave them somewhere safe.
- Lastly, you’re going to want to use a clear, acrylic aerosol spray coating to protect your hard work. We used “Crystal Clear Acrylic” by Krylon, and did two coats of it. Remember to follow all instructions on the package.
FURTHER RESOURCES

YouTube video by SmoothOn, how to make a 2 part silicone mold
https://www.youtube.com/watch?v=FQ1A7ZjTsx8

YouTube video by SmoothOn – How to make a liquid plastic cast using your silicone mold
https://www.youtube.com/watch?annotation_id=annotation_42850&feature=iv&list=PLB7D00770573C1683&src_vid=FQ1A7ZjTsx8&v=XPezK5RHgcc