Intermediate Pewter Casting in Soapstone Troubleshooting

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Troubleshooting for Carving and Pouring

If your mold will not fill:

- Add air vents all around outside of mold.
- Poof baby powder (NOT the corn starch version!) on mold (bottom and sprue) to break up surface tension of the metal.
- Add another sprue route to a different spot on the mold.
- Carve a matching channel on the back of the mold (bottom of the upper set) to the areas that will not fill. This does not have to be the whole width of your mold! (or particularly pretty!)
- Deepen the shank/pin/clasp/etc. portion of the mold.
- Get the metal extra hot.
- Try tilting your mold one way or another as you pour.
- Try pouring a slow steady stream of pewter vs. an abrupt dump.
- Deepen your actual carved face.

If your piece is very flimsy:

Carve a matching channel on the back of the mold (bottom of the upper set) to the areas that will not fill. This does not have to be the whole width of your mold! (or particularly pretty!)

If you are having excessive flashing (extra material around the edges:

- Check that there is no debris between your mold pieces, keeping them apart.
- Make sure that no outlying areas of your registration nubs are sticking up.
- This may be your actual carved face having too many stray scratches/carving marks on the outer face. Your options here are:
    - Deal with it in post-production.
    - Melt out the registration nubs (which sucks!), sand down your blocks a bit and re-register (keeping the stones aligned the same as before!

If you are getting a lot of bubbling on the surface (from trapped air):

To help with this we need to get the air out somewhere other than the sprue. To do this:

- Carve air vent scratches ALL around/over your mold.
- Use baby powder poof. It works. Ask Braden why… it sounded like chemistry to me!
- Deepen your sprue so that it is a decent reservoir.
- When pouring your mold, pour in (dump) all at once as quickly as possible. This will force the air only out the side vents and provide at least some help for this issue.

If an (inner) area will not fill:

This may be because the air in the mold has no escape. If you cannot get an air vent from the area to the outside of the mold (on the bottom piece or through the top set) and the other troubleshooting methods won't work, try this:

- Use a *very* small drill bit and drill *through the mold* to an outer edge.
    - This may be from a spot inside the actual carved face, from the back of the mold set or (preferably) in the middle of an adjacent non-carved space so that no mark will appear on the poured piece.
- Shove some broom straw into the hole so it is filled pretty thoroughly.
- Trim the straw so that it is flush with the face of the mold.

This will provide an air vent from the middle of the mold but not enough space for metal to flow through. Don't worry about the straw when heating up the mold. Occasionally the straw may have to be replaced but the effort is worth it!

This method is thoroughly documented by Daniel Burger. His examples show that the hole did not go all of the way through, but rather goes partway through the mold and is met but a larger hole drilled form the side of the mold.

Figure 1 – Example of Slate Mold with Inner Air Vent Holes Gertrude of Nivelles 15th Century – Brussels (Koldeweij, 146)

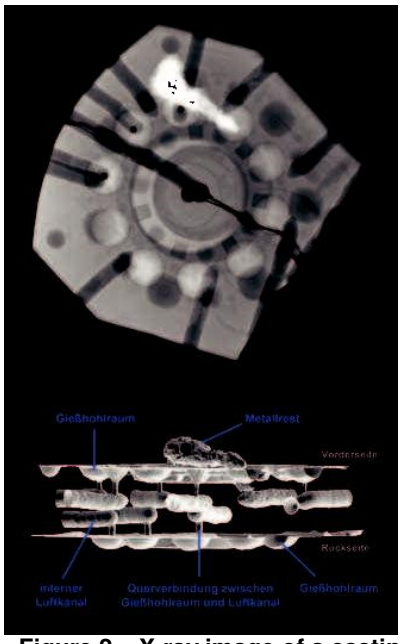

Figure 2 – X-ray image of a casting mold with internal channels for air release (above). Below, a reconstruction of the same shape. Good to see here are the narrow-sized cross-connections. Location: Magdeburg Date: before 1284 Dimensions: L. 90 mm, 104 mm (Berger, 44)

Figure 3 – Mold showing inner air vent hole that vents to larger side hole. Also show many air vent channels. Location: Magdeburg Date: before 1284 (Berger, 43)

References

Koldeweij, Jos. Geloof & Geluk Sieraad en devotie in middeleeuws Vlaanderen. Arnhem, Terra Lannoo, 2006.

Berger, Daniel. Herstellungstechnik hoch- und spätmittelalterlicher Kleinobjekte aus Zinn (Production processes of small pewter objects in the High and Late Middle Ages). (http://www.academia.edu/1261389/Herstellungstechnik_hoch-_und_spatmittelalterlicher_Kleinobjekte_aus_Zinn_Production_processes_of_small_pewter_objects_in_the_High_and_Late_Middle_Ages_ >