

Sand Casting Project

CM: 949

Team name: Team #4 Section 02

To: *Dr. McCormack*

From: *Elizabeth Foesch, Mike Gassen, Dustin Gurley, Austin Strozier*

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Re: Sand Casting Wax Seals

In this project we designed seals that have a specific engraving chosen by each individual. The product is shown in Figure 1. To facilitate the sand casting process vertical runners were attached to each seal in the pattern and at the bottom of the pattern a horizontal runner connected two of the seals. The runner design allowed gas to escape from the pattern easier and helped allow the metal to flow to all areas of the parts. Draft was added to each feature of the seal including the engraved patterns in the seals. The seals were cylindrical shaped, but with the draft the shapes appear more complicated.

A design difficulty with our pattern is the engraving in each seal. The engraving itself is small, so there are potential issues with the sand adequately filling the engraving and releasing from the mold. The challenge also existed in designing the engraving to be detailed, but still large enough to meet the radii and draft requirements of a sand casted part. Also, we created four individual parts, which created issues with air getting trapped in the sand mold as well as the metal being able to flow to all parts easily.



Figure 1. *The figure above shows our sand casted seals before post processing*

One design modification would be to change the engraving patterns so that the packing sand could more easily fall out of the engraving. The engravings could have a deeper indentation into the seal so that the weight of sand would help pull the sand out of the pattern. The detail could also be decreased on the engravings so that the sand would not get stuck in narrow slits or tight radii.