

Recipe to be annotated:

<title id="p140v_a1">To cast in **sulfur**</title>

<ab id="p140v_b1">

To make a clean cast in **sulfur**, arrange the pith of some **bread** under the brazier, as you know how to do. Mold whatever you want & leave it to dry & you will have a very clean work.</ab>

<note id="p140v_c1">

Try **sulfur** passed through melted **wax**, since it won't catch fire & won't make more little eyes.</note>

Related Recipes from MS Fr 640:

fol. 12r: 'molding sulfur'

[fol. 46v: how to write without ink' (sulphur oil?)]

fol. 50r: 'molding' (sulfur in paper/cardboard)

fol. 109r: 'wax for molding' (mixed with sulfur)

[fol. 131r-131v: 'molded wax' (again mixed with sulfur)]

fol. 139r-139v: 'Casting wax to mold an animal that one has not got' (wax mix)

Additional Sources:

Biringuccio

- 77: sulfur is a "semimineral"; "Those that liquefy with fire, like sulphur, antimony, marcasite, calamine, zaffre, manganese, and others, resemble the metals almost like brothers."
- 86-90: where sulfur is to be found ("This thing is found in many places.... Aeolian Islands, near Sicily, in Etna or Moncibello which is the island of Sicily, at Pozzuoli, in the territory of Rome, in the Sienese domain at San Filippo, and in many other similar places"), its properties, colors and odors
 - 86: "It is a substance that has a very strong odor and is most unpleasant to smell."
 - 86: "It is very fixed in its substance so that it is never corrupted by time, by boiling, or by the moisture of water" - could this be one of its main advantages - that it doesn't corrode or wear easily?
 - 86-87: doubts that sulphur is a "principle" for metals, as the alchemists argued, "because I do not believe that either of these [mercury or sulfur] really occurs except in similar elemental substances. I say this because i have never seen sulphur found in any metal mine, or metal near any sulphur or mercury ore"
 - 87: used for medicine, despite odor that can be physiological damage to animals: "Yet it is not for this reason to be considered among those materials that are wholly harmful, for it is used in many medicines for the health of men."
 - 88-89: extraction of sulfur from ore; distillation: "This is continued until you think that the substance that is in the ore has passed into the received that you placed

there. This substance passes like a smoke through the tubes, thickens there and becomes sulphur; when it becomes like melted wax, it falls to the bottom.”

- 90: “live sulphur”: “Among black and yellow sulphur is also found a certain kind of sulphur that is made pure by the action of Nature herself. This is very pure without adding anything to it, and when it is broken is found to be clear and beautiful inside like a glass that is yellow, black, or whatever color it may be.”
- 90: “As I told you, sulphur melts and by means of its fusion one can mould any desired object from it as if it were plaster of Paris, wax, or melted metal. It serves human needs in medicine, in the purifying and bleaching of wool, and in divers other things. But the greatest quantity today is consumed in making gunpowder.”
- 90: other uses: alchemy, “because of its heat and dryness and because of its yellow color”; silk bleach using sulfur smoke, women’s hair bleach
- 90: other references: Pliny, Albertus Magnus, Dioscorides, Avicenna
- 98: “Vitriol is found in all kinds of sulphur as I told you.”
- **329-332: “The Methods of Moulding Various Kinds of Reliefs”: “...I will tell how every relief reduces from convex to concave and also how the relief is made from the intaglio. These works are first made of plaster or pastes or some other liquid thing that is soft when moulded and becomes hard either by drying out with heat or by shrinking with cold, such as tragacanth, plaster of Paris, sulphur, lead, wax, or similar things.”
 - 331: “When I did not have plaster of Paris, I have used sulphur and brick dust”
 - this recipe seems similar to several of the things we’ve tried & may be very useful

Cennini

- 27, 101: used for pigments
- 130: “How to Cast Medals”: “If you wish to cast medals, you may cast them in clay or in plaster. Get them dry, and then melt some sulphur; get it cast in these molds, and it will be done. And if you wish to do them just with plaster, mix ground red lead with it; that is, mix the dry powder with the plaster. And make it as stiff as you think best, to suit yourself.”

Theophilus

- Sulphur used as agent for other things: cinnabar, solder, gold repair, knife repair
- 104: niello, which includes sulfur, silver, copper, lead

Cellini

- 7: niello - can be cast after broken into grains

Plat, 1594

- Book 1: p. 9, no. 5 – *How to defend fresh Water along time from putrefaction*
“This is performed by the addition of some small proportion of the oyle of Sulphur with it, incorporating them both together, whereof I have long since made a sufficient trial. Some commend the oyle of Vitriol to the same end (...)”
- Book 4 – The Art of molding and casting:
Generally patterns made of wax, but also of metal or plaster; sometimes wax mixed with

other materials such as glue, 'smale cole powder', red ocre, rosen, ashes, but, surprisingly, NO SULFUR (see, for instance, p. 59, no. 25).

Materials:

- fol. 12r: 'molding sulfur'
 - Yellow sulfur
 - Soot black/powdered sanguine (clay with iron oxides? is there another recipe for this?)
 - Verdigris (copper acetate?) for casting in plaster (see Cennini ch. 152)
- fol. 50r: 'molding' (sulfur in paper/cardboard)
 - Paper (florentine? find recipes for paper? recipe for paper on fol. 81r)
 - Stick, "broad at one end and with a well-dulled point at the other"
 - Oil
 - Brush
 - Tallow/sulfur/wax
 - Plaster/tripoli (silicate rock)
 - Cardboard (what kind of "cardboard"? find other recipes?)
- fol. 109r: 'wax for molding' (mixed with sulfur)
 - Wax
 - Sulfur
- fol. 131r-131v: 'molded wax' (again mixed with sulfur)
 - Wax
 - White lead (lead soaked in vinegar; dangerous)/cerussite (lead carbonate)
 - Sulfur
 - Candle smoke
 - Boiling water
- fol. (139v-)140v: incl. 'to cast in sulfur' (which uses the pith of bread)
 - Pith of bread
 - Sulfur
 - Wax

Experiments: t.b.d.

Questions:

- What are the uses of sulfur? Why would it be used as a casting material?
- What is sulfur mixed with, and for what reasons?
- What are the cultural associations of sulfur, and how are those manifest in the manuscript? Can we detect traces of alchemical thought? Are other properties of sulfur (such as flammability or brittleness) significant in the use of sulfur as a material for either pouring/casting, or as a pattern for casting other materials?