

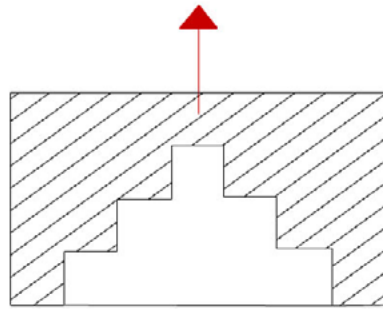
Mold making for mushroom mycelium

General questions for mold making

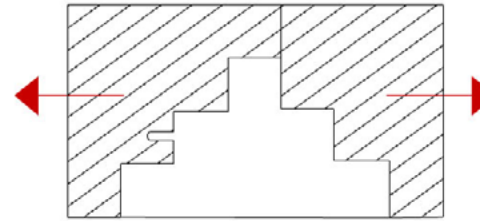
How complex is my shape, what and where are undercuts?

- o An undercut is a design element that extends freely from the part to be molded, preventing it from being removed from its mold.
- o The complexity of an object's undercuts determines how many parts a mold is made of or how flexible my mold making material needs to be.
- o In the lost-mold process, the mold is cut open from the outside, which also means this is how certain complex shapes can be handled.

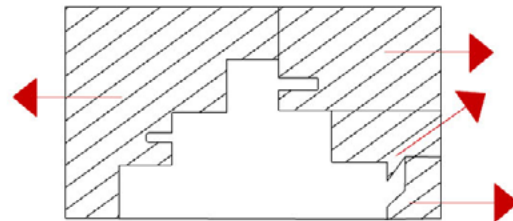
SCHEME UNDERCUTS:



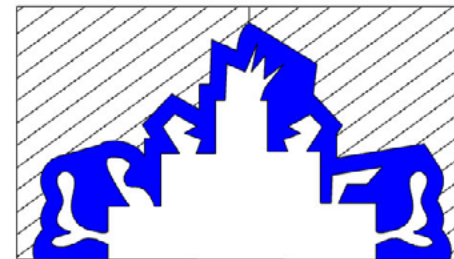
1 Part



2 Parts



Multiple parts / rigid mold



flexible part inside / rigid mother mold

What is special and important when making molds for mushroom mycelium?

- Material of the mold must be waterproof
- Be washable and disinfectable
- Ideally, the material should be transparent so that the condition of the mycelium can be easily checked.
- The mycelium should get enough air / evaporation should be able to take place to a certain degree
 - o no good experience with silicone molds
 - o installation of air holes necessary
- The mycelium should not fall below a minimum thickness of 15 mm at any point so that it remains stable later. Long and thin parts protruding from the mold are rather difficult, compact, bolder molds rather easy.

Examples of materials suitable for mold making for mushroom mycelium

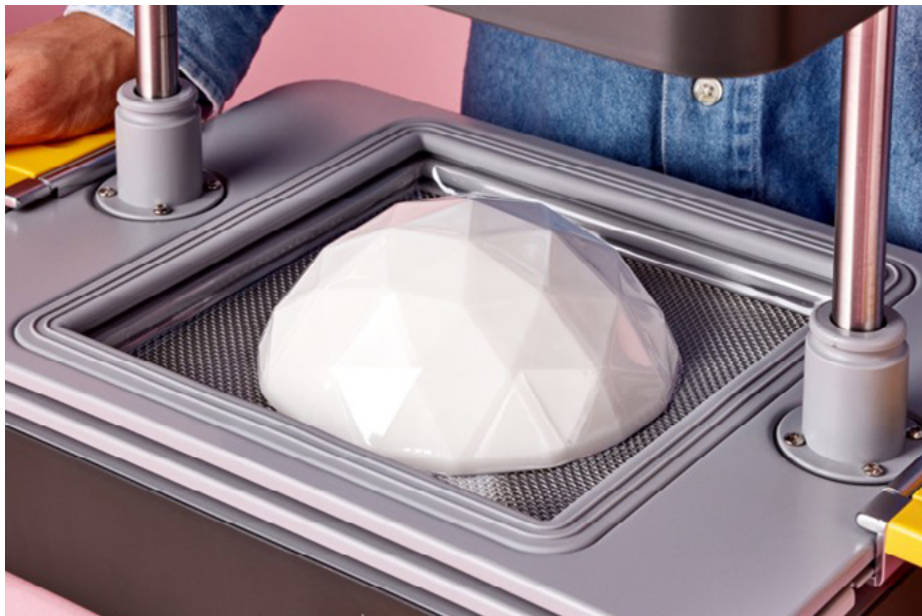
Thermoformed molds made of (transparent) PVC or PET films

Thermoforming or vacuumforming is a process for forming thermoplastic materials under the influence of heat and with the help of compressed air or vacuum.

Advantages: easy to produce a lot of the same molds, easy to clean, reusable, has some elasticity: good demolding properties, light-weight, transparent, well suited for large series, well suited for one part molds

Disadvantages: you need a thermoforming machine or access to it, from 3 part-molds on rather difficult in construction, ecology (PLA Films maybe best decision)

Thermoformed molds



Hardshell molds made of laminated acrylic resin

Waterproofed with a water-based varnish. Laminated with jute or fiber-glass.

Advantages: reusable, possible to produce large molds, well suitable for complex multi-part shapes, for sculptures and small series in the field of art and design.

Disadvantages: elaborate handwork, rigid, not transparent, material costs, cleaning is not ideal (varnish), ecology (best version with Jute)

Hardshell molds



Ceramic Molds

Best are self-made forms, where air holes are still cut into the unfired ceramic. Ceramic should be at least glazed inside.

Advantages: easy to clean (dishwasher), re-usable, ecological - suitable for simple shapes in large series.

Disadvantages: rigid and not break-proof, not transparent, rather for one or two-part mold making, one needs access to ceramic workshop or kiln.

Ceramic Molds



Re-use of packaging material

Plastic packaging such as yogurt cups, etc. or coated cardboard from milk or juice packs. This material is also available in rolls!

Advantages: free material, ecological because re-use, flexible (easy to demold) and suitable for lost-mold process as you can easily cut it, easy to work with, accessible, suitable for hobby or one-time use.

Disadvantages: difficult to create complex and exact shapes, rather not (often) re-usable

Molds from packaging material



What else should be considered in the further planning of the project?

- o To make the mushroom stable it must be dried - for this you need a *suitable kiln* depending on the size of the mushroom - large objects can be dried in a ceramic kiln, for example.
- o Mycelium *shrinks* somewhat during drying because it loses water, so if you want to work very precisely, you must test this shrinkage in advance in the exact set-up with which you then work: i.e. substrate mixture / mushroom type / drying temperature.
- o It is possible to let *wood parts grow into* the mycelium, these parts should be thought about and planned and preferably be inside the mold so that they do not bec