

How to Make a Brass-Casting Mold

Many hobbyists delve into the world of metal casting to produce unique pieces. Some of these items are decorative while others serve a specific function. For large production runs of more than 1,000 pieces, consistency in each casting is important. So permanent molds would be machined from a metal that can withstand molten brass or create wax patterns for an investment casting process. However, most hobbyists and short production runs can achieve acceptable results through the inexpensive, yet effective, sand casting process.

[Stainless steel glass spider castings](#)

Step 1

Create a pattern. A variety of materials are suitable for this purpose. Wood is the classic choice, but you could also fashion a pattern from Styrofoam. Just be sure that whatever material you choose can withstand being pressed into a box of sand. Also remember to make the pattern larger than the finished casting since brass occupies more space in its molten state than as a solid. For brass, the linear expansion coefficient is 0.0000104 inches per degree Fahrenheit. For castings that require control over dimensions, be sure to take this expansion factor into account for creating the pattern accurately. Assuming a room temperature of 72°F and a melting point of 1,710°F, you will need to allow all dimensions of the pattern to be at least 0.017 inches larger than the solid casting.

Step 2

Mix sand and clay, a process that is likely to require a few trial runs to achieve the perfect mixture. Sand usually requires the clay as a binding material to help it retain the mold impression, yet the sand acts as tiny vents to carry away any gases created by the casting process. So, some experimentation with the right ratio of clay to sand may be needed to obtain

the desired casting quality. This is part of the learning process that makes this fun, despite the challenge.

Step 3

Place sand and clay mixture in box. If you have a two-part mold, you will need to fill two boxes with this mixture. Be careful not to pack the sand and clay mixture in too tightly, or you may find it hard to press the pattern.

Step 4

Place and press pattern. Take the pattern for the casting and place it in the sand mixture. An alternative is to partially fill the box with sand mixture, place the pattern in the box, and pack around the pattern. If you have a one-piece mold, remove the pattern and this process is complete. For a two-part mold, you will need to press patterns in both the cope and drag, the technical terms for the top and bottom parts, respectively. With a two-part mold, be sure to carve out runners and make provisions for the gate and vent. The latter provisions keep gasses from becoming trapped in the finished casting.

Step 5

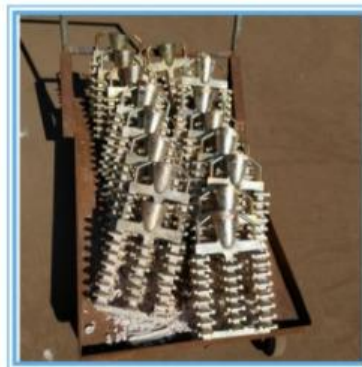
Assemble the mold pieces. If the mold consists of only one piece, then this process is complete. For more complex molds, the cope and drag need to be assembled. Be sure to align the cope and drag to reduce the parting lines that will show from the casting process. If there are internal features for the casting, be sure to place the sand core in place, holding it steady with brass chaplets. These are pins made from the same material that will enter the mold in a molten state and become part of the final casting. Once the mold is assembled, it is now ready to receive molten brass.

Brass investment casting is a process that creates parts through the metallic replication of wax models. Investment casting using molten brass results in a final product that is very smooth and detailed without flash or parting lines. This technique can create parts that are precise and lightweight.

JC Metal is a brass investment casting company and supplier. We can supply brass investment castings as per your design or specifications.

Brass Investment Casting

Almost any castable metal may be an investment cast. Brass investment casting is also by this process in our brass foundry.



The Brass Casting is produced by lost wax investment casting process or die casting process.

The first step in investment casting is creating a master die out of wax. This wax pattern can be carved by hand or machine or maybe produced through brass casting molds. The die is a replica of the part that is to be produced. It is attached to a wax rod called a sprue. Several hundred wax patterns may be attached to the same sprue or it may be a single pattern. When the master dies are firmly attached, the assembly is inverted and dipped into a ceramic slurry called the investment. It may be dipped multiple times to achieve an even coating and the desired thickness. An alternative method is to mount the assembly in a flask and to pour in the investment. The investment is then left to dry, which requires many hours unless the process is aided by a fan or vacuum. After it has dried completely, the assembly is inverted and baked in an oven or furnace to melt or vaporize the wax. The mold is heated more than necessary to guarantee that there is no moisture or residual wax inside that would interfere with the liquid brass that is then poured into the space left by the wax. To thoroughly fill the mold, the molten metal can be drawn in through vacuum, positive air pressure, or centrifugal casting methods. Sometimes the force of gravity is enough. The brass cools and once it has hardened into a solid, the investment mold is removed to release the brass casting inside.

Materials for Brass Investment Casting we can make

Brass	HPb63, HPb62, HPb61, HPb59, H59, H68, H80, H90 etc.
Copper	C11000, C12000, C12000, C36000 etc.

Advantages of Brass Investment Casting

Smaller diameter holes than forging, sand casting, and die casting
Tolerances within +/- .005 inches per linear inch
More environmental friendly
Highly complex dimensional geometry

