

The Lost Wax Casting Process

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Bronze objects have been cast using the lost wax (*cire perdue*) process for at least 5,000 years. Although by Rodin's day some of the techniques and materials have changed — and today continue to change — much of the process is as it was in ancient times. Lost wax casting is for many the process of choice because it is extremely accurate in replicating detail and because of the durability of the objects it creates. However, the process is very arduous and time-consuming. Most sculptors, including those of Rodin's day when artists could choose from scores of foundries, depend on independent foundries to cast their works.

Video - A Look at Lost Wax Casting: [youtube.com/watch?time_continue=12&v=4P9tdigW9Mw](https://www.youtube.com/watch?time_continue=12&v=4P9tdigW9Mw)

Below is the same process presented through pictures and text.



The artist creates a model, generally in plaster, clay, or wood.



The model is put into a bed of very fine elastic (shapable) material held in place by a rigid outer mold. When the model is removed, its impression remains.



Fireproof clay is carefully put into the impression, making a sharply defined duplicate of the artist's original model.



The surface of this second clay model is slightly scraped away. When this second model is returned to the mold, there is a gap between the model and the mold. This gap is where the wax will be poured. The final bronze will be of the same thickness as the gap that is created by the scraping.



After closing the mold around the clay model, hot wax is poured into the gap between the model and the mold. The result is a clay model covered in wax, which is then hand-finished to fidelity, incorporating the artist's signature, cast number, and a foundry seal.



A network of wax pipes, called *sprues* and *gates*, is attached to the wax-covered model. These pipes first will allow the wax to escape as it melts. Later, they will enable the molten metal to flow evenly throughout the mold and will also let air escape as the metal is poured in.



A finely granulated ceramic is applied to the surface of the model and its pipes until it becomes thick and coarse. The result, now called an “investment mold,” is then dried and heated. This causes the wax to melt and flow out of the mold, leaving a space between the fire resistant clay model and the investment mold. This is why this method is called the *lost wax* process.



Except for a place to pour in the liquid bronze at the top, the mold is covered with a layer of cladding (a protective metal coating), which must be completely dry before bronze pouring begins. The investment mold is then heated to a high temperature (over 1,000 degrees Fahrenheit).



Molten bronze (over 2,000 degree Fahrenheit) is then poured into the investment mold, filling the space left by the “lost” wax. When all is cool, the cladding and investment mold are broken and the metal appears. The bronze sculpture and its sprues and gates are an exact reproduction of the wax in step 6.



The network of sprues and gates is then removed and the surface of the bronze is chiseled and filed so that no trace of them can be seen. This process of hand-finishing the bronze to perfection is called *chasing*. Any remains of the fireproof clay model left inside the hollow bronze are removed now.

When the process of *chasing* is finished, if the sculpture is small enough to have been cast in one piece, the work is given a *patina*. Larger sculpture is generally cast in segments, and after all segments have been made, they are joined together, a process called *braising*. (Rodin often left the braising lines visible, so the viewer would always be aware that the artwork was made by an artist.) After

braising, the artwork would proceed to patination. A patina not only protects the sculpture, but also gives it color. It is a step in the making of the finished bronze wherein hot or cold oxides are applied to the surface of the metal, creating a thin layer of corrosion. This layer – slightly brown, green, or blue in color – is called the “patina.” The patina protects and enlivens the surface of the bronze.