

INVESTMENT CASTING

PRIMARY PROCESS

- INVESTMENT/LOSTWAX CASTING

SECONDARY PROCESSES

- COATING
- POLISHING
- PAINTING
- MACHINING
- ASSEMBLY
- ACID PICKLING

MATERIALS

- STAINLESS STEEL
- CARBON STEEL
- ALLOY STEEL
- SG IRON



One of the world's oldest manufacturing procedures, this process, capable of producing excellent surface finishes and complex, intricate shapes requiring little, if any, subsequent machining or secondary processes, is normally used on smaller castings - although steel castings up to 200 kg and aluminium castings up to 25 kg are possible.

In addition, metals that are hard to machine or fabricate are excellent candidates for this process, particularly products that cannot be produced by normal manufacturing techniques, such as turbine blades with complex shapes or aero parts that have to withstand high temperatures.

The part to be cast is replicated in wax by injecting wax into a die, which is essentially a 3D negative of the part required. The wax 'pattern' is often one of several on a 'tree' which is coated - the technical term is 'invested' -- with a ceramic slurry to form a skin which is dried and additional coats of slurry applied, depending upon the size of the casting being produced.

After application of the slurry coatings the wax is removed, usually by placing the tree in an oven and melting the wax away. The interior ceramic surface encasing the void within the slurry 'shell' again creating the 3D negative of the part to be produced. Molten metal is poured into the shell, to form the casting. This process produces excellent quality castings, but is a slower process with typical total production cycle times varying from 2/3 days to 6/7 days.