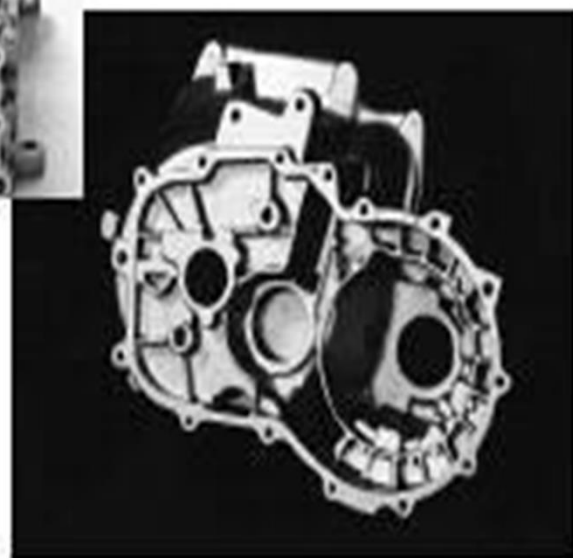


# Production Process

# CASTING

The metal casting industry plays a key role in all the major sectors of our economy. There are castings in locomotives, cars trucks, aircraft, office buildings, factories, schools, and homes.



# Definition

Metal Casting is one of the oldest materials shaping methods known.

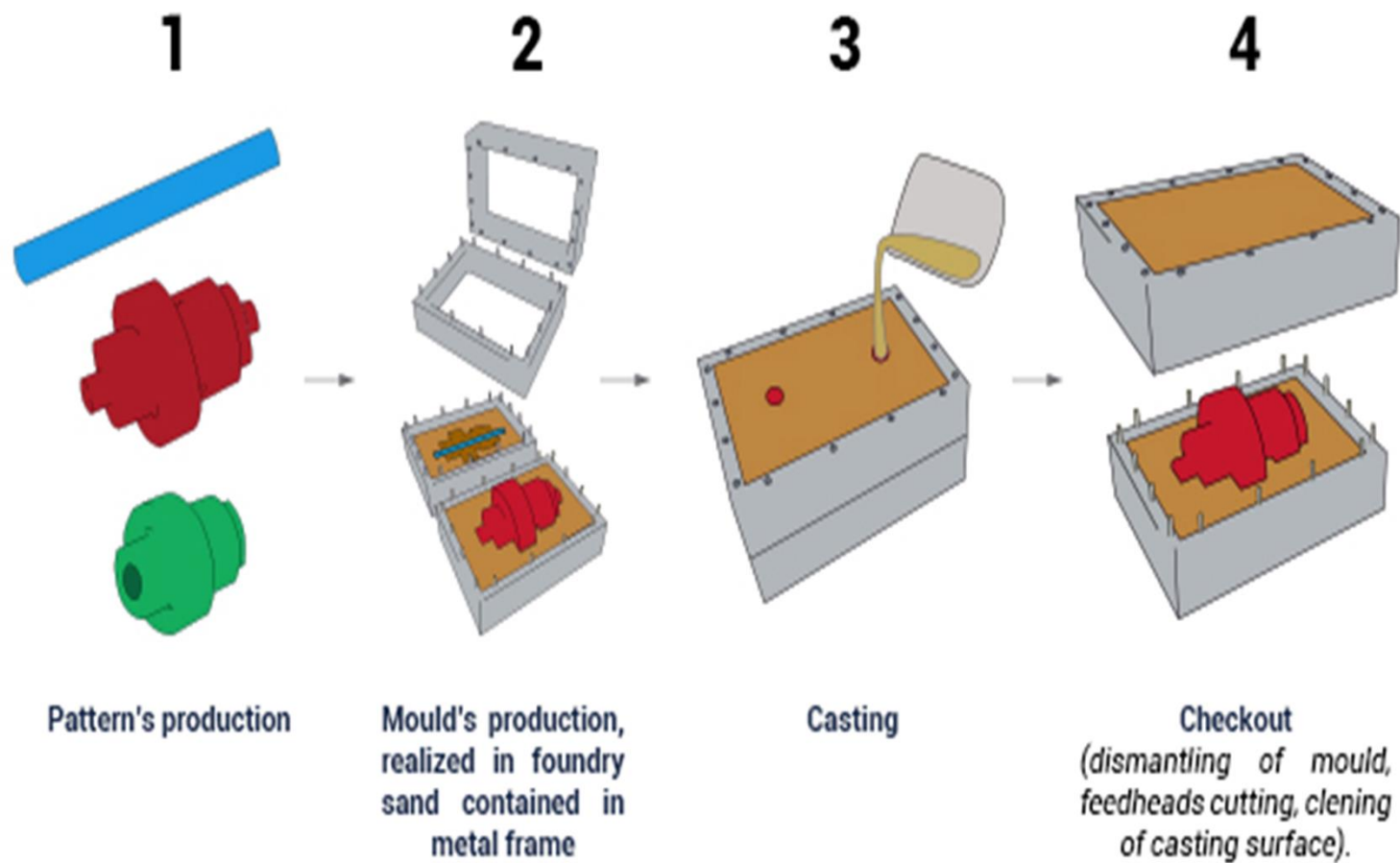
Casting means pouring molten metal into a mold with a cavity of the shape to be made, and allowing it to solidify. When solidified, the desired metal object is taken out from the mold either by breaking the mold or taking the mold apart. The solidified object is called the casting.

## Conti...

By this process, intricate parts can be given strength and rigidity frequently not obtainable by any other manufacturing process.

The mold, into which the metal is poured, is made of some heat resisting material.

Sand is most often used as it resists the high temperature of the molten metal.



# Advantages

1. Molten material can flow into very small sections so that intricate shapes can be made by this process. As a result, many other operations, such as machining, forging, and welding, can be minimized or eliminated.
2. It is possible to cast practically any material that is ferrous or non-ferrous.
3. The necessary tools required for casting molds are very simple and inexpensive. As a result, for production of a small lot, it is the ideal process.
4. There are certain parts made from metals and alloys that can only be processed this way.
5. Size and weight of the product is not a limitation for the casting process.

# Limitations

1. Dimensional accuracy and surface finish of the castings made by sand casting processes are a limitation to this technique. Many new casting processes have been developed which can take into consideration the aspects of dimensional accuracy and surface finish. Some of these processes are die casting process, investment casting process, vacuum-sealed molding process, and shell molding process.
2. The metal casting process is a labor intensive process



# Pattern

- The pattern is the principal tool during the casting process.
- It is the replica of the object to be made by the casting process, with some modifications.
- The main modifications are the addition of pattern allowances, and the provision of core prints.
- If the casting is to be hollow, additional patterns called cores are used to create these cavities in the finished product.
- The quality of the casting produced depends upon the material of the pattern, its design, and construction.

# Functions of the Pattern

- A pattern prepares a mold cavity for the purpose of making a casting.
- A pattern may contain projections known as core prints if the casting requires a core and need to be made hollow.
- Runner, gates, and risers used for feeding molten metal in the mold cavity may form a part of the pattern.
- Patterns properly made and having finished and smooth surfaces reduce casting defects.
- A properly constructed pattern minimizes the overall cost of the castings.