

# PROPERTIES OF MOULDING SAND

The basic properties required in molding sand are described as

1. Refractoriness
2. Permeability
3. Cohesiveness
4. Flowability or plasticity
5. Adhesiveness
6. Collapsibility

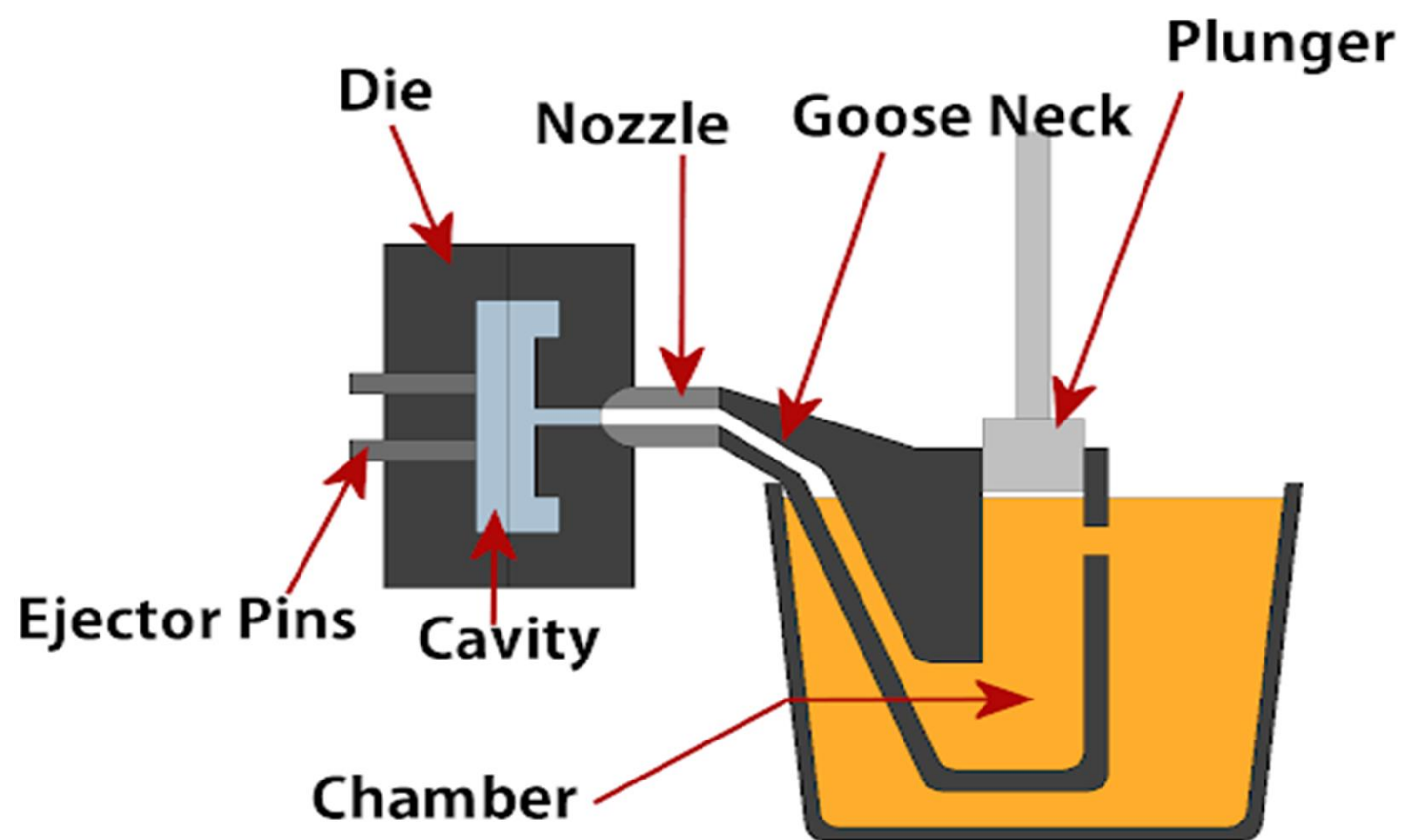
# Types of casting process

- Sand casting
- Investment casting
- Centrifugal casting
- Die casting
- Shell moulding
- Continuous casting

# DIE CASTING PROCESS

The molten metal is forced into metallic mold or dies under pressure in pressure die casting. The pressure is generally created by compressed air or hydraulically means. The pressure varies from 70 to 5000 kg/cm<sup>2</sup> and is maintained while the casting solidifies. The application of high pressure is associated with the high velocity with which the liquid metal is injected into the die to provide a unique capacity for the production of intricate components at a relatively low cost.

Die casting is widely used for non-ferrous metals and alloys of low fusion temperature. The casting process is economic and rapid. The surface achieved in casting is so smooth that it does not require any finishing operation. The material is dense and homogeneous and has no possibility of sand inclusions or other cast impurities.



# working

The die-casting machines which is simplest to operate. The melting unit of setup comprises of an integral part of the process. This process may be of gooseneck or air-injection type or submerged plunger type-air blown or goose neck type machine.

A die casting process is a simple and easy. A cast iron gooseneck is so pivoted in the setup that it can be dipped beneath the surface of the molten metal to receive the same when needed. The molten metal fills the cylindrical portion and the curved passageways of the gooseneck. Gooseneck is then raised and connected to an airline which supplies pressure to force the molten metal into the closed die. Air pressure is required for injecting metal into the die is of the order of 30 to 45 kg/cm<sup>2</sup>. The two mold halves are securely clamped together before pouring. Simple mechanical clamps of latches and toggle kinds are adequate for small molds. On solidification of the die cast part, the gooseneck is again dipped beneath the molten metal to receive the molten metal again for the next cycle. The die halves are opened out and the die cast part is ejected and die closes in order to receive a molten metal for producing the next casting. The cycle repeats again and again.

# Advantages

- It is very quick process
- It is used for mass production
- Castings produced by this process are greatly improved surface finish
- Thin section (0.5 mm Zn, 0.8 mm Al and 0.7 mm Mg) can be easily casted
- Good tolerances
- Cost of production is less

# Disadvantage

- Cost of die is high.
- Only thin casting can be produced.
- Special skill is required.
- Unless special precautions are adopted for evaluation of air from die-cavity some air is always entrapped in castings causing porosity.