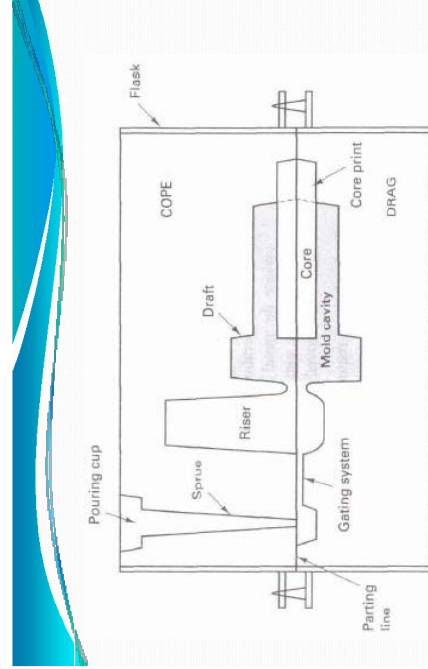
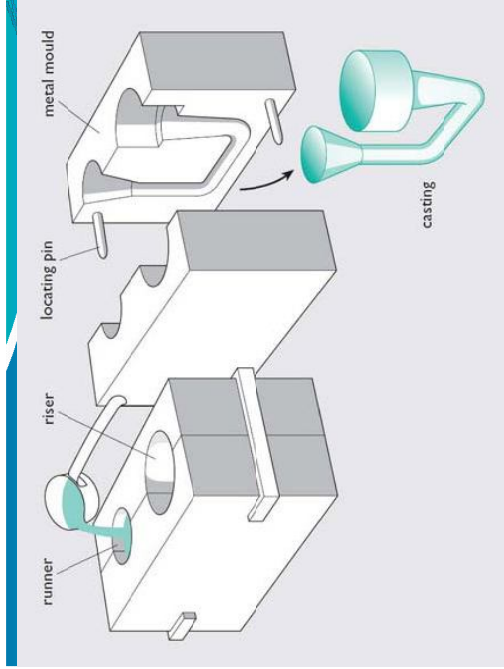


# Metal Casting

By S K Mondal



## Sand casting

- Sand casting uses ordinary sand as the primary mould material.
- The sand grains are mixed with small amounts of other materials, such as clay and water, to improve mouldability and cohesive strength, and are then packed around a pattern that has the shape of the desired casting.
- The pattern must be removed before pouring, the mold is usually made in two or more pieces.
- An opening called a *sprue hole* is cut from the top of the mold through the sand and connected to a system of channels called *runners*.

Contd....

## Sequential steps in making a sand casting

- A pattern board is placed between the bottom (drag) and top (cope) halves of a flask, with the bottom side up.
- Sand is then packed into the drag half of the mold.
- A bottom board is positioned on top of the packed sand, and the mold is turned over, showing the top (cope) half of pattern with sprue and riser pins in place.
- The cope half of the mold is then packed with sand.

Contd....

- The molten metal is poured into the sprue hole, flows through the runners, and enters the mold cavity through an opening called a *gate*.
- Gravity flow is the most common means of introducing the metal into the mold.
- After solidification, the mold is broken and the finished casting is removed.
- The casting is then "fettled" by cutting off the ingate and the feeder head.
- Because the mold is destroyed, a new mold must be made for each casting.

- The mold is opened, the pattern board is drawn (removed), and the runner and gate are cut into the surface of the sand.

- The mold is reassembled with the pattern board removed, and molten metal is poured through the sprue.

- The contents are shaken from the flask and the metal segment is separated from the sand, ready for further processing.

## Casting Terms

- **Flask:** A moulding flask is one which holds the sand mould intact. It is made up of wood for temporary applications or metal for long-term use.
- **Drag:** Lower moulding flask.
- **Cope:** Upper moulding flask.
- **Cheek:** Intermediate moulding flask used in three-piece moulding.

Contd....