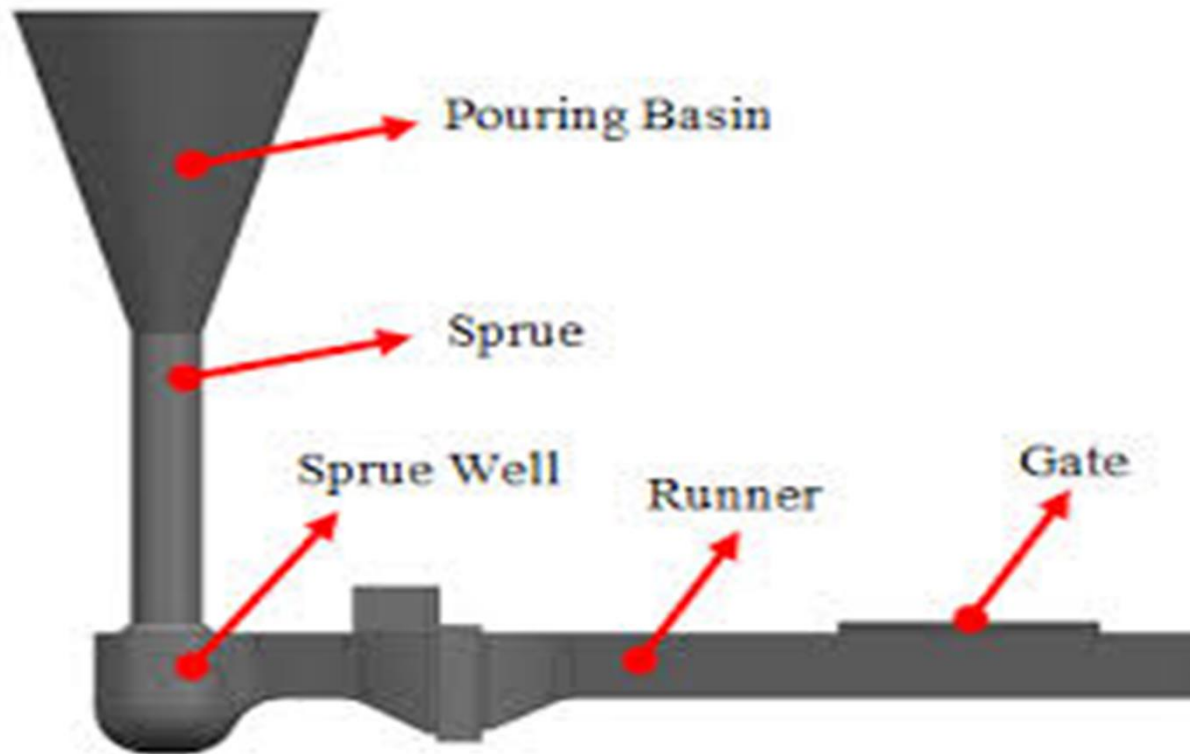
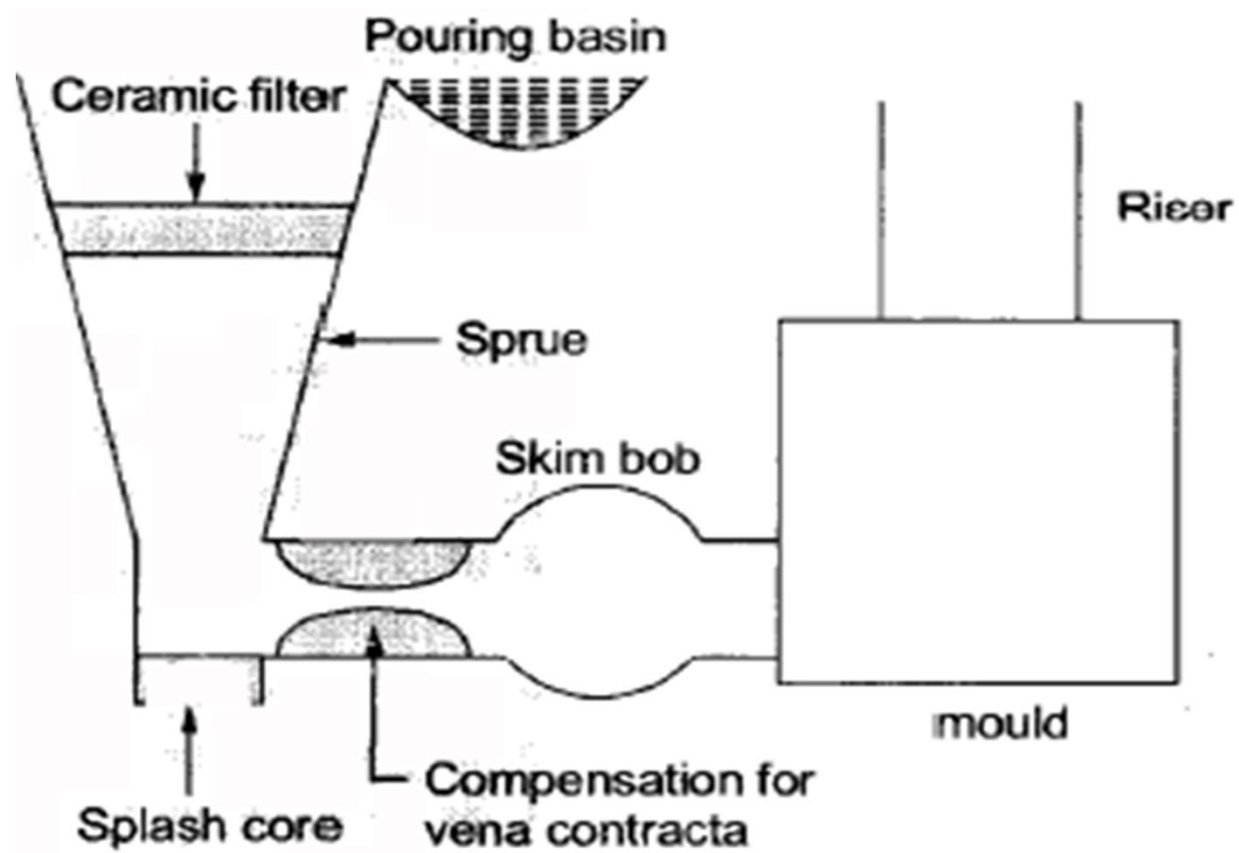


GATING SYSTEM





Pouring basin

- It is the conical hollow element or tapered hollow vertical portion of the gating system which helps to feed the molten metal initially through the path of gating system to mold cavity. It may be made out of core sand or it may be cut in cope portion of the sand mold. It makes easier for the ladle operator to direct the flow of molten metal from crucible to pouring basin and sprue. It helps in maintaining the required rate of liquid metal flow.

Sprue

- It is a vertical passage made generally in the cope using tapered sprue pin. It is connected at bottom of pouring basin. It is tapered with its bigger end at to receive the molten metal the smaller end is connected to the runner.

Runner

It helps to feed molten metal without turbulence to the runner which in turn reaches the mold cavity through gate. It some times possesses skim bob at its lower end. The main purpose of skim bob is to collect impurities from molten metal and it does not allow them to reach the mold cavity through runner and gate.

Gate

- It is a small passage or channel being cut by gate cutter which connect runner with the mould cavity and through which molten metal flows to fill the mould cavity. It feeds the liquid metal to the casting at the rate consistent with the rate of solidification.

RISER

Metals and their alloys shrink as they cool or solidify and hence may create a partial vacuum within the casting which leads to casting defect known as shrinkage or void. The primary function of riser as attached with the mould is to feed molten metal to accommodate shrinkage occurring during solidification of the casting. As shrinkage is very common casting defect in casting and hence it should be avoided by allowing molten metal to rise in riser after filling the mould cavity completely and supplying the molten metal to further feed the void occurred during solidification of the casting because of shrinkage. Riser also permits the escape of evolved air and mold gases as the mold cavity is being filled with the molten metal. It also indicates to the foundry man whether mold cavity has been filled completely or not. The suitable design of riser also helps to promote the directional solidification

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

- **Refractory Strength**

The mold must not melt, burn, or crack as molten metal is poured into it. Refractory strength measures the ability of molding sand to withstand extreme heat.

- **Adhesiveness**

Adhesiveness is a property of molding sand to get the stick or adhere to foreign material such sticking of molding sand with the inner wall of molding box.

Cohesiveness

Cohesiveness is property of molding sand by virtue which the sand grain particles interact and attract each other within the molding sand. Thus, the binding capability of the molding sand gets enhanced to increase the green, dry and hot strength property of molding and core sand.

- **Flowability**

- The capacity of the sand to fill small cavities in the pattern. High flowability creates a more precise mold, and is therefore useful for detailed castings.

Collapsibility

- The ability of the sand mixture to collapse under force. Greater mold collapsibility allows the metal casting to shrink freely as it solidifies, without the risk of hot tearing or cracking.

- **Permeability**

Permeability is also termed as porosity of the molding sand in order to allow the escape of any air, gases or moisture present or generated in the mould when the molten metal is poured into it. All these gaseous generated during pouring and solidification process must escape otherwise the casting becomes defective. Permeability is a function of grain size, grain shape, and moisture and clay contents in the molding sand. The extent of ramming of the sand directly affects the permeability of the mould. Permeability of mold can be further increased by venting using vent rods.