DISADVANTAGES OF PULTRUSION PROCESS: -

Pultruded components are used on a large scale in infrastructure, building, and consumer products because of lower product cost. However, pultrusion has the following limitations.

1. It is suitable for parts that have constant cross-sections along their length. Tapered and complex shapes cannot be produced.
2. Very high-tolerance parts on the inside and outside dimensions cannot be produced using the pultrusion process.
3. Thin wall parts cannot be produced.

APPLICATIONS OF PULTRUSION PROCESS: -

1. Electrical application including transformers.
2. Supports in bridges and structures.
3. Automobiles.
4. Pipes and rods.

Table 1.1 Details of Pultrusion process

Size	Shaping die and equipment pulling capacity influence size limitations
Shape	Straight, constant cross sections, some curved sections possible
Reinforcements	Fiberglass Carbon fiber Aramid fiber
Resin Systems	Polyester Vinyl ester Epoxy Silicones
Fiberglass Contents	Roving, 40-80% by weight Mat, 30-50% by weight Woven roving, 40-60% by weight
Mechanical Strengths	Medium to high, primarily unidirectional, approaching isotropic
Labor intensity	Low to medium
Mold cost	Low to medium
Production rate	Shape and thickness related

COMPRESSION MOLDING

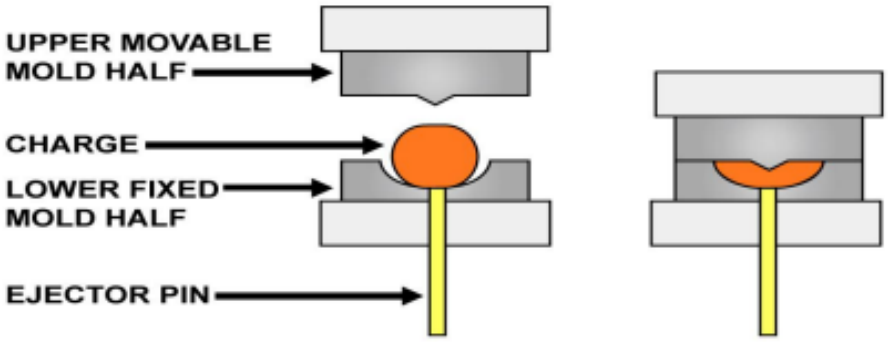

Fig. 1.8 Compression moulding setup

The molding compound is first placed in an open, heated mold cavity. The mold is then closed and pressure is applied to force the material to fill up the cavity. A hydraulic ram is often utilized to produce sufficient force during the molding process. Excess material is channeled away by the overflow grooves. The heat and pressure are maintained until the material is cured. The final part after the mold is removed. The molding pressure may vary from 1.4 to 34.5 MPa and the mold temperature is usually in the range of 130°C to 160°C. To decrease the peak exotherm temperature which may cause burning and chemical degradation in the resin, filler may be added. The time to reach peak exotherm is also reduced with increasing filler content, thereby reducing the cure cycle. The cure time may also be reduced by preheat process.