

THERMOFORMING

Thermoforming is a process of shaping flat thermoplastic sheet which includes two stages: softening the sheet by heating, followed by forming it in the mold cavity.

Elastomers and Thermosets can not be formed by the Thermoforming methods because of their cross-linked structure – they do not soften when heated.

Thermoplastics which may be processed by the thermoforming method are:

- ☐ Polypropylene (PP)
- ☐ Polystyrene (PS)
- ☐ Polyvinyl Chloride (PVC)
- ☐ Low Density Polyethylene (LDPE)
- ☐ High Density Polyethylene (HDPE)
- ☐ Cellulose Acetate
- ☐ Polymethylmethacrylate (PMMA)
- ☐ Acrylonitrile-Butadiene-Styrene (ABS)

Thermoforming is widely used in the food packaging industry for manufacturing ice cream and margarine tubs, meat trays microwave containers, snack tubs sandwich packs etc.

Thermoforming is also used for manufacturing some pharmaceutical and electronic articles, small tools, fasteners, toys, boat hulls, blister and skin packs.

There are three thermoforming methods, differing in the technique used for the forming stage:

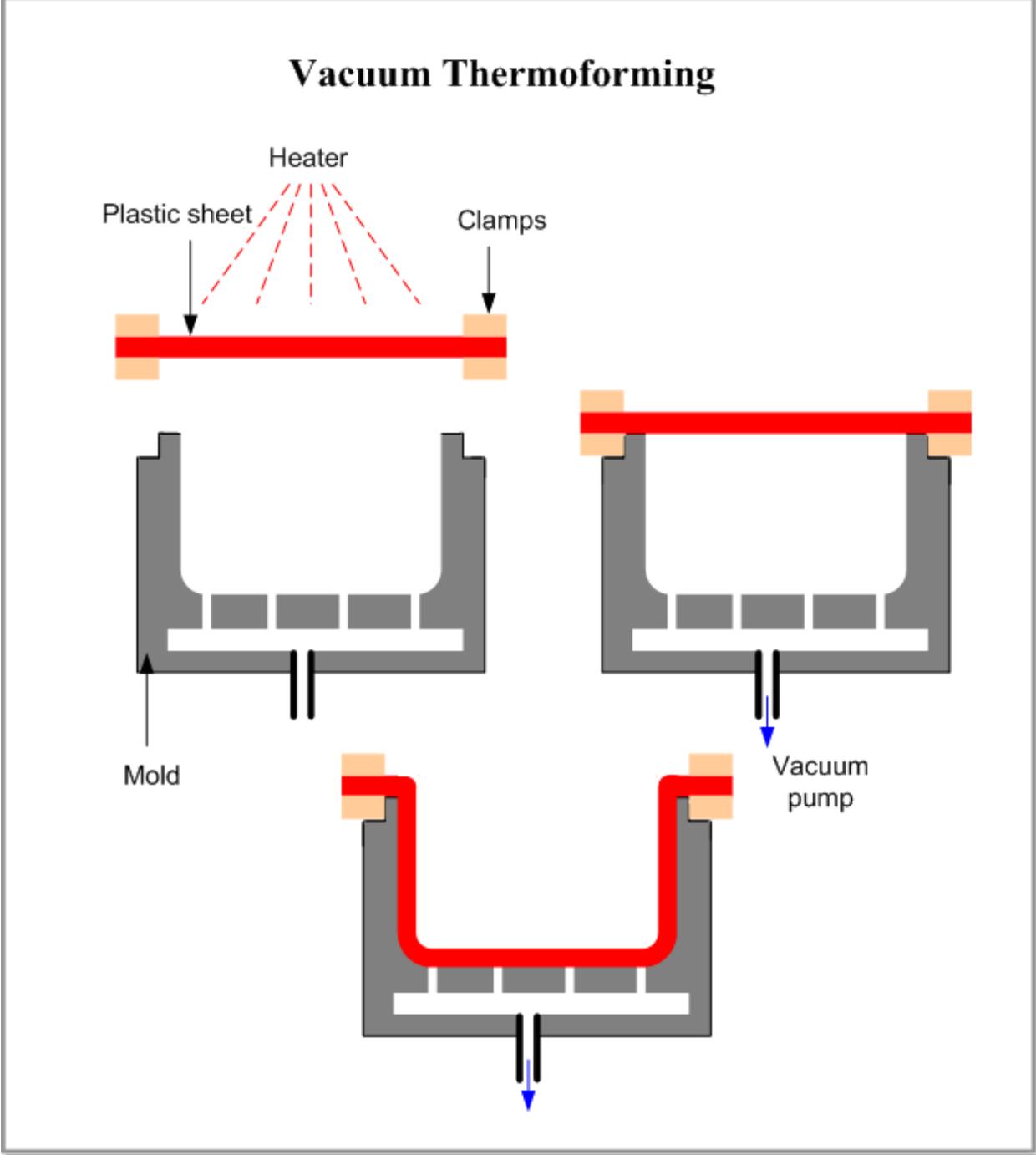
- ☐ **Vacuum Thermoforming**
- ☐ **Pressure Thermoforming**
- ☐ **Mechanical Thermoforming**

Vacuum Thermoforming

The process involves shaping a preheated thermoplastic sheet by means of vacuum produced in the mold cavity space.

The atmospheric pressure forces the soft sheet to deform in conformity with the cavity shape.

When the plastic comes into the contact with the mold surface it cools down and hardens.

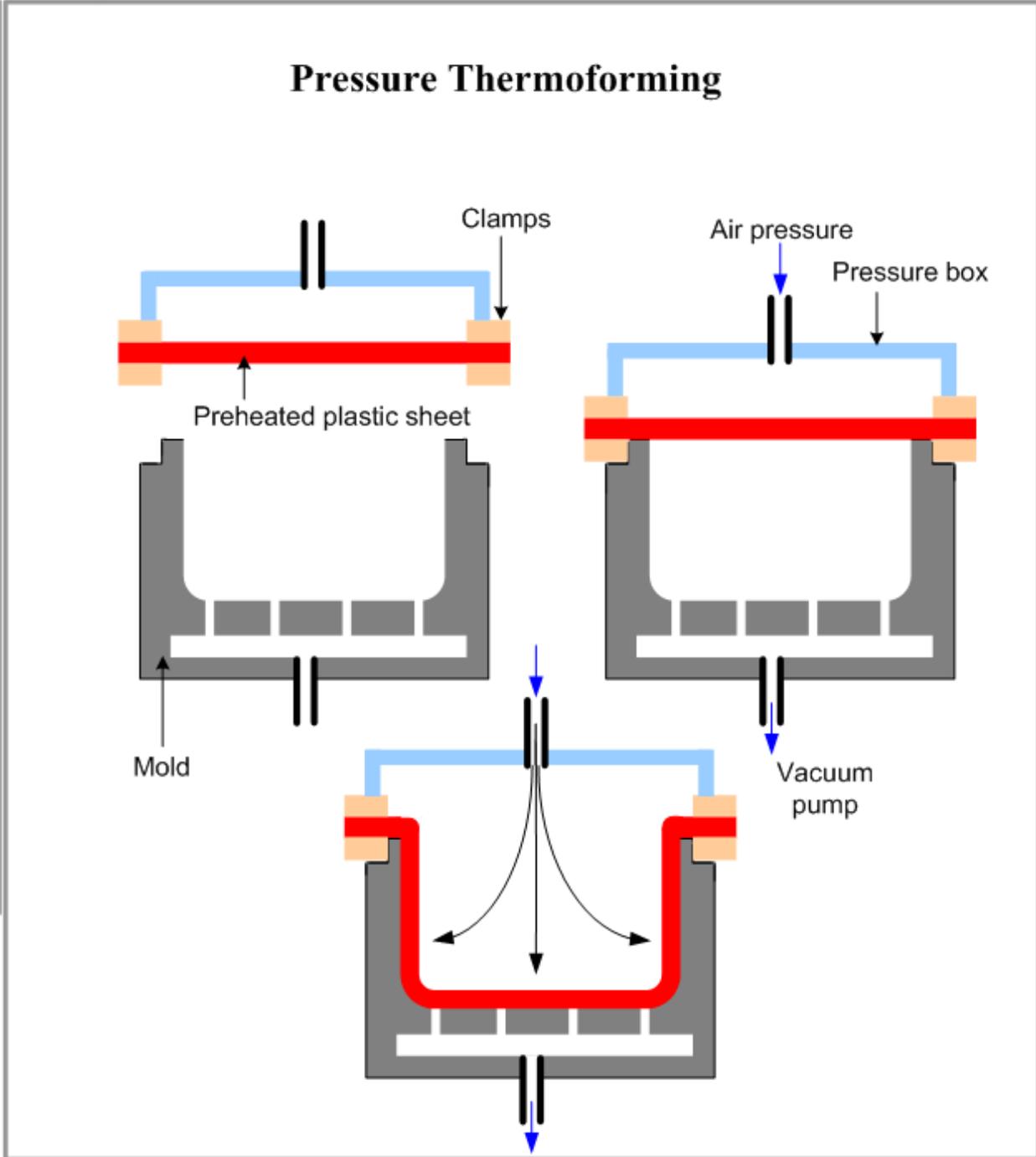


Pressure Thermoforming

The process involves shaping a preheated thermoplastic sheet by means of air pressure.

The air pressure forces the soft sheet to deform in conformity with the cavity shape.

When the plastic comes into the contact with the mold surface it cools down and hardens.

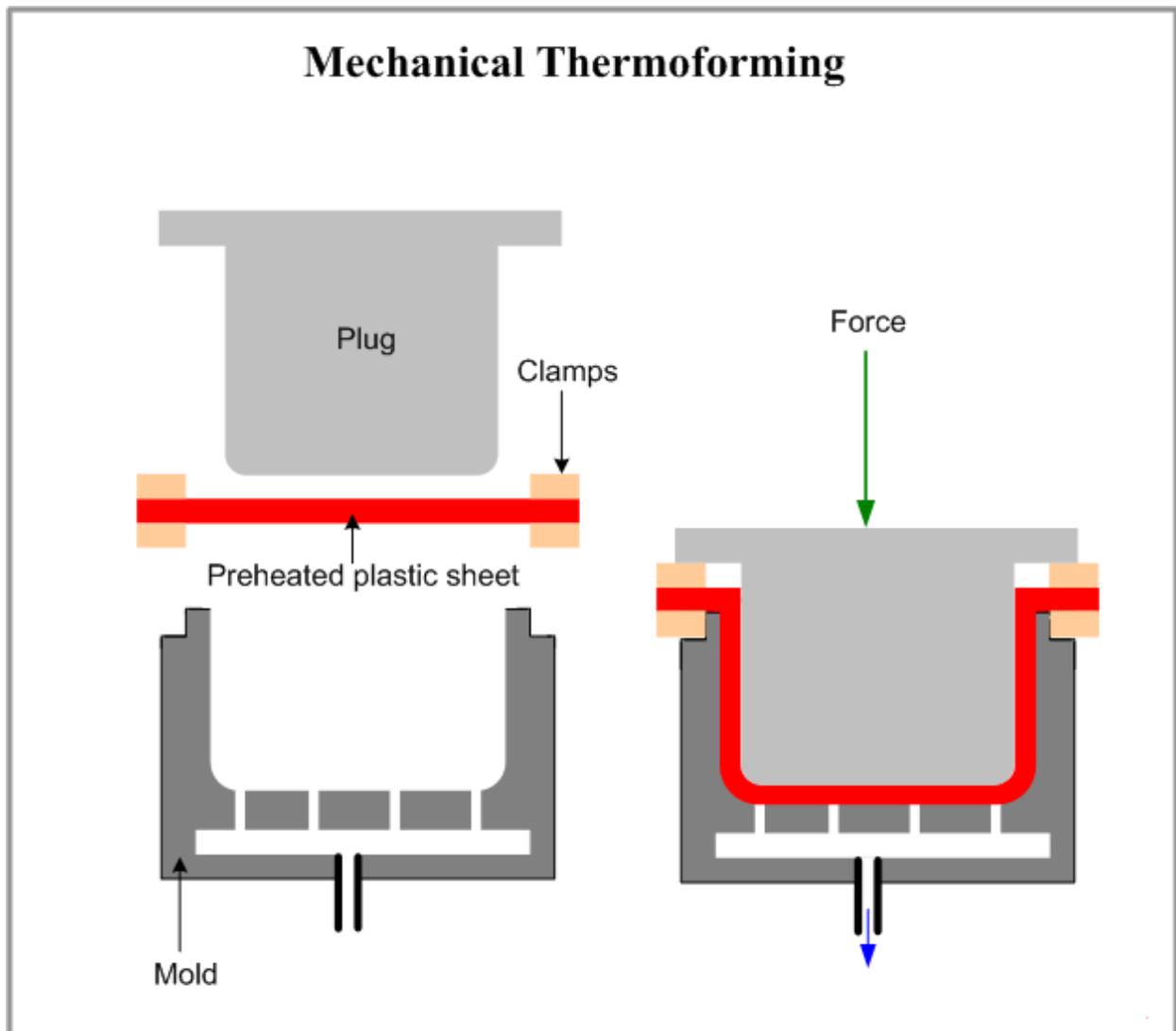


Mechanical Thermoforming

The process involves shaping a preheated thermoplastic sheet by means of a direct mechanical force.

A core plug (positive mold) forces the soft sheet to fill the space between the plug and the negative mold.

The process provides precise dimensional tolerance and surface detailing.



Source : <http://www.substech.com/dokuwiki/doku.php?id=thermoforming>