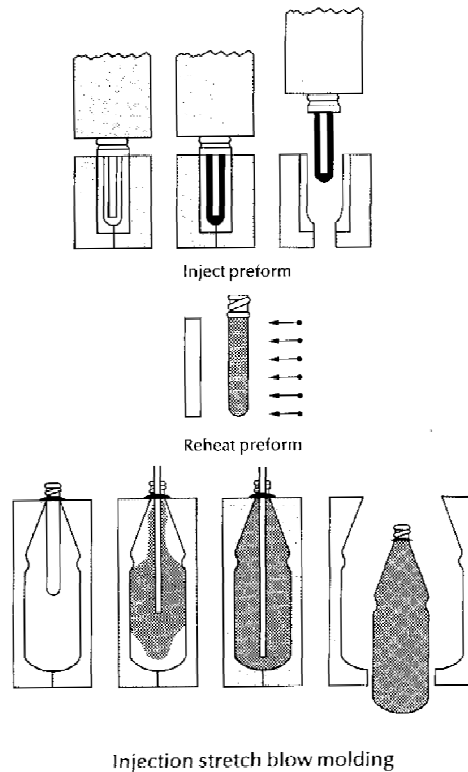


Stretch Blow Molding (Orientation)



Stretch blow moldings a process by which biaxial orientation is imparted in the final product. Biaxial orientation improves physical properties. Some of the effects of orientation are as follows:

- increased stiffness for better top load crush
- Increased low-temperature impact
- Improvement in both gas-and moisture-permeation properties
- Improvement in see-through clarity

In stretch blow molding, a preform is either extruded or injection molded. The preform is both shorter and thicker-walled than the desired product.

This preform is then heated to an orientation temperature, where it is stretched to its final length and blown into a mold.

Stretch blow molding can be performed either in a single-stage process (i.e., on the same machine) or in two stages.

The two-stage process uses one machine to make the preform and another for blowing. This process offers higher output rates.

Disadvantages include high investment costs and the inability to produce handled bottles.

OPTIMIZING CYCLE TIME

Cycle time optimization should be approached in the following steps:

1. Reduce cooling time in 1-sec increments until warpage occurs, then add 1 sec.
2. Reduce blowing time in 1/2.sec intervals until incomplete blowing occurs.
3. Adjustments in extruder output (screw rpm) may be necessary to compensate for these changes in cooling and blowing times.

Troubleshooting Common Blow Molding Problems

In troubleshooting any type of process, it is important first to identify exactly what the problem is and then to ascertain in which part of the process it is originating. The problem may either result from improper machine operation or be resin-related. Before processing changes are made, one should make sure the machine is being operated under proper conditions.

If changes in machine conditions are required, they should be made slowly and systematically. Change only one variable at a time, allowing the machine time to stabilize to each new condition before you proceed.