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What is Injection Molding?

Injection Molding is the most commonly used process for manufacturing plastic parts. A wide variety of products is manufactured using this method which varies greatly in size, complexity and application. This process requires an injection molding machine, raw plastic and a mold. The plastic is melted in the machine and then injected into the mold where it cools and solidifies into its final shape.

Applications: This method is used to produce thin walled plastic parts which have myriad applications especially plastic housings. These housings are used in a variety of applications like household appliances, consumer electronics, and power tools and as automotive dashboards. Other products include open containers like buckets. Everyday items like toothbrushes and plastic toys are made using this process. It is also used to manufacture medical devices like valves and syringes.

Advantages:

- â€¢ Can form complex shapes and fine details.

- â€¢ Surface finish is excellent.

- â€¢ Dimensional accuracy is very good.

- â€¢ Production rate is very high.

- â€¢ Low labor cost.

- â€¢ Scrap can be recycled.

Disadvantages:

- â€¢ Limited to thin walled parts.

- â€¢ Equipment and tooling cost is very high.

- â€¢ Long lead time possible.

The Process:

- â€¢ **Clamping:** At first two halves of the mold have to be made and be securely closed by the clamping unit. Each half of the mold is attached to the machine and one half is allowed to slide. The hydraulically powered clamping machine pushes the mold halves together and exerts sufficient force to keep the mold closed while the material is injected.

- â€¢ **Injection:** The raw plastic material is fed into the machine where it is melted by heat and pressure.

- â€¢ **Cooling:** The molten plastic inside the mold begins to cool as soon as it comes into contact with the interior mold surface. It then solidifies and takes the shape of the desired part.

â€¢ Ejection: After sometime, the cooled part is ejected from the mold by the ejection system at the rear end of the mold.

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