

Injection Moulding



Injection moulding is an industrial process used to make mass-market items quickly. Different types of plastic can be used to make the items. The plastic granules are loaded into a hopper. They are driven through a **heater** to melt them by a **screw** into the mould. Once the mould is filled with molten plastic, the screw



plunges forward, squeezing the plastic to a high pressure, ensuring that all parts of the mould are filled.

The screw pulls back, the mould is opened, and the item falls out. This process is repeated quickly and repeatedly to produce hundreds or thousands of items. Examples of common injection moulding items include:

Lego buttons kitchen items plastic cups toothbrushes handles machine casings, etc.

Characteristics of Injection Moulding:

High Set Up Costs—the moulds used in the machine are expensive to make and need to be very accurate. They can cost hundreds of thousands of pounds to make, but can be used over a million times. That is why this process is only used to manufacture mass-produced items. A machine that carries out the process is also required. Making moulds is a skilled process and needs a lot of training, whereas operating the machine is

Materials—used for making items from plastic materials such as **ABS, Polyethylene, Nylon, Polypropylene, or Polystyrene.**

Visible Signs—items made by injection moulding usually have two visible signs that they have been made this way—a **sprue** or projecting piece of plastic, which is where the plastic was injected, and marks of **ejector pins**, which is where the finished item has been pushed out. Sometimes **parting lines** can be observed—that is the line showing the split in the two parts of the mould.

Environmental—the process does not produce much waste, and any excess plastic is recyclable.

Consistent—the second and millionth item are virtually identical.

Sizing—as the plastic is hot when it is injected, it cools down once made. When it does this it shrinks slightly. This means that the original mould needs to be made slightly larger than the desired size.

