Medical Moulded Products

INJECTION MOULDING PROCESS

Plastic injection moulding is a process for producing plastic components from thermoplastic polymers.

- Material is either dried to remove moisture before processing (hygroscopic material) or is used without pre drying (non hygroscopic material).
- As an example Nylon and Polycarbonate need pre drying before use where Polypropylene and Polystyrene do not.
- Material is gravity fed into a heated barrel and transferred along the barrel by means of a archimedean type screw.
- The material is injected into a mould that replicates the shape of the final part where it is allowed to cool and solidify into the shape of the cavity within the tool.
- Once the part is cool enough to allow extraction the tool opens and the part is removed by means of an ejector system within the tool.

The stages of manufacture are as follows:

Tool close/clamp pressure is applied/material is injected/hold pressure is maintained/part is allowed to cool/tool opens/part is ejected from tool.

- Moulds are usually produced from appropriate grade of steel or aluminium to reflect the form of the designed part.
- Aluminium is not suitable for abrasive material such as glass or mineral filled plastics as the tool would wear quickly.
- Steel being much harder, is normally used for these materials.
- Tools often consist of a sprue and runner system to transport the material to the part within the tool.
- Tools are often made to produce more than one part at a time, particularly for parts that are used in very high volume.
- As plastic materials shrink on cooling allowance has to be made within the tool for this shrinkage so that the parts reflect the required size after this shrinkage has taken place.
- Also, to allow the part to be removed from the tool, taper is added to the part.
- Tools, if looked after and maintained correctly can last for many years.

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