

Extrusion

What is extrusion?

Extrusion involves forcing molten plastics material through a die to create one continuous profile.

The technique works well for producing plastics parts with uniform wall thickness and almost any shape can be created so long as it is a continuous profile. The die gives the final product its profile or shape.

Plastic extruders are used extensively to prepare recycled plastic waste into pellets after cleaning and sorting.

How does the process work?

- Raw plastics material is fed into a heated cylinder.
- The material is driven forward by a turning (archimedes) screw, compacting and melting as it moves through.
- The melt is forced through a die at the end, creating continuous lengths of uniform profile.
- As the extrudate leaves the die it starts cooling and the extruded product is then cut to the desired lengths.

What plastics materials can be used?

Any, especially high density polyethylene; polystyrene, and polyvinyl chloride; all synthetic fibres.

What are the clues?



The object is a tube.



It has a regular profile.

When was the process first introduced?

First experiments in the 1840s, widely used from late 1930s.

Advantages:

- Moderate tooling costs as only requires simple dies.
- High volumes produced.

Disadvantages:

- Not suitable for one-off productions.
- Restricted to minimum order lengths.

Uses:

Anything with a constant cross section: fibres; tubing; pipes; sheets; films; cable sheathing; profiles e.g. curtain rails or window frames.