



Technically Speaking

Identifying the Correct Moulding Technique

With the development of mass production, moulding interchangeable parts became a critical and advantageous process. Prior to mass production, all components were unique and equipment was manufactured by highly skilled craftsmen. Moulding allowed manufacturers to produce large volumes of replica parts for new equipment and repair purposes.

In 1839, Charles Goodyear developed the first processable natural rubber compound, paving the way for rubber moulding. His simple compound included natural rubber, sulfur, and an inorganic accelerator (white lead).

Today, there are five primary moulding techniques used by rubber and plastic manufacturers. Techniques include compression moulding, transfer moulding, injection moulding, cast moulding and extruding. Each technique has its distinct advantages and disadvantages:

Technique	Advantages	Disadvantages
Compression Moulding	<ul style="list-style-type: none"> Minimal material waste Economical tooling costs Best for small quantities Good for large diameter components 	<ul style="list-style-type: none"> More labour intensive Longer cure & cycle time Loose tolerances
Transfer Moulding	<ul style="list-style-type: none"> Minimal excess flash Good for complex & delicate parts Tight tolerances vs. compression 	<ul style="list-style-type: none"> More expensive moulds vs. compression High in material waste
Injection Moulding	<ul style="list-style-type: none"> Less excess flash Good for complex & delicate parts Low labour costs Excellent for high volumes 	<ul style="list-style-type: none"> Highest tooling costs High in material waste
Cast Moulding	<ul style="list-style-type: none"> Most economical tooling costs Ideal for small runs Easy to manipulate material properties 	<ul style="list-style-type: none"> Loose tolerances Relatively labour intensive Longer cycle & cure times
Extrusion	<ul style="list-style-type: none"> Least complex moulds Low mould & die costs Typically lower unit costs 	<ul style="list-style-type: none"> Simple shapes Minimum runs Loose tolerances

Hi-Tech Seals works with a select group of manufacturers, specialized in unique materials/compounds, dimension parameters and moulding techniques to bring our clients the best option for their application. Over the next five Technically Speaking articles we will look at the various moulding processes.