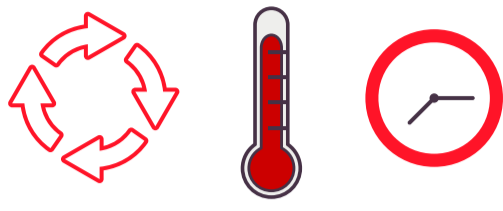


# Fantastic plastic!

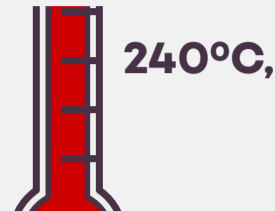
Often when a customer approaches us, they are not sure of the most suitable or cost effective way of producing their product, or even if rotational moulding is right for their product.

As the plastics experts, we've developed a quick reference guide to give you a brief overview of each process and its applications.

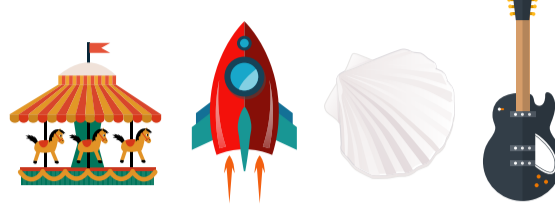
## Rotational Moulding



The holy trinity of the process is Rotation, Temperature and Time.



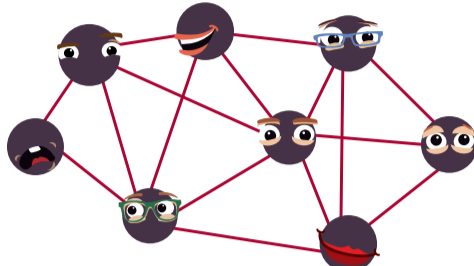
Temperature will typically be 240°C, although the melting temperature of PE is circa 115 to 130 °C.



Various Machine types are used, Carousel, Shuttle, Clamshell and Rock & Roll.



Machines vary in size from 1m diameter up to 3.5m diameter



The most commonly used materials is the family of Polyethylenes



Polyethylene compounds will normally be **natural** or **black**, but they can be made to a specific colour match.

## Advantages of Rotational Moulding

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Design flexibility ✓                 | Uniform wall thickness ✓    |
| Prototype & Development capability ✓ | Optional wall thicknesses ✓ |
| Short delivery schedules ✓           | Very large part sizes ✓     |
| Low tooling costs ✓                  | Low production runs ✓       |
| Tooling modification capability ✓    | Wide material choice ✓      |
| Strength and durability of part ✓    | Moulded-in metal parts ✓    |

## Typical applications

Building products

Street furniture

Playground equipment

Fuel tanks

Bins & refuse containers

Marine buoys

Medical equipment

Boats

Furniture

Materials handling

## Vacuum Forming

the  
**oldest**  
&  
**most common**  
method of  
plastic  
processing

The process involves the **heating of plastic sheet material**. When the plastic sheet reaches the required temperature, it is either draped over the male plug of the mould, or sags into the female cavity of the mould.

**A vacuum is then applied**, sucking the sheet onto or into the detail and fidelity of the mould. Typical applications include **engine covers, train interior trims** and **seat components**.

## Thermoforming

Thermoforming is considerably more automated resulting in **faster cycle times**. The improved cycle speed is achieved with the greater use of air pressure and mould features to assist the process.

This process is only suited to thermoplastic material, often fed automatically from rolls, with particular emphasis in supplying the **Food Packaging, Pharmaceutical** and **Vending Drink Cup industries**.



## Injection Moulding



Injection Moulding (along with Extrusion Moulding) is considered to be the **prime leader for manufacturing plastic parts**. Very high precision engineering components, particularly for the Automotive, Electrical and Medical industries are the norm.

Product size can vary from **tiny micro detail up to wheelie bins, vehicle bumpers and even small boats**, all of which can be injection moulded. High volume is normally the order of the day.

## Blow Moulding

### Extrusion

Extrusion Blow Moulding is the **most extensively used process**, using many different polymers, including PE, PVC & PP. The hot material is extruded downwards into the open mould to the desired length.

The mould then closes onto the tube, holding the top partially open and pinching the bottom closed. Air pressure is then applied into the tube to blow the material inside the mould cavity.

Used for **pipes, hoses, drinking straws** and **optical fibre cables**.

### Injection

Injection Blow Moulding is the preferred process for **high volume small part medical type products**, although it is considered the least used of the three Blow Moulding options.

Unlike Extrusion Blow Moulding, the material is injected onto a core pin, which then inflates the material into and against the profile of the mould.

### Stretch

Injection Stretch Moulding is predominately used for the manufacture of **high-pressure resistance bottles for the beverage and drinks industry**. Dimensional stability and visual presentation is excellent.

The process will initially inject the material into a preform, achieving specific neck thread details, prior to being blown into the metal mould. The preform of the neck area is then stretched with a core rod to fill the internal surface of the mould.

This is a simple introduction to some of the alternative plastics processes benchmarked to rotational moulding. Please contact our team if you require more technical comparisons or further details of the applications of rotational moulding.