

## Injection moulding process

Injection moulding can be performed with various materials including thermoplastic polymers, elastomers, glass, ceramics or metal. The injection moulding process involves four consecutive steps:

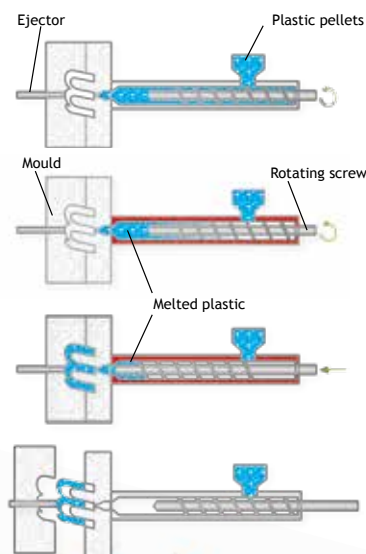
- > dosing and plasticizing
- > injection
- > pressing and cooling down
- > release of the finished product

Firstly, pellets of the raw material are fed into a heated barrel with a reciprocating screw. In

this injection (plastification) unit the thermal energy increases and reduces the viscosity of the melting polymer.

In the second step the material is injected at high pressure and velocity into the mould with the part-forming cavity. Thirdly, the screw reciprocates and receives material for the next cycle while the material within the mould cools down so that it can finally be ejected and stays in its final shape.

Please contact [Mowiflex@kuraray.eu](mailto:Mowiflex@kuraray.eu) for additional information about further MOWIFLEX™ products.



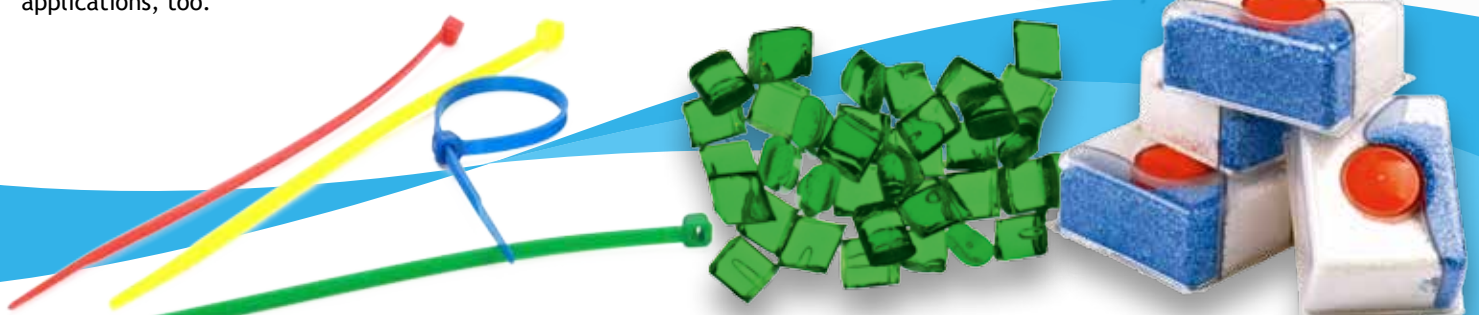
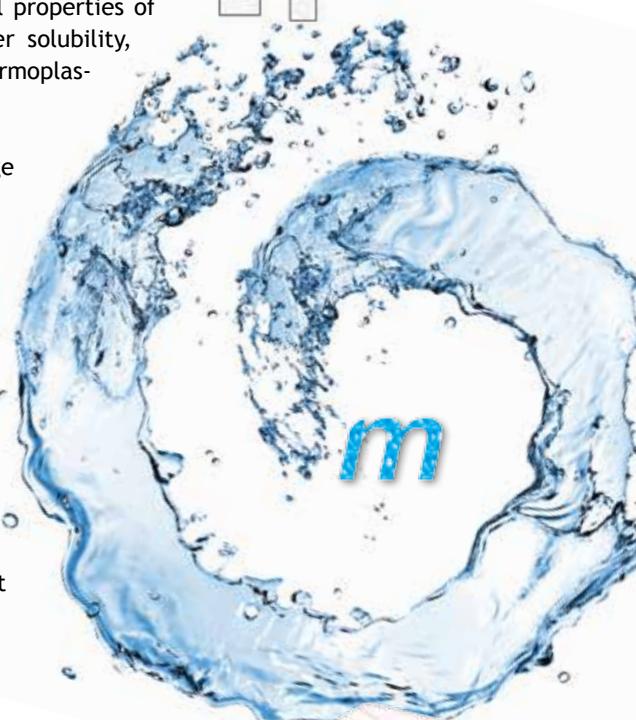
## Water-soluble injection moulding shapes

Of course, there are different types of injection moulding that differ in requirements, such as processing conditions or raw material properties, with regard to the desired end product. In this respect materials that can be processed thermoplastically to water-soluble shapes are attracting interest. Water-soluble shapes serve various fields of application like packaging, delivering, processing and as mounting or assembly aid. One possible utilization is as a supporting component in the automobile industry; another idea is water-soluble cable binders.

Water-soluble packing materials are of interest for dishwasher tabs or bait bags, for example, or even as casing for agrochemicals where a long-term release of the substrate is required. Furthermore, water-soluble shapes are relevant for multi-component processing, like lost core technologies, or as barrier that dissolves only under special conditions, e.g. a high water temperature. Certainly, water-soluble injection moulding shapes might be of interest for other applications, too.

This is the point where MOWIFLEX™, a compound of PVOH and plasticizer, comes into play. MOWIFLEX™ possesses all properties of standard PVOH, such as water solubility, and can be processed as a thermoplastic at the same time.

MOWIFLEX™ decisive advantage in comparison to other polymers is the **low shrinkage during the cooling phase**. This small change in specific volume is dedicated to the **high crystallinity of PVOH** and allows a **shorter cycle time**, necessitates **less material** and causes a **lower tension in the final form**. Kuraray offers several types of MOWIFLEX™ in order to serve different processing needs.



## Adding value to your products - worldwide



KURARAY POVAL™, EXCEVAL™, ELVANOL™ and MOWIFLEX™ are the trademarks for polyvinyl alcohols made by Kuraray. Their key characteristics – outstanding film-forming properties and high binding strength – add real value to your products. Our polymers are water-soluble, highly reactive, crosslinkable and foamable. They have high pigment binding capacity, protective colloid characteristics and thickening effects. The physical and chemical properties of KURARAY POVAL™ make it ideal for a wide variety of applications, ranging from adhesives through paper and ceramics to packaging films. Many of our polymers are food contact-

approved and thus suitable for food applications. Ecologically KURARAY POVAL™ is advantageous due to its biodegradability and the fact that combustion does not generate residues. It is available in various particle sizes from granules to fine powders.

Kuraray produces its wide range of KURARAY POVAL™ grades in Japan, Singapore, Germany and the USA. Kuraray's global production and service network make us your partner of choice for innovative high-quality PVOH resins.

**KURARAY - Here to Innovate.**

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