



## Designing For rotomoulding

Adopting some basic design criteria at the outset will always pay off, Rototek will be pleased to discuss your Initial concept and will offer sound advice from the outset. As with all good design the earlier you involve the principal manufacturer the better the likely outcome. Imagenta will help guide you along the path from concept to realization or simply offer professional support to the seasoned designer.

We can work from a physical model, drawings or CAD data (most platforms are supported). Imagenta will assess the design and give you early cost indicators to measure the viability of your project and where needed alternatives to keep the project on track.

## Design capabilities offered by rotational moulding

- Sophisticated hollow shapes
- Stress free moulded components with complex split lines.
- Moulded male and female threads (subject to compatible thread form)
- Moulded-in metal inserts or reinforcement
- Zero draft
- Variable controlled wall sections from under 2mm to over 30mm
- Multilayer wall sections can be produced from compatible polymer compositions to enhance performance or reduce cost.
- A range of surface finishes are achievable, textured (shot peen or chemical etch), smooth, polished - or combinations to achieve functional or aesthetic styling.
- Post applied finishes to achieve "Touch Form" automotive grade appearance.
- Multiple shapes can be created from a single moulding (family tools) by cutting or routing, sets of like parts can be kitted together from the same moulded charge.
- Post machining of cutouts, holes or slots are routinely undertaken and finished assemblies can be built up from mouldings and bought out components.

## Basic design guidelines:

1. In rotomoulding, the raw polymer is tumbled inside a heated mould and penetrates into surface shapes under the influence of gravity, therefore any designed shape must allow the powdered moulding material to flow easily within the tool Imagenta will assist in establishing an efficient form.
2. Sharp internal corners and edges should generally be avoided as they can create stress points and will locally reduce the wall section.

3. Sharp external corners and edges, may not fill correctly and therefore may not be aesthetically acceptable even if they are structurally sound.
4. Avoid internal webs unless you are prepared to compromise on the external aesthetics of your design.
5. Structural load bearing products may need theoretical testing before tooling Imagenta can arrange full FEA reports on your design.

## **CAD data:**

1. We can convert most CAD formats but check with our designers before transmitting your data to us.
2. You only need provide data that defines the outside of your moulding, internal detail is not necessary.
3. It is best to omit draft angles other than natural drafting of the part required by styling considerations. This is because draft may be affected by the position of the developed split line and tool operation which we will agree with you after design assessment.
4. Do not apply shrinkage or contraction to your model we will determine those details.
5. If you have ideas about the development of other derivatives of your product you will do well to give a basic outline it may affect the way we design the original tool.
6. Along with your basic 3D cad data please provide a 'key features' drawing or specification showing key requirements such as desired product tolerances, surface finishes, and colour specification. We will help you determine these parameters against standard industry data.

## **Cost Considerations:**

Rotational moulding tools are by their very nature less expensive to make than other competing manufacturing methods. What little waste generated by the moulding process can in most cases be reprocessed, so for small to medium volumes it is inherently a cost-efficient process. However, considering the following can cut costs further:

**Design for process:** discuss your concept with Imagenta at the earliest stage we will advise the key points you need to consider.

**Keep it simple:** well-designed simple forms are usually cheaper to mould.

**Material:** We have detailed most standard Rota-mould material types on our Materials page. Polyethylene covers the majority of applications being robust and very cost effective. We would always advise you to select the lowest cost polymer that will do the job.

**Texture:** Product surface finish is generated by the mould surface. Simple shot peening produces interesting texture at low cost, whereas photo-etching, whilst more expensive, produces a more aesthetically pleasing surface at something approaching automotive standards. The choice is determined by the end application.

**Colour:** can influence the perceived value of a product Self-coloured mouldings are lower in cost and durable, however additional surface treatments may be needed to achieve levels of gloss or in the case of painting precise colour matches to other non-plastic surfaces.

**Mould design:** Careful selection of split lines can be critical in achieving an efficient cost effective production tool Imagenta will help you design the most effective solution.

**Test Design:** Ensuring the design is right before committing to tooling saves time and money while rotational mould tools are possibly the easiest tooling to modify and develop, “right by design” is always the most cost effective option.

*The information incorporated in this document is based on industry standard good practice and as such should only be taken as guidance. All designs should be assessed and tested for there compatibility with a chosen process before proceeding with tooling. Imagenta will be happy to collaborate with you in the design process and help you achieve a cost effective solution.*