

# Vacuum Casting

If you've ever had to make concessions on Vacuum Casting parts because your supplier can't achieve certain detail features, here's the solution.

Vacuum Casting is a fast and cost-effective prototyping method for producing small numbers of highly accurate polyurethane prototype parts. Characteristics and quality are comparable to the final product e.g. for functional testing and/or marketing.

But not every supplier can produce the fine level of detail required.

Drawing on decades of experience in Vacuum and RIM casting, this informative Process Guide describes our approach. We typically keep concessions to the absolute minimum to produce a level of detail quality to satisfy any tool maker's production tooling requirement.

## What is Vacuum Casting?

Vacuum Casting is a fast and cost-effective prototyping method that is typically used to produce small numbers (usually up to 20) of highly accurate polyurethane prototype parts.

It is a slightly slower process than SLA alone because of the additional steps involved in the process, some of which are manually intensive. The time to manufacture depends on the desired characteristics of the part, with size being a key factor as this affects the curing time of the material.

Small numbers of parts are made from a single master mould, which is made using an SLA master model. The mould is made from silicone rubber, and the casting made by pouring resin into the mould in a vacuum chamber.

The result is a bubble free casting, ideal for highly accurate, functional plastic prototype parts in very fine detail which replicate patterns, dimensions, profiles and textures.

Vacuum Casting can also produce parts with varying degrees of flexibility or rigidity, in a wide range of colours and materials – as well clear parts.



## Vacuum Casting Benefits

Vacuum Casting is a fast and cost-effective prototyping method for producing small numbers of highly accurate polyurethane prototype parts.

- ✓ Ideal for functional testing and/or marketing
- ✓ Cost effective
- ✓ Low volume runs
- ✓ High quality
- ✓ Fine detail and accuracy
- ✓ Range of properties can be achieved to mimic the final product
- ✓ No requirement for expensive hard tooling.

## Vacuum Casting Process Summary

### PROCESS FEATURES

- ✓ Ideal for small runs of highly accurate prototype parts
- ✓ Short lead times to production
- ✓ Cost effective, with no requirement for expensive tooling

### PROPERTIES

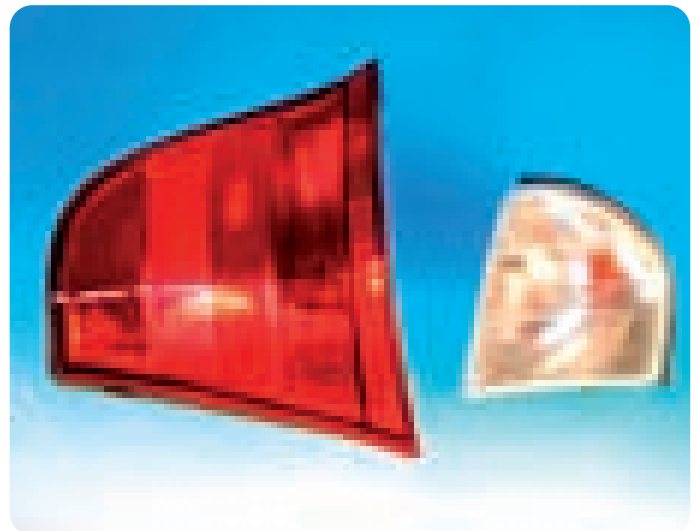
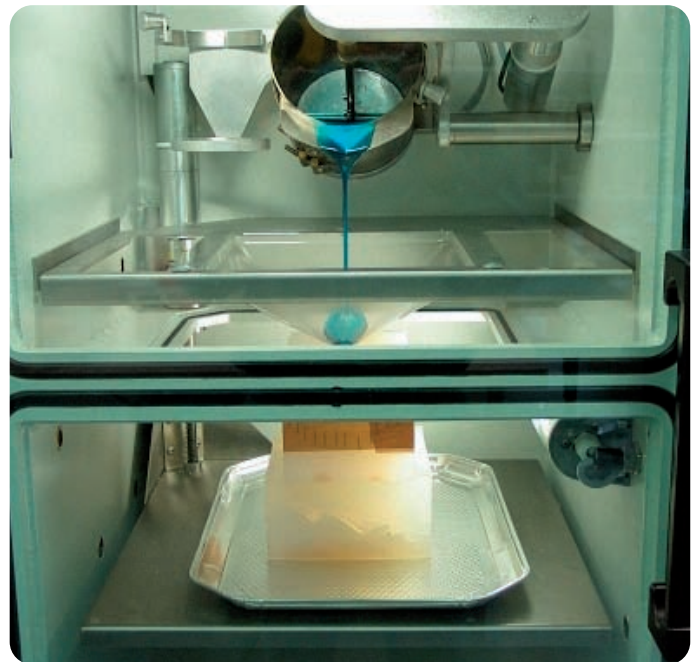
- ✓ Heat resistance
- ✓ Colours and tints
- ✓ Fire retardance
- ✓ Flexibility and rigidity
- ✓ UV stability
- ✓ Range of surface finishes
- ✓ Insert options
- ✓ Water clear
- ✓ Flexible polyurethane casting resin grades range
- ✓ Range of finishes from grades of spark texture, smooth matt and satin to a high gloss finish.

### MATERIAL SIMULATIONS

- ✓ ABS
- ✓ POM
- ✓ Elastomers (Range: 25 - 95 Shore A)
- ✓ Nylon inc Glass Filled
- ✓ Polypropylene

### PRE-PRODUCTION APPLICATIONS

- ✓ Marketing
- ✓ Functional testing
- ✓ Thermal and air flow testing
- ✓ Assembly line trials



## About Prototype Projects

Prototype Projects is an expert prototyping bureau providing rapid prototyping and model making services for clients across a range of sectors.

With 30 years of experience built on a reputation for service excellence, Prototype Projects aims to help its clients build and maintain a strong competitive edge in engineering design and production.

Underpinning its commitment to excellence and service quality is an ongoing process of investment in prototyping systems, expertise and technologies.

### Prototype Projects service capabilities include:

- ✓ SLA (Stereolithography)
- ✓ SLS (Selective Laser Sintering)
- ✓ FDM (Fused Repositioning Modelling)
- ✓ CNC (Computer Numerical Control) Milling (4 Axis) & Turning
- ✓ Injection Moulding (Max Shot Weight - 100g PP/ 70-80g GF PA)
- ✓ Vacuum Casting
- ✓ RIM (Reaction Injection Moulding)
- ✓ CAD (Computer Aided Modelling)
- ✓ CAM (Computer Aided Machining)
- ✓ CAE (Computer Aided Engineering)