

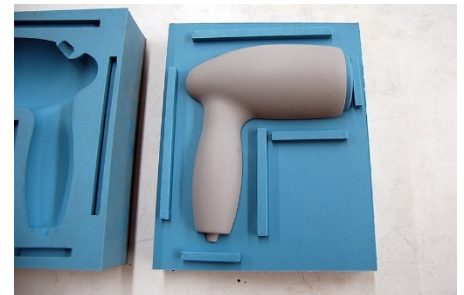
## Techsil Considers Flexible Moulding Materials for Part Reproduction

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### Introduction

When faced with a part reproduction application there are many routes available to explore, from replicating the master model by hand to 3D printing and all the various solid mould processes such as liquid injection moulding, or resin transfer moulding in between. Something you may not have considered though is flexible moulding.

Flexible moulding is already proving a very popular choice within a range of industries including rapid prototyping; art reproduction/restoration; composite manufacturing; large volume production applications and even within the hobbyist sectors.



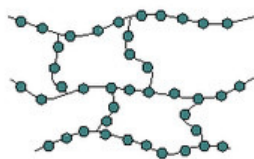
### Flexible Mould Making – The Basic Choices

There is a range of different plastics and chemistries suitable for use for flexible mould making; your choice is determined by the requirements set out by your application.

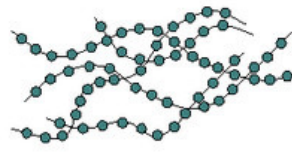
For example, if you are looking for the ability to replicate fine details but only require simple tooling and need a low cost, short production run you may want to consider something from the 'thermoset resin' family. Included in these are rigid polyurethanes, polyesters, epoxies and silicone RTV's.

Thermoplastics have loose polymer chains that undergo no chemical change during processing. They can be continually reshaped or reformed by the addition of heat and pressure. Included in this family of plastics are polystyrenes, waxes, ABS, polycarbonate and acrylics.

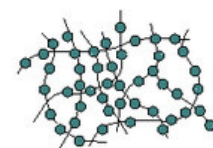
Thermoset resins have rigid, cross linked polymer structures. They undergo a chemical change during processing and take a permanent shape after cure; they cannot be reshaped.



Elastomer



Thermoplastic



Thermoset

### Now to Narrow Down your Options

Materials like latex and polysulfide provide a good transfer of pattern details, however they offer a relatively short mould life. They are best for low heat type applications and would not tolerate exotherms above 65°C. Polyurethanes perform better in terms of mould life and will tolerate exotherms up to 100°C. However, if you are looking for a solution without any casting temperature limitations you would want to focus on silicones, RTV's not only have no restrictions from exotherm temperatures they also offer excellent transfer pattern detail and moderate to long mould life.

The relative material cost for silicones is the highest compared with the other products we have

mentioned, however there are many benefits of choosing RTV's. For example a release agent is required with latex, polysulfide, PVS and polyurethanes, which is a step not required with silicones. There are no added labour costs with silicones as the mixing time is quick, applications can be as simple as a straight pour and there is no need for intricate cleaning of completed castings.

Silicones have the ability to not only be reliably repairs, but also repaired without the use of a primer. Latex, polysulfide and PVC all suffer from excessive shrinkage during cure, polyurethane not so much however silicone systems typically offer very low shrinkage. Overall, the opinion is generally taken that silicones balance out the economic cost with their performance attributes.



**Contact us for more information on our range of products suitable for flexible moulding and part reproduction:**

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