

MOULD MAKING AND CASTING -



Mould making materials, flexible or solid, are many and varied. Whether a simple one-part product (such as latex) or the more common two-part (silicones/polyurethane), they all have their advantages and disadvantages, relevant in their own application. The following is a brief overview of the most popular and readily available products for the hobby, craft and art industry -

Latex – Latex is a natural derivative of the sap from the rubber tree. Most Latex for mould making has been pre-vulcanized which, put simply, will cure once it is exposed to atmosphere. Latex for mould making does not require mixing or measuring, has great “stretch ability” and is economical in price, however, many coats are required to achieve a good mould thickness/stability and a support is required when using a latex mould.

RTV Silicone – RTV Silicones most commonly used in mould making have the ability to reproduce minute detail. Generally, silicone is a two part system, consisting of the rubber and a catalyst. The range of RTV Silicones available is diverse that there is a grade suitable for almost any casting application, including wax, low melt alloys, food product (a select range) and some are even skin contact safe (for life casting). When used thoughtfully and as directed RTV Silicone moulds can reproduce numerous casts, with or without a release agent. Although similar in characteristics, RTV Silicones all have unique properties. As such, certain RTV Silicones are inhibited by some substances – sulphur base clays for example. RTV Silicones must be measured accurately according to manufactures directions to obtain best results. RTV Silicones do not normally adhere to many surfaces, however proper preparation of your Master (Model) is imperative. Porous material must be sealed and use of release agent or separator is recommended when unsure of the Masters (Model) composition.

There are two main types of silicone of interest to the home crafter and hobbyist –

- condensation cure, and - addition cure.

The difference?

Condensation silicones cure by addition of a tin based catalyst. Pot life and curing times vary with the type and amount of catalyst. Condensation cure silicones release a type of alcohol (not the drinking type) during curing and due to this they have a slight shrinkage (usually less than 2%). Even after curing, Condensation silicones continually release this alcohol by-product and this can sometimes cause compatibility issues with some casting compounds. Condensation cure silicone is a general use silicone used by most crafters and hobbyists.

Addition cure silicones use a platinum based catalyst for curing. Generally, the two parts of the silicone must be mixed strictly by the prescribed ratio. Addition cure silicones release no by products during curing and therefore shrinkage is virtually nil. Some materials, used to make "Masters (Model)" may contain substances which can inhibit the curing of Addition cure silicones, testing is recommended.

Addition cure silicones generally, are beneficial by offering longer mould life.

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Polyurethane – Polyurethane resins are again a two part liquid system and available in rigid, flexible and foam. The most popular for mould making are the flexible systems. These polyurethanes have a high resistance to the abrasive characteristics of concretes and gypsums, making them a common choice for making moulds for these casting liquids.

Alginates – a once use mould material. Comes as a powder form which, when mixed with water begins to solidify to a fragile rubbery substance. Commonly used by the dental industry for denture impressions. Popular with the Life Casting industry, (taking casts of hands, feet, faces, bodies). Quick drying.

Gypsum Plasters – hardened plaster is normally used for making support jackets for thin moulds / latex. Also used for casting polyester and epoxy resins and soft plastics (silicones and flexible polyurethane).

Other materials include – polymer clays, pottery clays, tube silicone even hot glue can be used to make a mould. Although these materials may not reproduce minute detail, they can still be an option in certain applications. Your choice of product will basically depend on your casting requirements.

The most common material used in today's mould making is flexible, for several reasons:-

- flexibility allows for easier removal of cast pieces
- when used correctly, can give many reproductions
- will reproduce the finest of details

Although mould making and casting materials may have similar properties, they are all unique in some way. Some may require special handling, environments or techniques to achieve successful results. Your supplier will always advise reading all directions and test sampling of the product before proceeding with your project.

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