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LIQUID LATEX

Brush Latex is a moulding compound based on pre-vulcanised natural rubber latex. Pre-vulcanised latex is recommended for mould production as it only requires drying to give a strong elastic film. The high solids content and viscosity properties are suited to brush application without the occurrence of runs and sags. For dipping or spray applications, lower viscosity products are available.

Brush latex films, characteristically exhibit low shrinkage rates and fast drying times. Intricate models can be reproduced in exact detail and moulding latex will not separate on standing.

Moulding Production

Masters. Brush latex may be used to make moulds from masters (originals) made from various materials such as plaster, clay, glass and concrete. Plaster or clay masters should be coated with 2 – 3 applications of shellac or lacquer and thoroughly dried before applying latex. Ensure the masters are clean, dry and free of grease or oil. Except for plaster models, masters may be washed in a solution of dishwashing liquid and water and dried before latex application.

Fasten the master to a firm non-porous substrate so that the entire piece can be moved without handling the coated areas. The latex compound may be used as an adhesive by pouring a small quantity onto the support, positioning the model and allowing the assembly to dry.

Application of Latex. Brushes used to apply moulding latex should be rinsed in a solution of soap and water both before and after use. This aids cleaning of the applicators and prolongs their use.

When applying brush latex, care must be taken to eliminate all air bubbles in the first coat. This will ensure that the detail is accurately reproduced.

If a thinner viscosity is required for the first coat, the brush latex may be diluted with a small amount of distilled water. Brush from the top of the model to the bottom and continue out from the base to a distance of approximately 4 cm on the supporting substrate. Apply the overlap for every coat of latex, not just the first. When dry the excess film provides a useful handle in casting operations.

The first coat should be dried at room temperature (23 – 25 deg C) in order to minimise lifting from the master. Once the first coat is completely dry to touch subsequent coats may be applied. Drying between coats may be carried out at room temperature. To speed up the process the drying temperature can be increased up to a maximum of 50 deg C either in an oven or by fan heater. If no heat is available, directing a current of air across the surface of the model at room temperature will speed the drying.

Note. Do not use excessive heat as this may:
Promote shrinkage
Cause cracking
Trap moisture in the film
Lead to low tensile strength
Cause delamination between layers



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For models with a relatively large surface area, the following application may be considered. Apply the first coat of latex as described. When this is dry follow with a layer in a checkerboard pattern. Once the checkerboard application dries follow with an entire coating. Continue alternating between the full coat and the checkerboard coat until desired thickness is achieved. This technique helps to reduce the tendency to shrink and keeps the dimensions of the finished mould very close to those of the original.

Reinforcement of the latex may be achieved by applying strips of cheesecloth, burlap or a similar open weave cotton fabric to the mould after four applications have been made. The fabric should be cut into narrow strips and applied to a fresh coat of latex. After this has dried a further two or three coats of latex should be applied over the fabric.

Modelling clay may be used as the parting fin when making the mould. First coat the clay fin with shellac to ensure release of the latex mould. Apply the latex to the fin and half the model. When that coat is dry apply to the other half of the model. Continue coating with latex until the desired thickness is achieved. The clay fin can then be removed and the latex fin coated with mould release.

The recommended number of latex coats for a model approximately 15 cm high is five to six. For models 30 cm high or larger, ten to twelve coats may be required.

Once the final coat of latex is applied the mould should dry for 24 – 72 hours at room temperature to cure. To improve the tensile strength dry for 13 hrs at 50 – 60 deg C.

Casting

For larger items a casing or mother mould is required to provide support and minimise distortion of the latex mould. This also serves to protect the surface of the latex film against ozone attack that causes cracking and weakens the rubber film.

Before casting it is useful to apply a mould release such as RL359 to the mould surface. Do not use grease, petroleum oils or stearic acid solutions as release agents.

RL359 mould release can be used to release plaster or concrete from latex rubber. It can also be used between the latex mould and the mother mould or as a lubricant when slipping a thin mould over itself to remove the casting. Alternatively a solution of castor oil in alcohol in a ratio of 1:2 works well as a release agent with concrete items. Both types of release agents can be applied by brush or spray. For plaster castings a solution of dishwashing detergent in water, approximately 50ml in 10 litres helps to stop the plaster from sticking and keeps the mould clean and pliable. This solution should be applied to the mould and then allowed to dry completely before pouring plaster.

Prepare casting medium as per the suppliers instructions and pour into the latex mould ensuring no air bubbles are trapped in the liquid. When the material has set, carefully remove the casing (if used) and then the latex mould. The mould should be cleaned and release agent applied before the next casting.



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Precautions

During hot weather, do not be tempted to apply thicker layers of brush latex. It is much better to apply a thinner film that will dry much faster allowing more coats to be applied. A thicker coating can seal on the surface, trapping moisture underneath and result in poor drying through the film. This can result in cracking and poor tensile strength.

In common with all natural based products, contamination with even extremely low concentrations of copper, manganese, brass and zinc will cause rapid aging and deterioration of the rubber. In storage and processing avoid all contact with these metals from application equipment, water supplies and fake 'gold' paint.

When casting concrete products into latex moulds some grades of cement generate a pink/purple staining on the surface of the finished article. This effect is usually reversible on exposure to natural light and in no way affects the structure of the finished product.

Slip Casting Of Latex Rubber

Slip casting of latex will provide a rapid build of rubber and give a mould that is of more uniform thickness. This provides a more aesthetically pleasing rubber product. There are no brush marks to spoil the appearance.

The ideal method for slush (slip) casting of latex is to start with a completely dry plaster mould or pattern. Other types of stone tend to be less porous and therefore absorb less moisture from the latex. Non-porous (i.e. silicone or urethane) will work, however the result will be very poor unless a slightly different technique is used.

Brush or dip latex will both work, however the thinner dip grade will release the bubbles much faster. Fill your mould to the top with latex and let sit for 30 – 45 minutes (or longer) depending on required finished thickness. 30 minutes should give at least 1mm dried film thickness. Pour the un-coagulated latex back into the original container for re-use. A wet film of approximately 2mm will remain gelled on the inner face of the mould. Leave the mould to drain and even out the coating.

Dry this coating at room temp for at least a day. Fill and drain again for increased thickness. Dry the coating by blowing warm air into the cavity. Dust the inside face with talcum powder before attempting to de-mould the latex skin.

There may be times when there is insufficient latex to fill a very large mould. The mould may be partially filled and then rolled or slushed around until the required film thickness is obtained. Take care to build up the latex as evenly as possible. Pour out excess latex and dry as previously.