A Method of Making Plastic Models of Fruit and Vegetables

NEIL BREARLEY*
Vancouver, British Columbia

It is sometimes necessary to produce models of fruit and vegetables to demonstrate size and shape, or to illustrate defects. We have developed a method for making such models. The advantages of the method are as follows: it is simple and relatively cheap; unskilled personnel can do the work; the models are exceptionally durable; the fidelity of reproduction is very high; and the object modelled is recoverable in an undamaged condition.

First, a mould is made by embedding the object in Silastic RTV 588** This material is a silicone rubber which vulcanizes at room temperature after two liquid components have been mixed. For economy, used moulds and vulcanized material can be ground up and dispersed in fresh material up to about 50 percent of the total bulk. A cardboard container of a size large enough to hold the object to be moulded with about ½ inch space all round is partially filled with silicone rubber. The object is pushed in and more silicone rubber is added until the level is up to the midpoint of the object. In most cases it is necessary to make two moulds, one of each half of the object.

Initial set takes place in about 4 hours at room temperature, and the material is fully cured after about 24 hours. The vulcanized silicone rubber has excellent release properties and is flexible. Casts are made from the mould in epoxy resin. The following ingredients has been used:

100 ml. Epon resin 815†
15 ml. Cardolite NC-513‡
15 ml. Triethylene tetramine.
250 g. Precipitated chalk.

The triethylene tetramine, being the catalyst, should be added last.

To cut down on the amount of resin used we have inserted a roughly-shaped plug of wood in the centre of our casts. The casts should be surface hard after about 3 hours and can then be removed from the moulds. Complete cure takes about 24 hours.

The casts are easily removed from the mould. If two halves of an object have been cast they can easily be joined with a little of the epoxy resin mixture after the meniscus has been sanded off.

The cast may be coloured either by painting or by incorporating pigment into the epoxy resin mixture. We have used oil-base tinting colours for the latter.

The following precautions should be noted. Unless care is taken in stirring, air bubbles may become entrapped in the silicone rubber and epoxy resin mixtures. These can be removed by putting the container into a vacuum desiccator for a few minutes. The resins and curing agents may cause dermatitis in some individuals, therefore rubber gloves should be worn.

*British Columbia Research Council, University of British Columbia.
**Trade mark, Dow Corning Silicones Ltd.
†Trade mark, Shell Canada Ltd.
‡Trade mark, Minnesota Mining and Manufacturing of Canada Ltd.