

## **EMBEDDING CLEAR RESIN 480**

This is a styrene modified unsaturated polyester resin pre-promoted for room temperature curing.

### **MAJOR FEATURES OF CLEAR POLYESTER EMBEDDING RESIN 480**

- Specially formulated to produce small castings which appear crystal clear. Large castings may take on a clear to blue/grey tint.
- Used to produce quite large castings with less tendency to crack or discolour.
- Pre-promoted and requires only the addition of MEKP Catalyst to convert it to the solid cured state.

### **LIQUID RESIN PROPERTIES**

			<i>Test Method</i>
• Appearance	Clear Blue/Grey		NTM202.8
• Viscosity (25°C) #3/100, cps	400 - 450		NTM201.8
• Volatile Content, %	37 – 39		NTM200.25
• Gel time* (25°C), mins	15 – 20		NTM228.23

\*Using 100g resin 1.0% MEKP NA1

### **MAJOR USES OF CLEAR POLYESTER EMBEDDING RESIN 480**

Encapsulation of articles to be used as teaching aids and for other purposes in:

Metallurgy    Zoology    Botany    Medicine

Also a variety of consumer products are made from the resin, eg:

Cuff Links	Door knobs	Paper Weights	Plaques
Jewellery	Souvenirs	Artificial Marble	Lamp Bases
Fishing Lures	Table & Bar Tops	Decorative Panels	Corporate Logos

### **Colouring/Dying**

BUF Polyester Embedding Resin 480 may be tinted with clear dyes which are stable to the Peroxide based Catalyst. The dye should be dissolved in a solvent compatible with the resin. BUF Powder Dyes should be dissolved in a small amount of Styrene Monomer. The PSTF Dyes are ready to be added to the resin.

Alcohol soluble dyes are often used to colour the specimen to be embedded. For example, borax carmine alcohol solution is used to produce an artificial pink in animal tissue. Several other chemical mixtures for treatment of flowers and plants are also commonly used. This artificial colouring procedure is usually needed as the resin tends to destroy the natural colours in animal and plant tissue.

## Pigments

Standard Polyester gelcoat pigments may be used to obtain an opaque contrast layer for the base of a display piece. Raw pigments may also be added to BUF Polyester Resin 480. However they are often difficult to disperse. Some of the common oxide pigments may be dispersed if they are first made into a paste with a small amount of resin or styrene monomer. This will remove any lumps. This paste may then be added to the clear resin. The pigment should be dry as moisture may discolour and/or retard the cure of the resin.

## Properties of BUF Polyester Embedding Resin 480

Colour	Clear
Specific Gravity at 25°C	1.12± 0.02
Viscosity, Brookfield RVT at 25°C 3/100, cps	17 – 21 mins
Peak exotherm, 100g mass using 1.33% R.C.I. 46-709 MEKP	approx 155 mins
Uncatalysed stability at 25°C, Sealed Container,	6 months

## Safety Precautions

Polyester Resin contains Styrene Monomer and should not be used in a confined area without good ventilation and the use of proper breathing equipment. The very minimum should be a carbon activated cartridge respirator used in the open air work area. MEKP catalyst is a very unstable and dangerous peroxide based curing agent. It should not be allowed to contact the skin and safety spectacles will ensure it does not contact the eyes. A bucket of clean water next to the work bench should be used immediately in case of eye contact.

## Catalysing the Resin

The Polyester Embedding Resin 480 is very sensitive to the proportion of MEKP catalyst used in the curing process. You must aim to cure the resin in a reasonable period of time without overheating. Slight overheating will cause the resin and its embedded object to discolour yellow. Major overheating will cause the resin and its contents to badly discolour to a purple and crack. In the extreme, the resin can exude toxic fumes and black smoke. The only thing to do with overheating resin is to dump the lot into a bucket of water.

## Proportions of MEKP Catalyst

The resin will cure when mixed with MEKP catalyst in the proportions of between 0.6% to 2% and above. Aim to Gel a 12mm layer of the resin in about 1hr and a very thick layer in an extended time of 3 to 4 hrs. In the event of overheating the resin you have the option of cooling the resin for a short period with an electric fan or placing in a plastic bag in the refrigerator. A resin mix that is slow to start curing may be accelerated with a small fan boosted heater.

Some suggested MEKP proportion starting points would be:

Resin 2mm thickness	2.5% MEKP	(28ml in 1litre)
Resin 6mm thickness	1.25% MEKP	(14ml in 1 litre)
Resin 12mm thickness	1% MEKP	(11.2ml in 1 litre)
Resin 24mm thickness	0.8% MEKP	(8.96ml in 1 litre)
Resin 50mm thickness	0.6% MEKP	(6.72ml in 1 litre)

The above calculations are done with the assumption that 1 litre of resin weighs 1.12 kg.

If mixing small quantities of resin, say 50ml, and curing it approx 12mm thick, it is possible to add the correct proportion of MEKP.

Remember that 1ml of MEKP catalyst contains approx 35 drops. When you have a spare minute check this yourself by carefully dripping out and counting the number of drops in 20ml of MEKP. Now divide the counted quantity by 20.

50 ml of resin weighs 56g.  
 $56 \times 1\% = 0.56\text{ml of MEKP.}$   
 $0.56 \times 35 = 19.6 \text{ drops.}$

Therefore 50ml of resin catalysed at 1% would mean the addition of approx 20 drops of MEKP.