

PRODUCT CODE: C240045

POLYPLEX 490-45 is a pre-promoted thixotropic, grey pigmented, corrosion and high-temperature resistant unsaturated polyester laminating resin, based on Terephthalic acid. This resin features a high molecular weight polymer which shows high crosslink density, and offers excellent solvent resistance and retention of physical properties at elevated temperatures. The resin also contains a barrier additive which gives the cured laminate a tack-free surface. POLYPLEX 490-45 contains a combination of additives which improve the working environment during and after application by reducing styrene evaporation in static laminates, while providing excellent interlaminar adhesion characteristics after delayed lay-up. POLYPLEX 490-45 is a cost effective alternative to vinyl ester in many applications.

FEATURES

- Low viscosity under high shear with high thixotropy
- High molecular weight, high crosslink density Terephthalic polyester
- High heat distortion temperature
- Excellent chemical resistance towards acids, salts and polar solvents

BENEFITS

- Good sprayability with minimal drainage on inclined surfaces
- High corrosion resistance, improved toughness
- Greater retention of physical properties at elevated temperatures
- Cost effective alternative to vinyl esters in some applications

RELATED PRODUCTS

POLYPLEX 490-01	Unpromoted, non thixotropic base resin for Polyplex 490 series
POLYPLEX 490-17	Pre-promoted, non thixotropic variant.

RECOMMENDED CATALYST

Norox MEKP 9
Curox NR20

TYPICAL PROPERTIES IN LIQUID STATE @ 25°C

PROPERTY	TYPICAL VALUE	TEST DETAILS
Viscosity - Brookfield	1600 - 2000 cP	LVT sp 2/12
Viscosity - Cone and Plate	200 - 300 cP	Tested @ 23°C Brookfield CAP-2000
Density	1.10 gcm ⁻³	
Styrene Content	47 – 51%	
Appearance	Opaque Grey liquid	
Flash Point	31C	Setaflash
Gel Time	40 - 45 minutes	1% Curox NR20 MEKP

TYPICAL MECHANICAL PROPERTIES IN CURED STATE

(FULLY POSTCURED CASTING)

PROPERTY	TYPICAL VALUE	TEST DETAILS
Density	1.19 gcm ⁻³	ISO/R 1183-1970
Tensile Strength	60 MPa	ASTM D638
Tensile Elongation	2.0 – 2.5%	ASTM D638
Flexural Strength	115 MPa	ASTM D790
Flexural Modulus	3585 MPa	ASTM D790
Volume Shrinkage	7-8%	ISO 3521-1976
Heat Distortion Temperature	122C - 126C	ISO 75-1974
Barcol 934-1 Hardness	40	Barcol Impressor

FABRICATION

Various methods of fabrication can be specified or recommended, but all basically require that a coat of 0.3mm minimum thickness (corrosion barrier) be applied to the side exposed to the corrosive environment. This layer must be smooth and free of imperfections, and consisting of either:

- Resin - rich layer with a resin content of 80-90%, reinforced with a surfacing veil or tissue of chemical resistant glass.
- Flow coat of resin containing between 2-5% Wax solution (5% paraffin wax in styrene). This applies to structures where the last layer applied is exposed to air during cure. The wax ensures a satisfactory degree of surface cure is obtained.

POST CURE

One of the most important factors governing the corrosion resistance of composites is the degree of cure that the resin obtains. To achieve optimum chemical resistance moulded articles should be properly postcured prior to exposure to any chemical environment. Any of the following minimum schedules are suggested:

- 14 days at ambient temperature
- 2 days at 45°C
- 20 hours at 65°C
- 5 hours at 80°C

For higher postcure temperatures, the article should first be matured for not less than 24 hours at room temperature. For general service, it is recommended that the laminate reach a minimum of 90% of the clear cast Barcol Hardness value listed above. For highly aggressive conditions elevated temperature post-cure must be employed to attain the highest degree of cure possible.

This bulletin is intended as a guideline only. If doubt exists as to the suitability of our products for a particular purpose, then small test laminates should be evaluated in the appropriate environment.

STORAGE AND HANDLING

To ensure maximum stability and maintain optimum resin handling properties, polyester resins should be stored in closed containers, away from heat sources and sunlight. The resin should be stored away from all sources of ignition. Stored resin quantities should be kept to a reasonable minimum and used on a first in/first out stock rotation basis.

Prolonged storage, or unfavourable storing conditions, may cause separation, therefore agitation of the resin before use is recommended.

STANDARD PACKAGING

Mild steel drums (open top)
Mild steel pail

Always refer to the MSDS before use