

### PRODUCT CODES: C260111, C260112, C260113

Ultratec™ VE Tie Layer resins are prepromoted, thixotropic bisphenol-A epoxy-based vinyl ester laminating resins dissolved in styrene. These resins are suitable for use in hand lay-up, spray-up, and filament winding applications where outstanding mechanical properties and excellent chemical & heat resistance properties are required.

### FEATURES

- Tough and versatile
- Excellent Chemical Resistance
- Excellent osmotic blistering resistance

### BENEFITS

- Excellent crack and craze resistance

Suitable for construction of barrier laminates directly behind the gelcoat, in marine and swimming pool composites.

### APPLICATION

Ultratec™ VE Tie Layer resins are ideally suited for construction of barrier laminates/tie layers directly behind the Gelcoat in Marine composites, Moulds, swimming pool composites and behind the thermoformed skin in Acrylic Spa Pool mouldings. In Marine & Pool applications, the resin rich tie layer laminate provides excellent resistance to osmotic blistering, and also reduces the surface profile to improve cosmetics of final parts.

In Composite Tooling (Mould) constructions, Ultratec™ VE Tie layer laminates applied directly behind the Tooling Gelcoat provide excellent clarity to allow good visibility of entrapped air-bubbles for easy removal via consolidation, prior to application of opaque, filled Ultratec Low shrink Tooling laminates. In the event of damage to the Tooling Gelcoat in service, subsequent Gelcoat and laminate repairs typically show excellent adhesion to the unfilled VE Tie layer laminate. The unique chemical composition of these resins allow fabrication of tough and versatile laminates with excellent crack and craze resistance in moulded parts. Ultratec VE Tie Layer resins are suitable for mouldings that are subjected to particularly high static or dynamic loads and have excellent resistance to sustained heat.

### RELATED PRODUCTS

PRODUCT CODE	PRODUCT NAME	GEL TIME @ 25°C - 1.5% MEKP Norox 925H (mins)	GEL TIME @ 25°C - 1.5% MEKP Curox NR20 (mins)
C260111	Ultratec™ VE Tie Layer-15	12 - 16	13 - 17
C260112	Ultratec™ VE Tie Layer-30	30 - 35	28 - 32
C260113	Ultratec™ VE Tie Layer-45	48 - 53	43 - 47

### RECOMMENDED CATALYST

Ultratec™ VE Tie Layer resins can be used with a variety of MEKP initiators. However - MEKP types with high Dimer content, such as Norox MEKP 925H are the preferred catalysts for optimum curing.

Norox MEKP 925H also features a very low hydrogen peroxide content which reduces the amount of catalyst fizzing on catalyzation.

When using standard 'Polyester grade' MEKP catalysts, with lower Dimer/Monomer ratios such as Curox M200, Curox NR20, Norox MEKP 9 or Butanox M50, higher levels must be used to ensure satisfactory curing.

For these catalysts, a minimum addition rate of 1.5% catalyst should be used.

Advice on other catalysts can be given on request by your Allnex Composites representative.

### TYPICAL LIQUID RESIN PROPERTIES

PROPERTY	TYPICAL VALUE	TEST DETAILS
Appearance	Hazy blue/pink	TP202.8
Summer: Brookfield RVT Viscosity - 25°C/cP spindle 3 / 5 RPM spindle 3 / 50 RPM	2000 – 3000 cP 700 - 900 cP	201.8_0
Winter: Brookfield RVT Viscosity - 25°C/cP spindle 3 / 5 RPM spindle 3 / 50 RPM	1600 – 2500 cP 600 - 700 cP	201.8_0
Cone and Plate Viscosity (23°C)/cP	250-330 cP	
Density @ 25°C kg/m <sup>3</sup>	1070	TP204.3
Flash Point °C	31	Tag Closed Cup
Volatile Content %	36 - 40	TP 200.25
Shelf Life, when stored in original closed container in the shade	4 Months	

### TYPICAL CAST RESIN PROPERTIES – FULLY POSTCURED CASTINGS

PROPERTY	TYPICAL VALUE	TEST DETAILS
Barcol 934 Hardness	39	Barcol(GYZ 934-1) EN 59
Tensile Strength MPa	77	ISO R527
Tensile Modulus MPa	4730	ISO 178
Elongation at break %	3.8	ISO R527
Flexural Strength MPa	143	ASTM D790
Density g/cm <sup>3</sup>	1.07	
Flexural Modulus MPa	3800	ASTM D790
Heat Deflection Temperature °C	130	ISO 175 (1.8 MPa)

### POSTCURING

Post curing is recommended to achieve maximum chemical and heat resistance and should be carried out within two weeks of construction. Postcure conditions as outlined in EN 13121-2 are recommended. Minimum recommended postcure conditions are 80°C for four hours.

### 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 (225kg)

Always refer to the MSDS before use