

# Crystic VE 671-03 PA

## Vinyl Ester Resin - Vacuum infusion

### Introduction

Crystic VE671-03 PA is a pre- accelerated bisphenol A epoxy based, vinyl ester resin.

### Applications

Crystic VE671-03 PA was designed for use in closed mould applications and mainly for vacuum infusion process. It is recommended for the manufacture of fibre reinforced composite parts such as tanks, vessels, ducts etc. for use in chemical processing applications.

### Features and Benefits

Crystic VE671-03 PA has excellent resistance to a wide range of chemical substances (acid, alkalies and oxidising agents).

### Product Characteristics

#### FORMULATION

Crystic VE 671-03 PA should be allowed to attain workshop temperature (18°C-25°C) before use. It requires the addition of a catalyst to start the curing reaction.

The correct amount of Acetyl Acetone should be stirred into the resin to adjust the gel time. The recommended catalyst for this system is Trigonox 239, which should be added at 2% into the resin and thoroughly dispersed. The geltime can be adjusted by varying the levels of Acetyl Acetone  
*N.B. Catalyst and accelerator must not be mixed directly together, as they can react with explosive violence.*

#### TYPICAL PROPERTIES

The following tables give typical properties of **Crystic VE 671-03 PA** when tested in accordance with the appropriate BS, or BS EN ISO test method.

Property		Liquid Resin
Acid value	mgKOH/g	max. 8.5
Viscosity Brookfield RVT @ 25°C	mPas	150 - 200
Volatile content	%	53 ± 2
Shelf life (max 25 °C, in the dark)	months	3
Geltime @ 25°C using: 2% Trigonox 239	minutes	20 - 30
Geltime @ 25°C using: 0.06 % Acetyl acetone & 2% Trigonox 239	minutes	110

## Mechanical Properties

Property		Cured cast resin *
Tensile strength**	MPa	80
Tensile modulus**	GPa	3.4
Elongation to break**	%	4 – 5
Flexural strength**	MPa	125
Barcol hardness**		45
HDT ***	°C	95 - 100
Water absorption** : 7 days	mg	35

\*\* Curing Schedule: 24 hrs at 20°C followed by 3 hrs at 80°C.

\*\*\*Curing Schedule: 24 hrs at 20°C followed by 5 hrs at 80°C and then 3 hrs at 120°C.

Laminate Property	at different temperature						
	(°C)	23°C	65°C	93°C	107°C	121°C	149°C
Temperature	(°C)	23°C	65°C	93°C	107°C	121°C	149°C
Flexural Strength	(MPa)	208	198	189	101	34	22
Flexural Modulus	(GPa)	7.6	6.9	5.9	3.4	3.3	1.6
TensileStrength	(MPa)	152	172	145	124	76	50
TensileModulus	(GPa)	9.9	10.2	8.5	6.3	4.3	-
CompressiveStrength	(MPa)	1185	-	-	-	-	-
Glass Content	(%)	40					
Laminate Construction:		V/M/M/WR/M/WR/M					

V = veil, M = CSM, W = woven roving



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## **POST CURING**

Satisfactory laminates for many applications can be made from **Crystic VE671-03 PA** by curing at workshop temperature (20°C). However, for optimum properties and long term performance laminates must be post cured before being put into service. Mouldings should be allowed to cure for 24 hours at 20°C and then be oven cured for a minimum of 3 hours at 80°C. Post curing at 100°C is advisable if mouldings are to operate at high temperatures.

## **Storage**

**Crystic VE 671-03 PA** should be stored in the dark in suitable closed containers. It is recommended that the storage temperature should be less than 20°C where practical, but should not exceed 30°C.

## **Packaging**

**Crystic VE 671-03 PA** is supplied in 200 kg drums.

## **Health & Safety**

Please see separate Material Safety Data Sheet.

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