CRYSTIC

SCOTT BADER

CRYSTIC VE 676/1TP

Vinyl Ester Resin

Introduction
Crystic VE 676/1TP is pre-accelerated, thixotropic epoxy bisphenol A based, vinyl ester resin.
Crystic VE 676/1TP has excellent chemical resistance to a wide range of substances (acid, alkalis and oxidising agents).

Application
It is suitable for the fabrication of fibre reinforced composites by conventional techniques (spray lay-up and hand lay-up in different constructions) and for use in many chemical processing industry applications (storage tanks, vessels, ducts).

Features and Benefits
Crystic VE 676/1TP is less reactive than Crystic VE 671-05TPA. It has higher molecular weight, higher styrene content and higher viscosity than basic Crystic VE 671 or Crystic VE 671-05TPA. It has excellent chemical resistance, the best alkali resistance of all Crystic VE types. Crystic VE 676/1TP cures with standard catalyst as Butanox M50.

TYPICAL PROPERTIES

Property		Liquid Resin
Appearance	-	**Violet, thix**
Acid value	mgKOH/g	**Max 10**
Viscosity Brookfield RVT @ 25ºC sp 2/20rpm	mPas	**650-1000 ***
Volatile content	%	**43-48**
Shelf life (max 25°C, in the dark)	months	**6**
Geltime @ 25ºC using: 100g resin 1,5 Butanox M50	minutes	**25-35**
25°C to peak	minutes	**35 – 50**
Peak exotherm	ºC	**155-185**

*Variants available, on request, designed for improved fabrication

Properties		Cured cast resin *
Tensile strength**	MPa	**80**
Tensile modulus**	GPa	**3.4**
Elongation to break**	%	**5**
Flexural strength**	MPa	**150**
Flexural modulus**	GPa	**3.8**
Barcol hardness**		**42**
HDT **	ºC	**100-102**
Water absorption: 7 days**	mg	**35**

** Curing Schedule: 24 hrs at 20°C followed by 3 hrs at 100°C.

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

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

Post Curing

Satisfactory laminates for many applications can be made from Crystic VE 676/1TP by curing at ambient temperature (20°C) .For optimum properties and long term performance laminates should be post cured before being put into service.

The laminate 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; the time will be dependent upon the thickness of the laminate. Post curing at 100°C is advisable for high operating temperatures.

Chemical Resistance

Crystic VE 676/1TP has excellent chemical resistance to a wide range of substances (acid, alkalis, oxidising agents) at room and elevated temperatures. A separate technical leaflet offers the user a comprehensive guide to the use of Crystic VE 676/1TP based laminates in a wide variety of chemical environments.

Storage

Resin should be stored in dark. It is recommended that storage temperature should be less than 20ºC, but should not exceed 25ºC. In addition, it can be recommended that the vinyl ester resin is weekly aerated with dry and oil free air for 30 minutes through dip pipe (Note: this dip pipe should not contain any zinc or copper alloy). This is done to improve efficiency of inhibitor in order to extend the shelf life of the resin.

Packaging

200 kg resin is supplied in 210 dm^3 protected drums, white coloured outside.

Health & Safety

Please see separate Material Safety Data Sheet.

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