

Product information

# VESTALITE® P 312

(PRELIMINARY)

## GENERAL DESCRIPTION

VESTALITE® P 312 is a polyurethane based resin formulation specially designed as matrix for fast curing prepreg applications. It gives room temperature stable, dry and non-tacky prepregs, which can be formed thermoplastically at 70 - 100°C and cured at temperatures between 130 and 180°C.

## APPLICATION

High volume and automated production of structural FRP components, body panels and parts for exposed surface applications. Specifically developed for Prepreg Compression Molding (PCM).

## BENEFITS

- Fast curing PU prepreg system | 5 min at 150°C
- Excellent surface quality
- High toughness and ductility
- UV stable
- Storage stable and non-tacky at room temperature
- Automated preforming without binder
- Thermoplastic behavior for preforming

## PRODUCT DATA

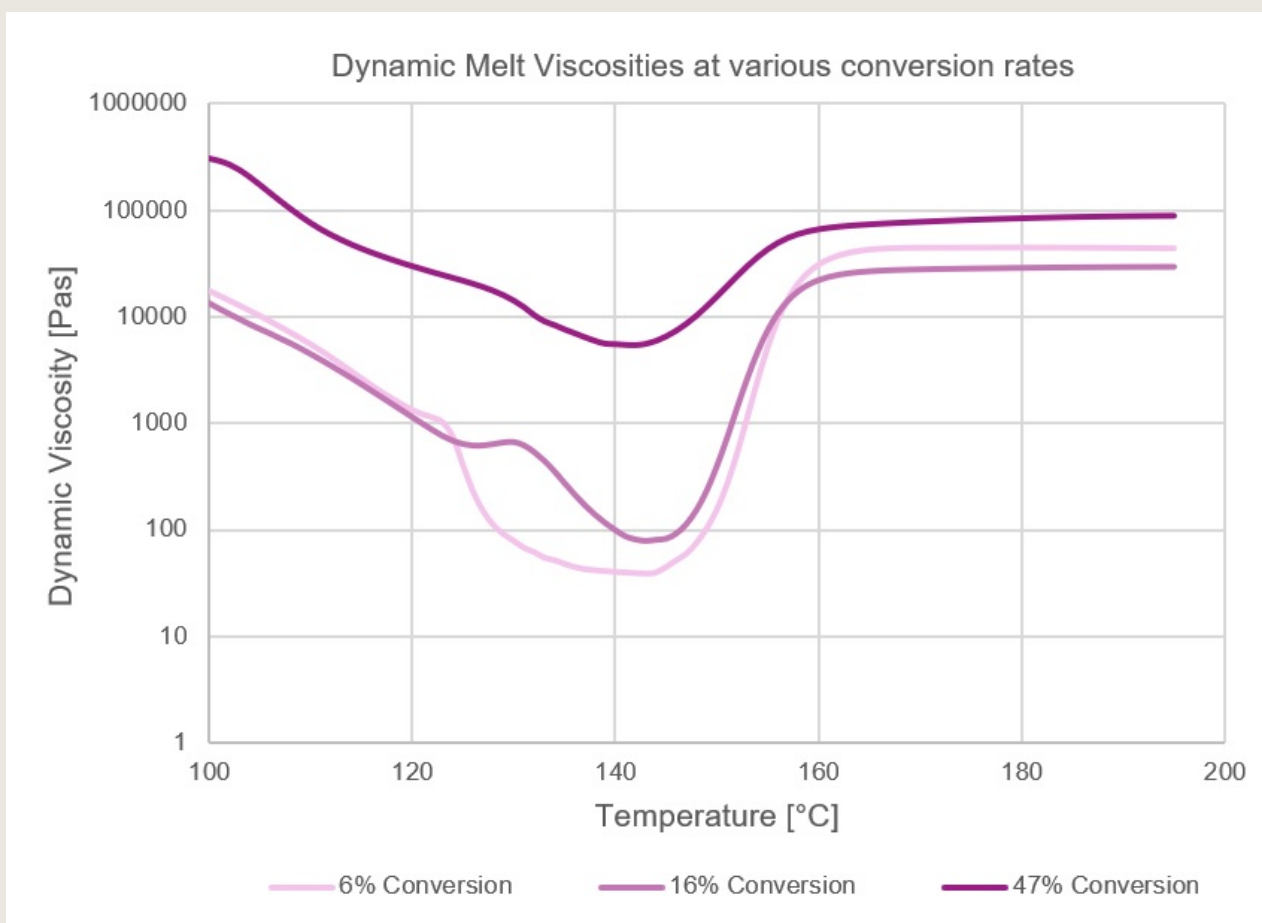
VESTALITE® P 312 Resin System	Value	Unit	Standard
Solids	60 - 65	%	Calculated
Color	0 - 1,5	Gardner	DIN EN ISO 4630
Viscosity at 23°C	200 - 4.000	mPa*s	ISO 3219, OECD 114
Exothermic Peak	159 - 161	°C	DSC [10K/min]
Geltime at 140°C	300 - 350	s	Geltimer (Plate)
Shelf Life at 23°C	6	week	
at -18°C	> 1	year	



## RESIN PROPERTIES AFTER PREPREG STEP

VESTALITE® P 312 Resin System	Value	Unit	Standard
Tack	zero		
Volatiles	< 5	%	Weight Constancy
Exothermic Peak	158 - 160	°C	DSC [10K/min]
Shelf Life at 23°C	25	week	
at -18°C	>>1	year	
Curing Conditions at 130°C	25	min	
at 140°C	10		
at 150°C	4 - 5		
at 160°C	3		
at 180°C	2		

## VISCOSITY BUILD UP (5K/min)



## MATERIAL PROPERTIES

### NEAT FORMULATION

Neat Resin properties		Value	Unit	Standard
Tensile Modulus	$E_t$	3400	MPa	DIN EN ISO 527-2
Tensile Stress at Break	$\sigma_{tB}$	85	MPa	DIN EN ISO 527-2
Tensile Strain at Break	$\epsilon_{tB}$	2,3	%	DIN EN ISO 527-2
Poisson's ratio	$\nu$	0,34	-	DIN EN ISO 527-1
Flexural Modulus	$E_f$	3300	MPa	DIN EN ISO 178
Flexural Strength	$\sigma_{fB}$	115	MPa	DIN EN ISO 178
Flexural Strain at Break	$\epsilon_{fB}$	3,6	%	DIN EN ISO 178
Glass Transition Temperature (DSC)	$T_g$	140	°C	DIN EN ISO 11357-2
Fracture Toughness	$K_{Ic}$	1.7	$MNm^{-3/2}$	ASTM D 5045-99
Chemical Shrinkage		0.9	%	pVT Method
CTE < $T_g$ (20 - 130 °C)	$\alpha$	60	ppm/k	TMA [1K/min]
> $T_g$ (150 - 190°C)		195		
Density	$\rho$	1.13	g/cm <sup>3</sup>	OECD 109

## LAMINATE PROPERTIES

Glass Fiber Reinforced Laminates*		Value	Unit	Standard
Interlaminar Shear Strength (ILSS)	$\tau_M$	80	MPa	DIN EN ISO 14130
Inerlaminar fracture toughness energy	$G_{Ic}$	2100	J/m <sup>2</sup>	DIN EN 6033
Carbon Fiber Reinforced Laminates**				
Interlaminar Shear Strength (ILSS)	$\tau_M$	90	MPa	DIN EN ISO 14130
Interlaminar fracture toughness energy	$G_{Ic}$	1500	J/m <sup>2</sup>	DIN EN 6033

\*Reinforcement: Glass Fiber-UD-NCF 591g/m<sup>2</sup>; Fiber Volume Content: 55 ± 2%

\*\*Reinforcement: Carbon Fiber-UD-NCF 330 g/m<sup>2</sup>; Fiber Volume Content: 48 ± 2%



## SAFETY AND HANDLING

For the most current Safety and Handling information, please refer to the Material Safety Data Sheet of VESTALITE® P 312 Resin.

Marl, March 4, 2019; This data sheet replaces all former issues.

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