Infusion system LP

Compset

Description

Compset Infusion Series LP are low viscosity, highly resilient , Epoxy Resin System designed primarily for large composite structures, for example wind turbine blades, marine hulls and deck composites.

Low viscosity and surface tension of the system enables both fast and safe wet out of the composite combined with a capillary action.

As the system contains no unreactive diluents or no plasticisers, high mechanical properties can be obtained at both room temperature and elevated cures.

Appearance

B175 Epoxy Resin

Viscosity 20°c	1800-2200 mPa s
Density	1.1-1.21 g/cm^3
Flash Point	>120 °c

RIH 43 & 49 Hardeners

Viscosity 20°c	20 – 60 mPa s
Density	0.96 – 1.01 g/cm^3
Flash Point	> 120 °c

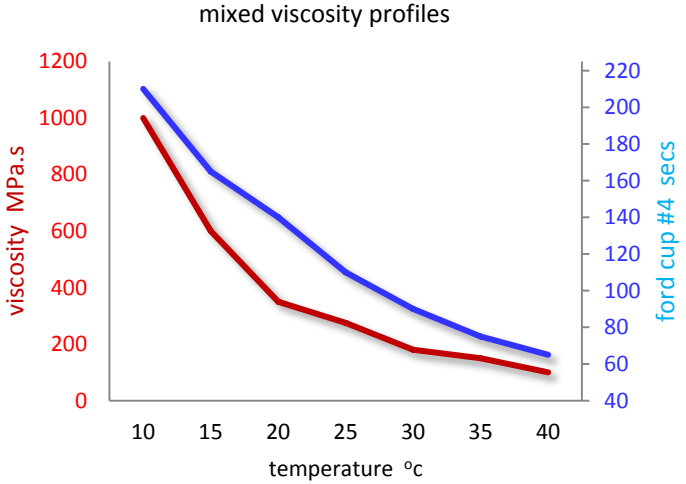
Application data

Mixing Ratio by weight 100 Parts Epopol B175 Resin to

25 Parts RIH 43 Hardener
29 Parts RIH 49 Hardener

Mixing Ratio by Volume not recommended

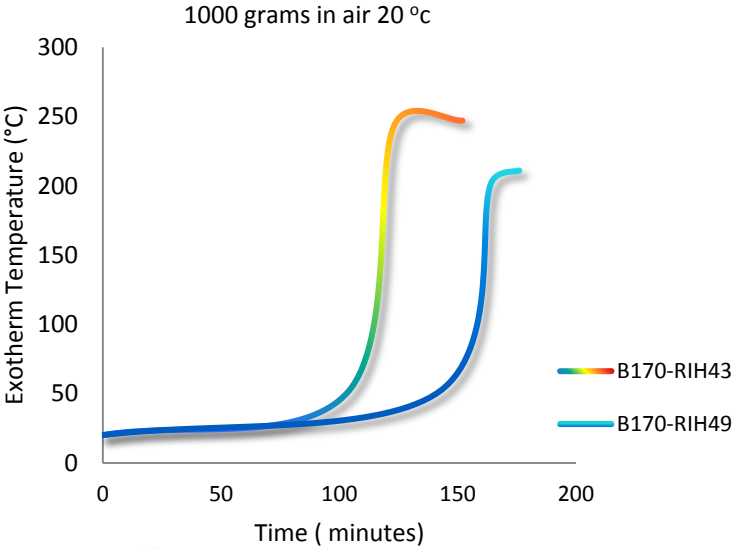
The components should be mechanically mixed thoroughly at medium speed ensuring that no unnecessary air is entrained. Both sides and bottom of container should be scraped during mixing process.



PotLife 1000 grams RIH 43 90 mins

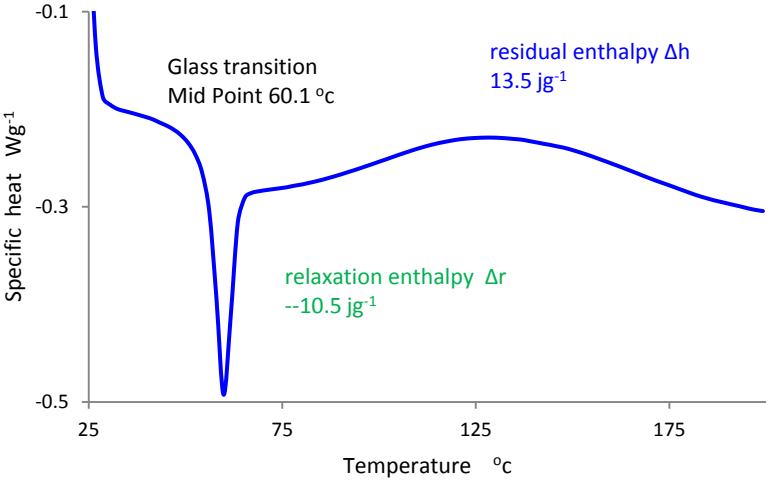
RIH 49 150 mins

Significant changes in pot life occur with varying volumes and temperature. When difficult infusions are encountered smaller mixes may be required. Laminate design including fibre type and content, core size and thickness will significantly influence PotLife.



Curing data : Thermodynamics Differential Scanning Calorimeter DSC

The DSC measures changes in specific heat or heat flow characteristics of a polymer.
From this we can determine the Glass Transition temperature Tg, the “B-staging” or Tg enthalpy and the ΔH enthalpy which indicates how much heat is required to post-cure the finished composite to full physical properties. Most physical properties show changes around the Tg as the material changes from “glass like” to “liquid like”.



Typical properties	**RIH 43**	**RIH 49**
Reactivity dynamic Jg^-1	475	480
Tg ∞ ultimate °c	81	88
Post cure 7 hours 40 °c		
Tg first pass	48	44
Tg ∞ ultimate °c	76	82
Δr Jg^-1	14.9	18.8
Δh Jg^-1	47.1	55.3

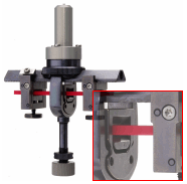
VEE-TEK

Typical properties	**RIH 43**	**RIH 49**
Post cure 7 hours 55 °c		
Tg first pass	60	63
Tg ∞ ultimate °c	76	82
Δr Jg^-1	10.5	10.4
Δh Jg^-1	13.5	24.2
Post cure 7 hours 70 °c		
Tg first pass	75	75
Tg ∞ ultimate °c	80	85
Δr Jg^-1	2.8	4.5
Δh Jg^-1	1.3	10.1

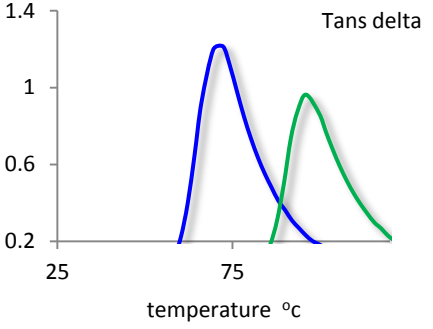
Cured properties : dynamic modulus – flexural DMA

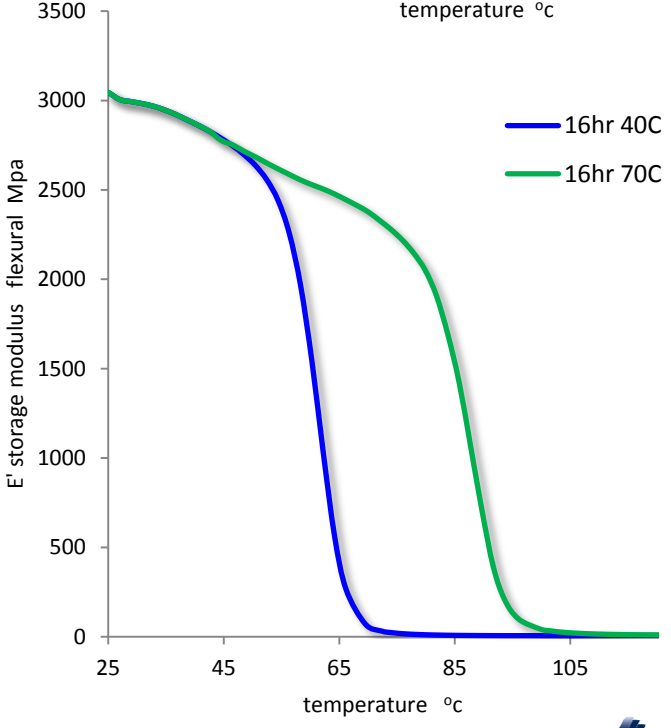
The **storage modulus E'** is a measure of the stiffness or elastic properties of a material.
The **loss modulus E"** represents energy lost under deformation or force.
The **loss factor tans delta (tan δ)** is the ratio of loss modulus to storage modulus and is a measure of energy lost, and represents mechanical dampening.

Cured properties : dynamic modulus – flexural DMA



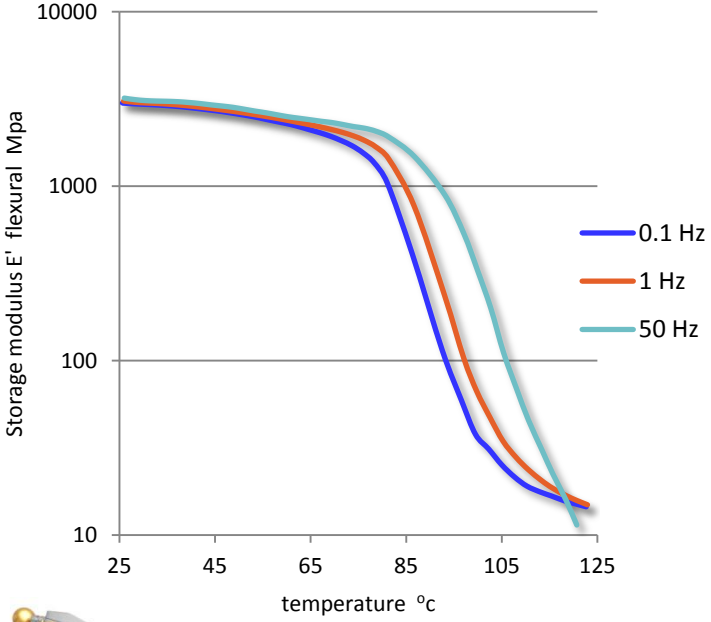
B175 Resin with RIH 43





Cured properties : multi frequency scans – flexural DMA

B175 Resin RIH 43 cured 8 hours 80 °c



E' storage modulus 25 °c	3400 MPa
E" loss modulus max	84 °c
Tan α	98 °c
Tan δ	98 °c
Deflection point 1.8 MPa 0.1 Hz	89 °c

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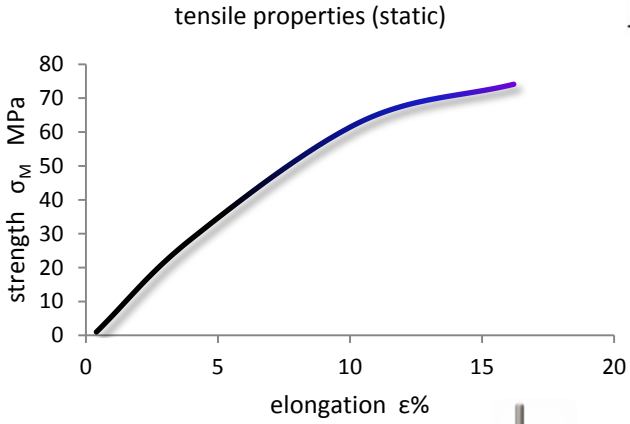
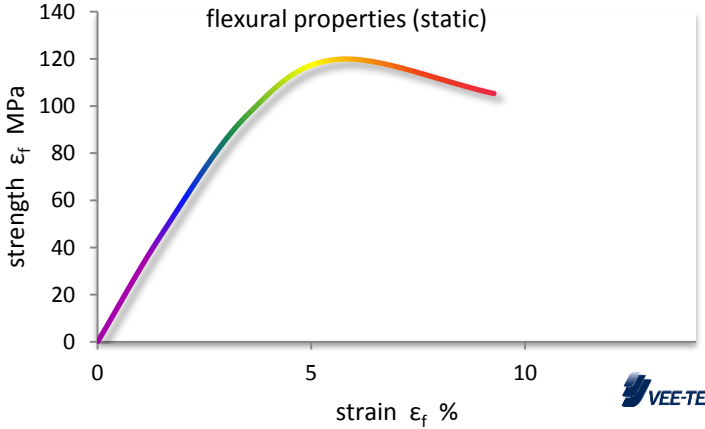
Cured properties : static mechanical analysis 7hrs 70°c





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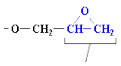
Cured properties : engineering data



		7 hrs 70 °c		8 hrs 80 °c	
		RIH 43	RIH 49	RIH 43	RIH 49
Tg	ultimate (200 c pass II)	79	85	81	88
Enthalpy	$\Delta R_{Jg^{\wedge}-1}$	-2.9	-4.5	-2.1	-3.1
	$\Delta H_{Jg^{\wedge}-1}$	1.3	10.1	0.0	0.0
E_f	Modulus MPa Δ 0.020 - 0.010	3180	3350	3150	3025
Flex σ_{fM}	Max Flex strength MPa	113	107	115	115
Flex ε_{fM}	strain at Flex σ_{fM} %	5.9	5.5	7.3	6.8
Flex σ_{fC}	stress MPa conv point 3.5%	94	87	92	85
Flex σ_{fB}	Ultimate strength MPa	107	95	102	114
Flex ε_{fB}	strain at Flex σ_{fB} %	7.7	9.4	9.1	7.4
Ten σ_M	Max tensile strength	69	97	66	64
Ten ε%	Elongation %	14.1	13.5	19.8	16.8

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REFERENCED TEST METHODS

Viscosity	ISO 2555
Epoxy Equivalent weight	ISO 3001
Determination of amine nitrogen content	ISO 9702
Reactivity dynamic	ISO 11357-5
Tg	ISO 111357-3
Tg Enthalpy	ISO 111357-5
Flexural Properties	ISO 178
Tensile Properties	ISO 527
Heat Deflection Temperature	ISO 75
Compressive Properties	ASTM D695
Dynamic Mechanical Properties	ASTM D5418
DMA flexural vibration	ISO 6721
DMA shear	ISO 6721

Notice:

The information provided in this data sheet is intended to help the user achieve positive results. Results shown are typical properties obtained by laboratory testing to the listed standards. It should not be construed as specifications. It is the user's responsibility to fully test and qualify the resin system, along with ingredients, methods, applications or equipment identified herein, by the user's knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any information given in this information sheet.

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