

# PRO-SET®

## Technical Data

# LAM-135

# LAM-229

## LAMINATING EPOXY

The New  
Standard

EPOXIES for  
Laminating  
Infusion  
Tooling  
Assembly

### Wessex Resins & Adhesives

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ISO9001:2015 Certified

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& Adhesives

### COMBINED FEATURES

**Medium viscosity** for good wet out of all synthetic composite fabrics and core materials.

**Slow cure speed** hardener provides 4 to 5 hours of working time at 25°C. A typical laminate will be gelled in 6 to 7 hours.

**Optimized** for hand wet out and machine impregnation in contact moulding, vacuum bagging and filament winding applications.

**Room temperature cure** properties suitable for many composite components and structures.

**Tg as high as 111°C** with proper post cure providing excellent temperature stability and great part cosmetics.

**Cost effective, high performance** epoxy formulation for synthetic composite manufacturing.

### HANDLING PROPERTIES

Property	Standard	Units	22°C	25°C	29°C
150g Pot Life	ASTM D2471	minutes	151	93	68
500g Pot Life	ASTM D2471	minutes	100	84	56
Viscosity Mixed	ASTM D2196	mPas	1098	904	655
Viscosity (resin)	ASTM D2196	mPas	5725		
Viscosity (hardener)	ASTM D2196	mPas	32		

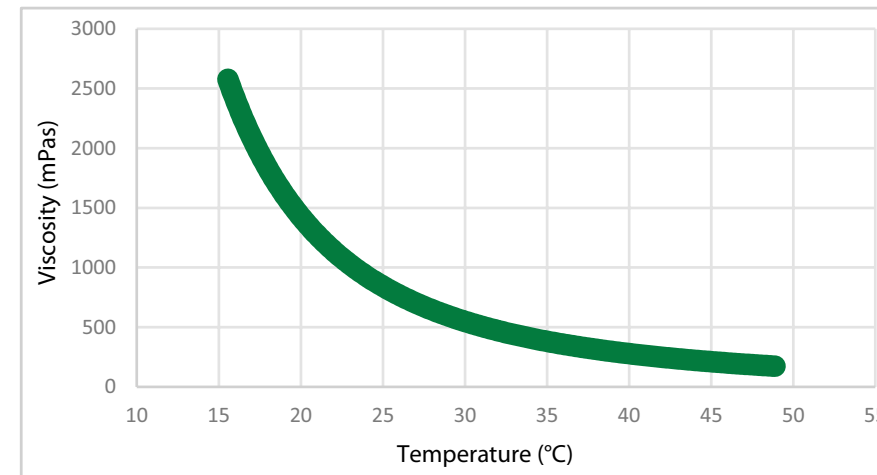
### MIX RATIO

Method	Resin:Hardener	Resin:Hardener
Weight	3.5:1	100:28.6
Volume	3.00:1	100:33.3

### DENSITY

State	Units	21°C
Cured	gcm <sup>-3</sup>	1.17
Resin	gcm <sup>-3</sup>	1.16
Hardener	gcm <sup>-3</sup>	0.97

### VISCOSITY VS TEMPERATURE



Test specimens were neat epoxy (without fibre reinforcement).  
Typical values not to be construed as specification.

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### MECHANICAL PROPERTIES

Property	Standard	Units	22°C x 4 Weeks	25°C x 2 Weeks	RT Gelation + 49°C x 8 hrs	RT Gelation + 60°C x 8 hrs	RT Gelation + 82°C x 8 hrs
Hardness	ASTM D2240	Shore D	86	87	87	87	87
Compression Yield	ASTM D695	MPa	106	105	101	101	101
Tensile Strength	ASTM D638	MPa	55	54	73	73	74
Tensile Modulus	ASTM D638	GPa	3.83	3.94	3.76	3.76	3.31
Tensile Elongation	ASTM D638	%	1.6	1.5	2.8	3.6	5.3
Flexural Strength	ASTM D790	MPa	83	90	122	123	125
Flexural Modulus	ASTM D790	GPa	3.54	3.56	3.35	3.3	3.0

### THERMAL PROPERTIES

Property	Standard	Units	22°C x 4 Weeks	25°C x 2 Weeks	RT Gelation + 49°C x 8 hrs	RT Gelation + 60°C x 8 hrs	RT Gelation + 82°C x 8 hrs	
Tg DMA Peak Tan Delta	ASTM E1640*1	°C	69	68	87	94	113	
Tg DMA Onset Storage Modulus	ASTM E1640*1	°C	61	60	76	83	111	
Tg DSC Onset - 1st Heat	ASTM E1356	°C	58	57	68	75	98	
Heat Deflection Temperature	ASTM D648	°C	54	53	68	72	89	
Tg DSC Ultimate	ASTM E1356	°C	103*2					

\*1 1Hz, 3°C per minute.

\*2 Additional post cure may be required; contact Technical Department for details.

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These are typical properties and cannot be construed as a specification. The end users should test the products to ensure the products are suitable for the intended application. Any information, data, advice or recommendation published by Wessex Resins or obtained from Wessex Resins by other means and whether relating to Wessex Resins' materials or other materials, is given in good faith and believed to be reliable.

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