

## Technical Data

# LAM-125 LAM-226

## LAMINATING EPOXY

### COMBINED FEATURES

**Low viscosity** for quick wet out of synthetic composite fabrics; especially effective with Kevlar® and carbon fiber.

**Medium cure speed** hardener provides 2 to 3 hours of working time at 77°F (25°C). A typical laminate will be gelled in 4 to 5 hours.

**Optimized** for hand wet out and machine impregnation in contact molding, vacuum bagging and Light RTM applications.

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

**T<sub>g</sub> as high as 207°F (97°C)** with proper post cure providing excellent temperature stability and great part cosmetics.

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

**Quality-control tinting** is available at no extra charge; simply add "QC" after the product code on your order.

**Shelf life** is 3 years for resin and 2 years for hardener when properly stored<sup>3</sup>.

The New  
Standard

EPOXIES for  
Laminating  
Infusion  
Tooling  
Assembly

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Bay City, MI 48707  
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888-377-6738

ISO9001:2008 Certified

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### HANDLING PROPERTIES

| Property             | Standard   | Units   | 72°F (22°C) | 77°F (25°C) | 85°F (29°C) |
|----------------------|------------|---------|-------------|-------------|-------------|
| 150g Pot Life        | ASTM D2471 | minutes | 71-87       | 56-70       | 36-46       |
| 500g Pot Life        | ASTM D2471 | minutes | 50-62       | 46-58       | 32-40       |
| Viscosity Mixed      | ASTM D2196 | cP      | 696         | 544         | 402         |
| Viscosity (resin)    | ASTM D2196 | cP      | 1,731       |             |             |
| Viscosity (hardener) | ASTM D2196 | cP      | 42          |             |             |

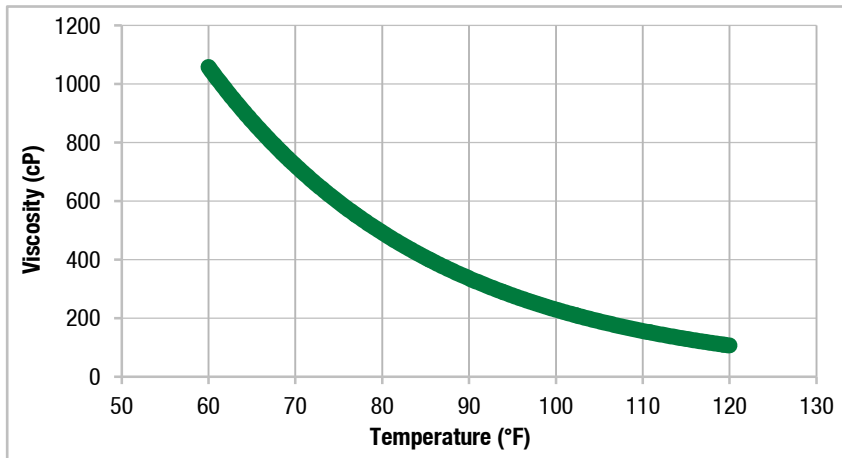
### MIX RATIO

| Method       | Resin:Hardener | Resin:Hardener    |
|--------------|----------------|-------------------|
| Weight       | 3.5:1          | 100:28.1          |
| Weight Range | 3.76:1–3.23:1  | 100:26.6–100:30.9 |
| Volume       | 3.00:1         | 100:33.3          |
| Volume Range | 3.16:1–2.72:1  | 100:31.6–100:36.7 |

### DENSITY

| State    | Units         | 72°F (22°C) |
|----------|---------------|-------------|
| Cured    | lb/gal (g/cc) | 9.59 (1.15) |
| Resin    | lb/gal (g/cc) | 9.58 (1.15) |
| Hardener | lb/gal (g/cc) | 8.06 (0.97) |

### VISCOSITY VS TEMPERATURE



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

# LAM-125~LAM-226

## LAMINATING EPOXY

### MECHANICAL PROPERTIES

| Property           | Standard   | Units     | 72°F (22°C)<br>x 4 wk | 77°F (25°C)<br>x 2 wk | RT Gelation<br>+ 120°F (49°C)<br>x 8 hrs | RT Gelation<br>+ 140°F (60°C)<br>x 8 hrs | RT Gelation<br>+ 180°F (82°C)<br>x 8 hrs |
|--------------------|------------|-----------|-----------------------|-----------------------|--|--|--|
| Hardness           | ASTM D2240 | Type D    | 92                    | 92                    | 92                                       | 93                                       | 93                                       |
| Compression Yield  | ASTM D695  | psi (MPa) | 16,700 (115)          | 16,800 (116)          | 14,400 (99)                              | 14,400 (99)                              | 14,400 (99)                              |
| Tensile Strength   | ASTM D638  | psi (MPa) | 9,570 (66)            | 8,100 (56)            | 10,600 (73)                              | 10,600 (73)                              | 10,600 (73)                              |
| Tensile Modulus    | ASTM D638  | psi (GPa) | 5.34E+05 (3.68)       | 5.64E+05 (3.89)       | 4.91E+05 (3.39)                          | 4.96E+05 (3.42)                          | 4.33E+05 (2.99)                          |
| Tensile Elongation | ASTM D638  | %         | 2.1                   | 1.7                   | 3.8                                      | 5.6                                      | 7.2                                      |
| Flexural Strength  | ASTM D790  | psi (MPa) | 17,100 (118)          | 15,300 (105)          | 18,800 (130)                             | 18,800 (130)                             | 18,800 (130)                             |
| Flexural Modulus   | ASTM D790  | psi (GPa) | 5.36E+05 (3.7)        | 5.86E+05 (4.04)       | 5.39E+05 (3.72)                          | 5.08E+05 (3.5)                           | 4.37E+05 (3.01)                          |

### THERMAL PROPERTIES

| Property                     | Standard                | Units   | 72°F (22°C)<br>x 4 wk | 77°F (25°C)<br>x 2 wk | RT Gelation<br>+ 120°F (49°C)<br>x 8 hrs | RT Gelation<br>+ 140°F (60°C)<br>x 8 hrs | RT Gelation<br>+ 180°F (82°C)<br>x 8 hrs |
|------------------------------|-------------------------|---------|-----------------------|-----------------------|--|--|--|
| Tg DMA Peak Tan Delta        | ASTM E1640 <sup>1</sup> | °F (°C) | 160 (71)              | 161 (72)              | 189 (87)                                 | 202 (94)                                 | 226 (108)                                |
| Tg DMA Onset Storage Modulus | ASTM E1640 <sup>1</sup> | °F (°C) | 146 (63)              | 148 (64)              | 169 (76)                                 | 182 (83)                                 | 207 (97)                                 |
| Tg DSC Onset– 1st Heat       | ASTM E1356              | °F (°C) | 135 (57)              | 138 (59)              | 153 (67)                                 | 162 (72)                                 | 191 (88)                                 |
| Heat Deflection Temperature  | ASTM D648               | °F (°C) | 130 (54)              | 131 (55)              | 150 (66)                                 | 165 (74)                                 | 182 (83)                                 |
| Tg DSC Ultimate              | ASTM E1356              | °F (°C) |                       |                       | 190 (88) <sup>2</sup>                    |  |  |

<sup>1</sup> 1 Hz, 3°C per minute.

<sup>2</sup> Additional post cure may be required; contact Technical Department for details.

<sup>3</sup> Store PRO-SET® Epoxy resins and hardeners at room temperature in sealed containers until shortly before use. As with many high-performance epoxy resins, repeated exposure to low temperatures during storage may cause the resin to crystallize. If this occurs, warm the resin to 125° F and stir to dissolve crystals. Hardeners may form carbamation when exposed to CO<sub>2</sub> and moisture in the atmosphere for extended periods of time. Prevent carbamation by protecting hardeners from exposure until immediately prior to processing.

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