301T

250-300°F (121-149°C) Cure Epoxy Resin System

Typical applications
- Sporting goods
- Marine
- Medical
- Industrial manufacturing

Out life
- 30 days at 70°F (21°C)

Shelf life
- 6 months at 40°F (4°C)
- 12 months at 0°F (-18°C)

Description
301T is a 250°F (121°C) to 300°F (149°C) cure, toughened, controlled flow epoxy resin system, with versatile processing, excellent mechanical properties, and long out time. The 301T is a version of 301 designed to improve surface finish for applications with stringent cosmetic requirements.

Benefits/features
- Optimized cosmetics for bladder molding
- Moderate tack
- Good toughness
- Excellent mechanical properties
- >30 days out time at 70°F (21°C)
- Available on a wide range of unidirectional fibers and fabrics

Application
301T is suited for structural applications in sporting goods, marine, medical, and industrial manufacturing.

301T can be supplied with most commercially available fibers in both woven form (designated as NB) as well as unidirectional tape (designated as NCT), including: carbon, quartz, aramid, S-glass, E-glass, and other specialty fibers and fabrics.

Woven fabrics are available in standard commercial widths up to 60 inches (1.5 M). Unitape widths up to 39 inches (1M) are available in standard fiber weights ranging from 90 to 300 gsm.

Recommended processing conditions
301T can be cured at temperatures from 250°F (121°C) to 300°F (149°C), depending on part size and complexity. Low, medium, and high pressure molding techniques may be used to cure 301T resin. Recommended cure cycle is 50 psi (345 kPa), 3°F (1.7°C)/min. ramp to 275°F (135°C), hold for 60 minutes, cool to <140°F (60°C).
**Neat resin** [values are average and do not constitute a specification]

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gel time @ 275°F (135°C), minutes</td>
<td>5 – 7</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.22</td>
</tr>
<tr>
<td>T(_g) (DMA, E'), °C (°F)</td>
<td>120 (248)</td>
</tr>
<tr>
<td>Tensile strength, ksi (MPa)</td>
<td>8.9 (61)</td>
</tr>
<tr>
<td>Tensile modulus, Msi (GPa)</td>
<td>0.45 (3.1)</td>
</tr>
<tr>
<td>Flexural strength, ksi (MPa)</td>
<td>16.5 (114)</td>
</tr>
<tr>
<td>Flexural modulus, Msi (GPa)</td>
<td>0.52 (3.6)</td>
</tr>
</tbody>
</table>

**Mechanical data** [values are average and do not constitute a specification]

3K 2x2 Twill weave, fabric cured, 40 psi, 60 minutes at 250°F, normalized to 55%FV

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0° Tensile strength, ksi (MPa)</td>
<td>ASTM D3039</td>
<td>103  (710)</td>
</tr>
<tr>
<td>0° Tensile modulus, Msi (GPa)</td>
<td></td>
<td>9.2  (63)</td>
</tr>
<tr>
<td>0° Compressive strength, ksi (MPa)</td>
<td>SACMA 1R-94</td>
<td>85   (586)</td>
</tr>
<tr>
<td>0° Flexural strength, ksi (MPa)</td>
<td>SACMA 8R-94</td>
<td>8.4  (57)</td>
</tr>
<tr>
<td>0° Flexural modulus, Msi (GPa)</td>
<td>ASTM D790</td>
<td>120  (827)</td>
</tr>
<tr>
<td>0° Short beam shear strength, ksi (MPa)</td>
<td>SACMA 8R-94</td>
<td>9.1  (63)</td>
</tr>
</tbody>
</table>

**Viscosity profile**

TA - AR2000 parallel plate rheometer

![Newport 301-T Viscosity vs Temperature](image)
Isothermal viscosity of NB301T vs NB301 resin systems

Time (min)

Viscosity (Poise)

0  1  2  3  4  5  6  7

NB 301T 300°F  NB301T 275°F  NB 301 275°F

Gel curve

301T Gel time vs temperature

Temperature (°F)

0  10  20  30  40  50  60  70

Time (min)

0  10  20  30  40  50  60  70

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