104

250-300°F (120-150°C) Cure Epoxy Film Adhesive

Typical applications
Aerospace
Marine
Wind energy
Sporting goods
Industrial manufacturing

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

Out life
30 days at 70°F (21°C)

Description
104 is a 250°F (120°C) to 300°F (150°C) cure, general purpose, epoxy film adhesive designed for bonding applications that require extended out time, while maintaining high strengths at temperatures ranging from -67°F (-55°C) to 180°F (82°C).

Benefits/features
• Extended out life and shelf life
• High strength sandwich panel bonding
• Uniform bond strength between top and bottom sandwich skins
• Co-curable with most 250°F (120°C) curing prepregs
• Meets: MMM-A-132B, Type I, Class 3, Group 3
• Meets MIL-A-25463B, Type I, Class 1, Group 3

Application
104 is suited for structural and secondary bonding applications in aerospace, sporting goods, marine, wind energy, and industrial manufacturing. High shear and peel strengths make 104 ideal for metal-to-metal bonding and sandwich panel manufacturing.

104 is supplied in standard film weights from 0.030-0.060 psf (145-290 gsm), either unsupported or on a variety of commercially available reinforcements, including:
• Non-woven polyester mat (HC)
• Nylon mesh (N), and tricot (TR)
• Unsupported (U)
• Aluminum and copper mesh for lightning strike protection

Recommended processing conditions
104 can be cured at temperatures from 250°F (120°C) to 300°F (150°C), depending on part size and complexity. Low, medium, and high pressure molding techniques may be used to cure 104. Recommended cure cycle is 25 psi (172kPa), 3°F (1.7°C)/min ramp to 285°F (141°C), hold for 45 minutes, cool to <140°F (60°C).

Contact your account manager or MCCFC technical support to discuss specific applications.
Neat resin (values are average and do not constitute a specification)

<table>
<thead>
<tr>
<th>Property</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gel time @ 275°F (135°C), minutes</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.19</td>
</tr>
</tbody>
</table>

Mechanical data (values are average and do not constitute a specification)

NB104 HC 0.060
Press cured, 25 psi, 45 minutes at 285°F

<table>
<thead>
<tr>
<th>Property</th>
<th>Test method</th>
<th>-67°F</th>
<th>RT</th>
<th>180°F</th>
<th>220°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile shear strength, psi (MPa)*</td>
<td>ASTM D1002</td>
<td>4000 (27)</td>
<td>4200 (29)</td>
<td>3500 (24)</td>
<td>2400 (16)</td>
</tr>
<tr>
<td>Climbing drum peel strength, in-lbs/in (m-N/m)**</td>
<td>ASTM D1781</td>
<td>Top</td>
<td>9.5 (42.3)</td>
<td>14.0 (62.2)</td>
<td>19.6 (87.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom</td>
<td>10.5 (46.7)</td>
<td>14.1 (62.7)</td>
<td>19.3 (85.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>10.0 (44.5)</td>
<td>14.0 (62.2)</td>
<td>19.5 (86.7)</td>
</tr>
<tr>
<td>Flatwise tensile strength, psi (Mpa)**</td>
<td>ASTM C297</td>
<td>1300 (9.0)</td>
<td>1400 (9.6)</td>
<td>1000 (6.9)</td>
<td>-</td>
</tr>
<tr>
<td>Flexural strength, lbs (kN)**</td>
<td>ASTM C393</td>
<td>2700 (12.0)</td>
<td>3000 (13.3)</td>
<td>2700 (12)</td>
<td>-</td>
</tr>
</tbody>
</table>

*MMM-A-132B, Type I, Class 3  **MIL-A-25463B, Type I, Class 1