Description
HexPly® 922-1 is a structural epoxy resin for general industrial applications and aerospace applications. HexPly® 922-1 has an exceptionally good hot/wet performance and a very high Tg with cure cycle versatility, low viscosity and high flow. Hexply® 922-1 can be processed using a wide range of techniques.

The HexPly® 922-1 family is available in fabrics and UD tapes.

Benefits and Features
- Excellent mechanical properties
- Very good hot/wet performance
- High Tg > 200 °C (390 °F)
- Versatile cure regime 165/190 °C (330/375 °F)
- Low viscosity and high flow

Resin Matrix Properties

![Rheology Graph](image1)

![Gel Time Graph](image2)
### Cured Matrix Properties cured at 180 °C (350 °F)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength</td>
<td>56 MPa (8.1 Ksi)</td>
<td>ISO R527 type 1</td>
</tr>
<tr>
<td>Tensile modulus</td>
<td>4.05 GPa (0.59 Msi)</td>
<td>ISO R527 type 1</td>
</tr>
<tr>
<td>Strain</td>
<td>1.7 % (1.7 %)</td>
<td>ISO R527 type 1</td>
</tr>
<tr>
<td>Poisson’s ratio</td>
<td>0.384 (0.384)</td>
<td>ISO R527 type 1</td>
</tr>
<tr>
<td>Flexural strength</td>
<td>129 MPa (18.7 Ksi)</td>
<td>ISO 178</td>
</tr>
<tr>
<td>Flexural modulus</td>
<td>3.44 GPa (0.48 Msi)</td>
<td>ISO 178</td>
</tr>
<tr>
<td>$K_{IC}$</td>
<td>0.49 MPa $\sqrt{\text{m}}$ (0.45 Ksi $\sqrt{\text{in}}$)</td>
<td>/</td>
</tr>
<tr>
<td>$G_{IC}$</td>
<td>51 J/m$^2$ (0.29 in-lb/in$^2$)</td>
<td>/</td>
</tr>
<tr>
<td>Glass transition temp.</td>
<td>190-220 °C (374-428 °F)</td>
<td>DMTA</td>
</tr>
<tr>
<td>Cured resin density</td>
<td>1.265 g/cm$^3$ (0.046 lb/in$^3$)</td>
<td>/</td>
</tr>
</tbody>
</table>

### Prepreg Curing Conditions

The ideal cure cycle is 2 hours at 180 °C (350 °C), at a pressure between 3 and 5 bar.

Alternative cure cycles can be used:

<table>
<thead>
<tr>
<th>Cure cycle</th>
<th>Glass Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 min at 165 °C (330 °F) + post curing 3 hours at 180 °C (350 °F)</td>
<td>221 °C (430 °F)</td>
</tr>
<tr>
<td>30 min at 170 °C (340 °F) + post curing 3 hours at 180 °C (350 °F)</td>
<td>231 °C (450 °F)</td>
</tr>
<tr>
<td>30 min at 180 °C (350 °F) + post curing 3 hours at 180 °C (350 °F)</td>
<td>235 °C (460 °F)</td>
</tr>
</tbody>
</table>

Performance testing should accompany the alternative cure cycles to ensure they are suitable for the particular application.
### Typical Mechanical Properties on HexPly® 922-1 prepregs [cured at 180 °C (350 °F)]

HexPly® 922-1/35%/G926  5H satin/370g/m² carbon fabric: FVC = 60 %

<table>
<thead>
<tr>
<th>TEST</th>
<th>Temp. °C (°F)</th>
<th>Material as cured</th>
<th>After ageing at 70 °C / 95 % RH (158 °F / 95 % RH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILSS MPa (Ksi)</td>
<td>RT</td>
<td>73 (10.6)</td>
<td>79 (11.4)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>53 (7.6)</td>
<td>20 (2.9)</td>
</tr>
<tr>
<td>Flexural strength MPa (Ksi)</td>
<td>RT</td>
<td>1079 (156)</td>
<td>1038 (150)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>761 (110)</td>
<td>244 (35)</td>
</tr>
<tr>
<td>Flexural modulus GPa (Msi)</td>
<td>RT</td>
<td>60 (8.7)</td>
<td>57 (8.3)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>56 (8.1)</td>
<td>42 (6.1)</td>
</tr>
<tr>
<td>Compression strength MPa (Ksi)</td>
<td>RT</td>
<td>668 (97)</td>
<td>605 (88)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>493 (71)</td>
<td>218 (32)</td>
</tr>
<tr>
<td>Compression modulus GPa (Msi)</td>
<td>RT</td>
<td>66 (9.6)</td>
<td>65 (9.4)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>57 (8.3)</td>
<td>52 (8.3)</td>
</tr>
<tr>
<td>Tensile strength MPa (Ksi)</td>
<td>RT</td>
<td>718 (104)</td>
<td>786 (114)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>774 (112)</td>
<td>677 (98)</td>
</tr>
<tr>
<td>Tensile modulus GPa (Msi)</td>
<td>RT</td>
<td>67 (9.7)</td>
<td>77 (11.1)</td>
</tr>
<tr>
<td></td>
<td>175 (350)</td>
<td>70 (10.2)</td>
<td>64 (9.3)</td>
</tr>
<tr>
<td>In-plane shear strength MPa (Ksi)</td>
<td>RT</td>
<td>98 (14.2)</td>
<td>90 (13.1)</td>
</tr>
<tr>
<td></td>
<td>RT</td>
<td>5.6 (0.81)</td>
<td>5.0 (0.73)</td>
</tr>
</tbody>
</table>

* Results normalized to 60 % FVC.

### Prepreg Storage Life
- **Out Life**: @ 23 °C (73 °F)  10 days
- **Storage Life**: @ -18 °C (0 °F)  12 months

Storage conditions statement:

HexPly® 922-1 prepregs should be stored as received in a cool dry place or in a refrigerator. After removal from refrigerator storage, prepreg should be allowed to reach room temperature before opening the polythene bag thus preventing condensation. A full reel in its packaging can take up to 48 hours.

### Precautions for Use

The usual precautions when handling uncured synthetic resins and fine fibrous materials should be observed, and a Safety Data Sheet is available for this product. The use of clean disposable inert gloves provides protection for the operator and avoids contamination of material and components.
For more information
Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets. Our comprehensive range includes:

- HexTow® carbon fibers
- HexForce® reinforcements
- HexPly® prepregs
- HexMC® molding compounds
- HexFlow® RTM resins
- Redux® adhesives
- HexTool® tooling materials
- HexWeb® honeycombs
- Acousti-Cap® sound attenuating honeycomb
- Engineered core
- Engineered products

For US quotes, orders and product information call toll-free 1-800-688-7734. For other worldwide sales office telephone numbers and a full address list, please go to:

http://www.hexcel.com/contact/salesoffice