





PRODUCT NOTES


3900-series prepregs are highly-toughened 350°F (177°C) cure systems. It is available in a variety of configurations, including unidirectional tape for manual or automated tape laying applications, slit-tape-tow for automated fiber placement applications, and plain-weave carbon and glass fabrics.


 **Mechanically Stable**
Mechanical working life of product is over 40 days, allowing for lay-up of large parts.

 **Highly Toughened**
High strength fiber is combined with particulate interlayer toughening to reduce delamination and increase fracture toughness, impact resistance, and environmental resistance.

 **Consistency**
Uniform resin content and a noble resin system allows for predictable thicknesses and parts.

 **Readily Available**
AMS products, marked with this icon, are kept in stock and ready to ship.

 **Proven Technology**
Products have been used successfully in multiple applications, including aircraft primary structures, for over 25 years.

 **Customizable Forms**
Compatible with multiple applications, including AFP, ATL, and hand layup. Multiple widths and roll configurations available.

AVAILABLE PRODUCT FORMATS

3900 resin is available with numerous types of unidirectional carbon fibers and woven and glass fabrics with Fiber Areal Weight (FAW) ranging from 70 g/m² to 300 g/m² and Resin Content, (RC%) by weight percent, ranging from 34% to 44%.

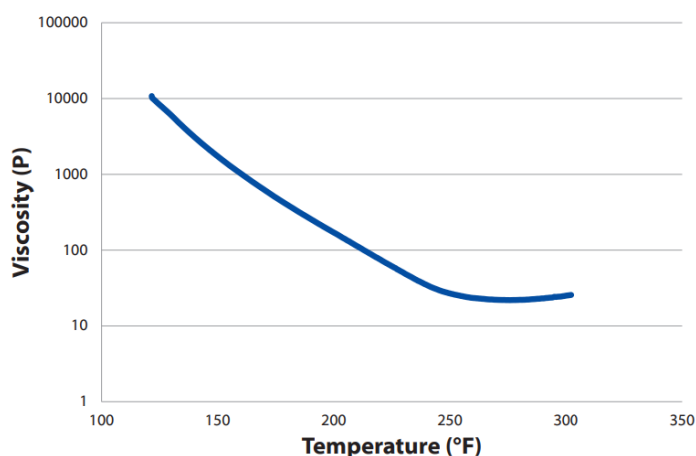
Unidirectional products can be slit to widths between 1/8" and 60", and fabric products to widths above 6". Common product formats include: 1/4", 1/2", 1", and 1.5" AFP spools (UD only); 6", 500mm, 9", and 12" ATL rolls; and 24" to full width rolls for hand layup. Product widths of less than 3" require additional lead time.

| PART NUMBER | FIBER FORMAT | FIBER TYPE/STYLE | FAW (GSM) | RC % WEIGHT | ROLL WIDTH (IN) |
|---------------------------|----------------|------------------|-----------|-------------|-----------------|
| P2362W-19L (AMS 6891/1) | Unidirectional | T800S | 192 | 35.5 | 60 |
| P2362W-145 | Unidirectional | T800S | 145 | 35.0 | 36 |
| FM6673G-37KL (AMS 6891/2) | Plain Weave | T830H-6K | 196 | 40.0 | 38 |
| FJ6361F-30HT | Plain Weave | T400H-3K | 193 | 37.0 | 38 |
| FGF108-29ML | Glass Fabric | 108 | 47.5 | 42.0 | 39 |
| FGF7781-29E | Glass Fabric | 7781 | 294 | 34.0 | 38 |

NEAT RESIN PHYSICAL PROPERTIES

| PROPERTY | METHOD | UNITS | VALUE |
|-------------------|------------|--|-------------|
| Density | ASTM D792 | g/cc | 1.22-1.25 |
| Tg (Dry) | DMA | °F (°C) | 400 (204) |
| Tg (Wet) | DMA | °F (°C) | 330 (166) |
| K _{IC} | ASTM D5045 | ksi*in ^{0.5} (MPa*m ^{0.5}) | 1.54 (1.69) |
| Minimum Viscosity | ASTM D4440 | Poise | 21.9 |
| | | °F (°C) | 275 (135) |

RESIN VISCOSITY CURVE



STORAGE LIFE

| | |
|--------------|-----------------------------|
| Out Life* | 42 days @ 75 °F (24 °C) |
| Freezer Life | 24 months @ <10 °F (-12 °C) |

*Tack and drape is optimum at 72F and 65% RH

LAMINA/LAMINATE MECHANICAL PROPERTIES: P2362W-19L (T800S-24K UD)



| PROPERTY | SYMBOL | METHOD | UNITS | CTA | RTA | ETW |
|---|-----------------|------------|-------------|----------------|--------------|--------------|
| 0° Tensile Strength | F _{1t} | ASTM D3039 | Ksi (MPa) | 411 (2834) | 436 (3006) | 441 (3041) |
| 90° Tensile Strength | F _{2t} | ASTM D3039 | Ksi (MPa) | 7.68 (52.9) | 8.82 (60.8) | 3.84 (26.5) |
| 0° Tensile Modulus | E _{1t} | ASTM D3039 | Msi (GPa) | 21.6 (149) | 21.5 (148) | 22.2 (153) |
| 90° Tensile Modulus | E _{2t} | ASTM D3039 | Msi (GPa) | 1.24 (8.5) | 1.47 (10.1) | 1.17 (8.1) |
| 0° Compressive Strength | F _{1c} | ASTM D6641 | Ksi (MPa) | 282 (1944) | 258 (1779) | 231 (1593) |
| 90° Compressive Strength | F _{2c} | ASTM D6641 | Ksi (MPa) | 44.5 (307) | 31.3 (216) | 19.3 (133) |
| 0° Compressive Modulus | E _{1c} | ASTM D6641 | Msi (GPa) | 18.8 (130) | 18.9 (130) | 20.2 (139) |
| 90° Compressive Modulus | E _{2c} | ASTM D6641 | Msi (GPa) | 1.37 (9.4) | 1.24 (8.5) | 1.15 (7.9) |
| In-Plane Shear Strength @ 5% | F ₁₂ | ASTM D5329 | Ksi (MPa) | 13.1 (90.3) | 10.0 (68.9) | 6.70 (46.2) |
| In-Plane Shear Modulus | G ₁₂ | ASTM D5379 | Msi (GPa) | 0.741 (5.11) | 0.571 (3.94) | 0.436 (3.01) |
| Short Beam Shear Strength | SBS | ASTM D2344 | Ksi (MPa) | 20.7 (143) | 14.0 (96.5) | 9.29 (64.1) |
| Open Hole Compression Strength (QI:25/50/25) | OHC | ASTM D6484 | Ksi (MPa) | - | 42.5 (293) | 37 (255) |
| Compression After Impact @ 1500 in-lb/in (QI: 25/50/25) | CAI | ASTM D7137 | Ksi (MPa) | - | 41 (283) | - |
| Laminate Density | ρ | ASTM D792 | g/cc | 1.54 | | |
| Cured Ply Thickness | CPT | - | Inches (mm) | 0.0075 (0.191) | | |

Notes:

CTA: -65°F (-54°C), Ambient

RTA: 72°F (22°C), Ambient

ETW: 180°F (82°C), conditioned at 160°F/85% RH until equilibrium

Tension and compression values are normalized to the indicated CPT values

LAMINA/LAMINATE MECHANICAL PROPERTIES: FM6673G-37KL (T830H-6K PW)



| PROPERTY | SYMBOL | METHOD | UNITS | CTA | RTA | ETW |
|---|-----------------|------------|-------------|----------------|--------------|-------------|
| 0° Tensile Strength | F _{1t} | ASTM D3039 | Ksi (MPa) | 134 (924) | 150 (1034) | 135 (931) |
| 90° Tensile Strength | F _{2t} | ASTM D3039 | Ksi (MPa) | 127 (876) | 134 (924) | 125 (862) |
| 0° Tensile Modulus | E _{1t} | ASTM D3039 | Msi (GPa) | 10.3 (71.0) | 10.0 (69.0) | 10.8 (74.5) |
| 90° Tensile Modulus | E _{2t} | ASTM D3039 | Msi (GPa) | 9.9 (67.9) | 9.9 (68.0) | 10.2 (70.3) |
| 0° Compressive Strength | F _{1c} | ASTM D6641 | Ksi (MPa) | 111 (765) | 97 (668) | 80 (551) |
| 90° Compressive Strength | F _{2c} | ASTM D6641 | Ksi (MPa) | 98 (676) | 88 (603) | 71 (486) |
| 0° Compressive Modulus | E _{1c} | ASTM D6641 | Msi (GPa) | 9.1 (62.8) | 9.2 (63.6) | 9.4 (64.8) |
| 90° Compressive Modulus | E _{2c} | ASTM D6641 | Msi (GPa) | 9.0 (62.1) | 8.9 (61.5) 9 | 9.0 (62.2) |
| In-Plane Shear Strength @ 5% | F ₁₂ | ASTM D5329 | Ksi (MPa) | 17.4 (120.0) | 11.5 (79.3) | 8.2 (56.5) |
| In-Plane Shear Modulus | G ₁₂ | ASTM D5379 | Msi (GPa) | 0.66 (4.6) | 0.52 (3.6) | 0.43 (3.0) |
| Short Beam Shear Strength | SBS | ASTM D2344 | Ksi (MPa) | 15.3 (105) | 10.8 (74) | 7.0 (49) |
| Open Hole Compression Strength (QI:25/50/25) | OHC | ASTM D6484 | Ksi (MPa) | - | 40.2 (277) | 32.2 (22) |
| Compression After Impact @ 1500 in-lb/in (QI: 25/50/25) | CAI | ASTM D7137 | Ksi (MPa) | - | 43.2 (298) | - |
| Laminate Density | ρ | ASTM D792 | g/cc | 1.51 | | |
| Cured Ply Thickness | CPT | - | Inches (mm) | 0.0086 (0.218) | | |

LAMINA/LAMINATE MECHANICAL PROPERTIES: FJ6361F-30HT (T400-3K PW)

| PROPERTY | SYMBOL | METHOD | UNITS | RTA | ETW |
|---|-----------------|------------|-------------|----------------|-------------|
| 90° Tensile Strength | F _{2t} | ASTM D3039 | Ksi (MPa) | 123 (848) | - |
| 90° Tensile Modulus | E _{2t} | ASTM D3039 | Msi (GPa) | 9.89 (68.2) | - |
| 90° Compressive Strength | F _{2c} | ASTM D6641 | Ksi (MPa) | 96.1 (663) | - |
| 90° Compressive Modulus | E _{2c} | ASTM D6641 | Msi (GPa) | 8.82 (60.8) | - |
| In-Plane Shear Strength @ 5% | F ₁₂ | ASTM D5329 | Ksi (MPa) | 16.3 (112) | 8.14 (56.1) |
| In-Plane Shear Modulus | G ₁₂ | ASTM D5379 | Msi (GPa) | 0.51 (3.52) | 0.42 (2.9) |
| Short Beam Shear Strength | SBS | ASTM D2344 | Ksi (MPa) | 8.91 (61.4) | |
| Open Hole Compression Strength (QI: 25/50/25) | OHC | ASTM D6484 | Ksi (MPa) | 36.3 (250) | 34.8 (240) |
| Laminate Density | ρ | ASTM D792 | g/cc | 1.51 | |
| Fiber Volume Fraction | V _f | ASTM 3171 | % | 49 | |
| Cured Ply Thickness | CPT | - | Inches (mm) | 0.0089 (0.226) | |

Notes:

CTA: -65°F (-54°C), Ambient

RTA: 72°F (22°C), Ambient

ETW: 180°F (82°C), conditioned at 160°F/85% RH until equilibrium

Tension and compression values are normalized to the indicated CPT values



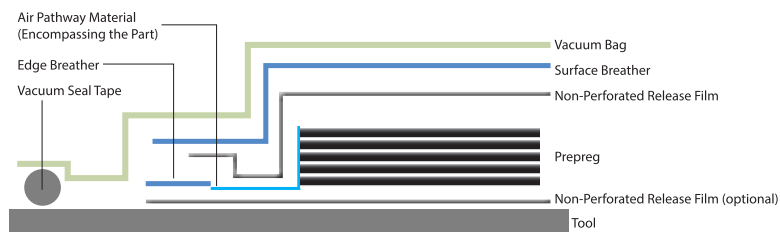
| PROPERTY | SYMBOL | METHOD | UNITS | RTA | ETW |
|-----------------------|--------|-----------|-------------|-----------------|-----|
| Lamina Density | ρ | ASTM D792 | g/cc | 1.51 | |
| Fiber Volume Fraction | V_f | ASTM 3171 | % | 43.7 | |
| Cured Ply Thickness | CPT | - | Inches (mm) | 0.0018 (0.0457) | |

LAMINA/LAMINATE MECHANICAL PROPERTIES: FGF7781-29E (7781 Glass 8HS)

| PROPERTY | SYMBOL | METHOD | UNITS | RTA | ETW |
|--------------------------|----------|----------------|-------------|----------------|------------|
| 90° Tensile Strength | F_{2t} | ASTM D3039 | Ksi (MPa) | 59 (409) | 45.7 (315) |
| 90° Tensile Modulus | E_{2t} | ASTM D3039 | Msi (GPa) | 3.6 (25) | 3.2 (22) |
| 90° Compressive Strength | F_{2c} | SACMA SRM1R-94 | Ksi (MPa) | 75.9 (524) | 53.5 (369) |
| In-Plane Shear Strength | F_{12} | ASTM D5329 | Ksi (MPa) | 16.5 (114) | - |
| In-Plane Shear Modulus | G_{12} | ASTM D5379 | Msi (GPa) | 0.64 (4.4) | - |
| Cured Ply Thickness | CPT | - | Inches (mm) | 0.0091 (0.231) | |

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 ETW: 180°F (82°C), conditioned at 160°F/85% RH until equilibrium
 Tension and compression values are normalized to the indicated CPT values

BAGGING PROCEDURE



Notes:

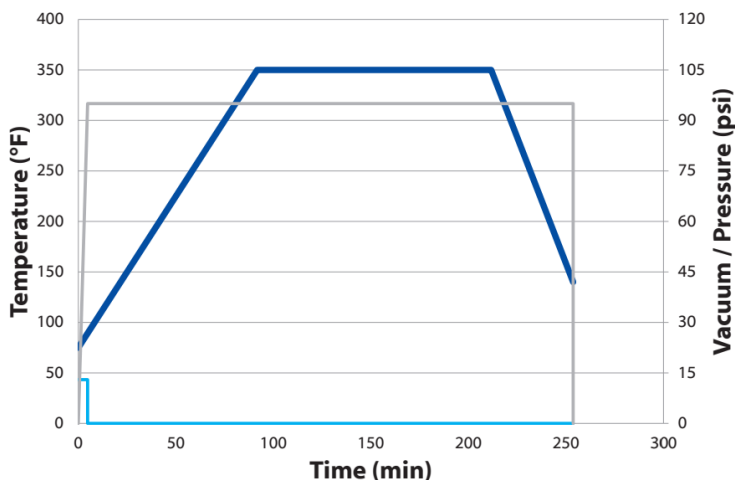
1. During layup, debulk after the first ply and then every 4 plies or as needed
2. The vacuum should be checked for leaks before beginning the cure cycle. The leak rate shall be less than 2.0 inches of Hg (7 kPa) over 5 minutes.

Please refer to the SDS for handling and disposal.

CURE CYCLE - AUTOCLAVE

1. Apply full vacuum* to the part.
2. Apply 95 ± 0 psi (655 kPa) autoclave pressure to the laminate.
3. Vent the vacuum bag when the autoclave pressure reaches 20psi (138 kPa)
4. Ramp to 350 ± 10°F (177 ± 5°C) at rate of 3.0 ± 2.0 °F (1.7 ± 1.1°C) per minute.
5. Hold for 120 - 180 minutes at 350 ± 10°F (177 ± 5°C).
6. Cool vessel to 140°F (60°C) or lower at a maximum rate of 5°F (2.78°C) per minute before releasing autoclave pressure.

* Required vacuum level varies depending on elevation. 28" Hg (95 kPa) is the recommended minimum at sea level under average conditions.



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