



Toray Composite Materials America, Inc.



## 2511 PREPREG SYSTEM

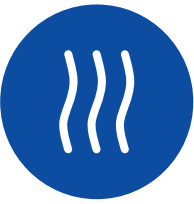
This semi-toughened epoxy prepreg system was specifically formulated for better oven cure processing than the #2510 general aviation (AGATE) prepreg system. #2511 provides excellent all-around structural properties with a high wet and dry TG while offering a flexible cure temperature (250°F to 350°F, 121°C to 177°C) with a very low void content. This prepreg system also can be used in industrial and recreational applications.



**Industry Material Specification**  
Coming soon.



**Industry Database**  
Coming soon.



**High Heat Tolerance**  
High Tg is suitable for structures exposed to elevated service temperatures.



**Easy Layup**  
Product allows complex part layup with minimal cuts or ridge lines. It maintains a comparable class A finish through post-cure, minimizing sanding and finishing times.



**Readily Available**  
Product is in stock and ready to ship.



**Flexible Cure Methods**  
Curing methods include autoclave or oven cure. Product can be cured with or without using a dwell.



## AVAILABLE PRODUCT FORMATS

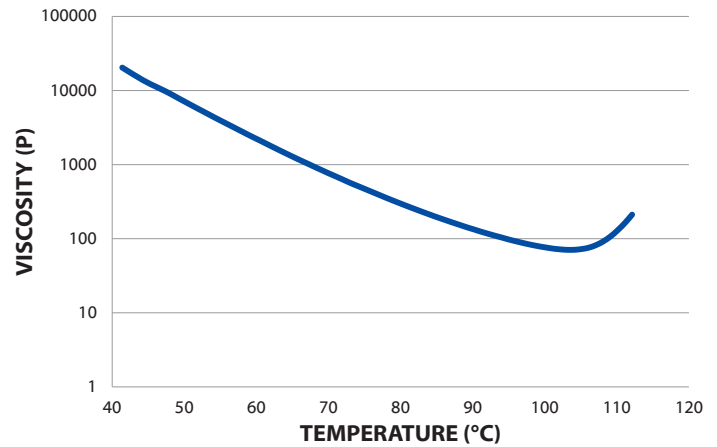
PART NUMBER	FIBER FORMAT	FIBER TYPE/STYLE	FAW (GSM)	RC % WEIGHT	ROLL WIDTH (IN)
P711AG-15	Unidirectional	T700G	150	35	39, 36, 24, 12, 6
F6273C-11M	Plain Weave	T700S-12K	190	42	38
FGF7781-11I	Glass Fabric	7781	295	38	38

## NEAT RESIN PHYSICAL PROPERTIES

PROPERTY	METHOD	UNITS	VALUE
Density	ASTM D595	g/cc	1.267
Tg (Dry)	DMA	°F (°C)	309 (154)
Tg (Wet)	DMA	°F (°C)	262 (128)
Gel Time	*	Minutes	46
K <sub>IC</sub>	ASTM D504	ksi*in <sup>0.5</sup>	0.75

\* From room temperature to 248°F at 3.1°F/min.

## RESIN VISCOSITY CURVE



## LAMINA/LAMINATE MECHANICAL PROPERTIES: P711AG-15

PROPERTY	SYMBOL	METHOD	UNITS	CTA	RTA	ETW
0° Tensile Strength	F <sub>1t</sub>	ASTM D3039	Ksi (MPa)	272 (1847)	321 (2212)	272 (1874)
0° Tensile Modulus	E <sub>1t</sub>	ASTM D3039	Msi (GPa)	17.8 (123)	17.6 (121)	17.8 (123)
0° Compressive Strength	F <sub>1c</sub>	SACMA SRM 1	Ksi (MPa)	235 (1619)	231 (1592)	166 (1144)
In-Plane Shear Strength @ 5% or Ultimate	F <sub>12</sub>	ASTM D3518	Ksi (MPa)	-	25.0 (172)	-
Short Beam Shear Strength	SBS	ASTM D2344	Ksi (MPa)	-	15.4 (106)	-
Open Hole Compression Strength (25/50/25)	OHC	ASTM D6484	Ksi (MPa)	-	42.8 (295)	34.2 (236)
Compression After Impact (25/50/25)	CAI	ASTM D7137	Ksi (MPa)	-	26.2 (181)	-
Fiber Volume Fraction	V <sub>f</sub>	ASTM D3171	%	-	54.7	-
Cured Ply Thickness	CPT	-	Inches (mm)	-	0.0058 (0.148)	-

Tension and compression values are normalized to the indicated V<sub>f</sub> herein.

### Notes:

CTA: -67°F (-55°C), Ambient

RTA: 72°F (22°C), Ambient

ETW: 180°F (82°C) Ambient, Conditioned at 160°F (71°C) /85% RH until equilibrium

Please refer to SDS for handling and disposal.

**For more information or purchasing inquiries:**  
 sales@toraycma.com | www.toraycma.com | 253-846-1777

## LAMINA/LAMINATE MECHANICAL PROPERTIES: F6273C-11M

PROPERTY	SYMBOL	METHOD	UNITS	CTA	RTA	ETW
0° Tensile Strength	F <sub>1t</sub>	ASTM D3039	Ksi (MPa)	145	158	158
90° Tensile Strength	F <sub>2t</sub>	ASTM D3039	Ksi (MPa)	144	147	133
0° Tensile Modulus	E <sub>1t</sub>	ASTM D3039	Msi (GPa)	8.49	8.57	9.11
90° Tensile Modulus	E <sub>2t</sub>	ASTM D3039	Msi (GPa)	8.22	8.43	8.76
0° Compressive Strength	F <sub>1c</sub>	ASTM D6641	Ksi (MPa)	106	97.7	74.5
90° Compressive Strength	F <sub>2c</sub>	SACMA SRM 1	Ksi (MPa)	104	85.6	65.5
0° Compressive Modulus	E <sub>1c</sub>	ASTM D6641	Msi (GPa)	7.15	7.53	8.40
90° Compressive Modulus	E <sub>2c</sub>	ASTM D6641	Msi (GPa)	7.22	7.04	8.18
In-Plane Shear Strength @ 5% or Ultimate	F <sub>12</sub>	ASTM D3518	Ksi (MPa)	17.2	12.5	6.92
In-Plane Shear Modulus	G <sub>12</sub>	ASTM D5379	Msi (GPa)	0.690	0.582	0.429
Short Beam Shear Strength	SBS	ASTM D2344	Ksi (MPa)	10.1	9.83	4.63
Poisson's Ratio	v <sub>12</sub>	ASTM D3039	-	0.057	0.054	0.024
Poisson's Ratio	v <sub>21</sub>	ASTM D3039	-	0.058	0.052	0.041
Open Hole Compression Strength (25/50/25)	OHC	ASTM D6484	Ksi (MPa)	-	39.4 (271)	31.0 (214)
Compression After Impact (25/50/25)	CAI	ASTM D7137	Ksi (MPa)	-	30.9 (213)	-
Laminate Density	ρ	ASTM D792	g/cc	1.51		
Fiber Volume Fraction	V <sub>f</sub>	ASTM D3171	%	48.2		
Cured Ply Thickness	CPT	-	Inches (mm)	-	0.0086 (0.218)	-

Tension and compression values are normalized to the indicated V<sub>i</sub> herein.

**Notes:**

CTA: -67°F (-55°C), Ambient

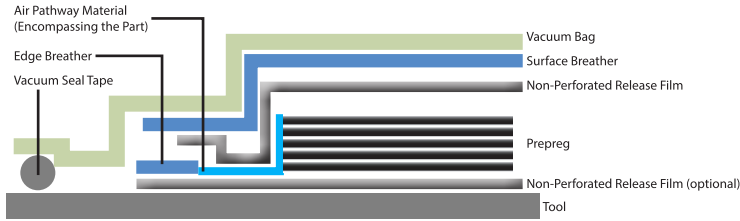
RTA: 72°F (22°C), Ambient

ETW: 180°F (82°C) Ambient, Conditioned at 160°F (71°C) /85% RH until equilibrium

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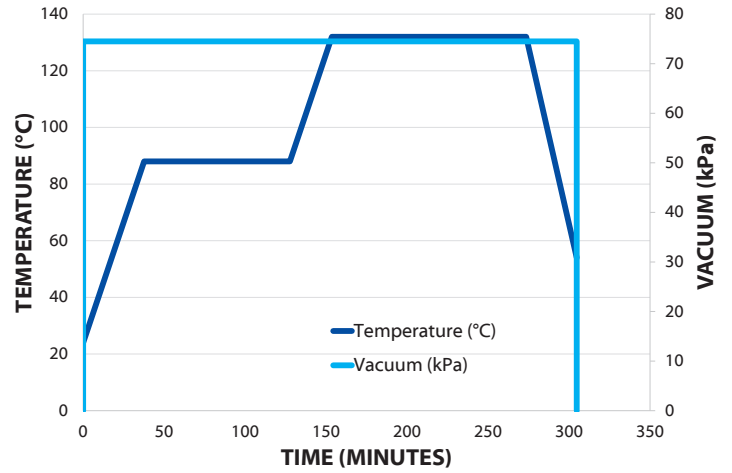
**BAGGING PROCEDURE**



**STORAGE LIFE**

Out Life	28 days @ 75 °F
Freezer Life	24 months @ <10 °F

**RECOMMENDED VACUUM CURE CYCLE (270°F OVEN CURE)**



**Notes:**

1. De-bulk every four plies, or as needed, when laying up material.
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.
3. It is recommended that small test specimens have a pre-cure vacuum hold time of 1 hour, for medium sized panels (>1ft<sup>2</sup>) for 3 hours, and for complex layups (ply drops, >2ft<sup>2</sup>) for 16+ hours.
4. The vacuum should be within 2" of Hg (7 kPa) for an absolute vacuum for a given altitude. For example, at sea level, the vacuum should be at a minimum of 28" Hg (95 kPa).
5. Ramp to 190 ± 10°F at 1-5°F/min (88 ± 5°C at 0.6-2.8°C/min) and hold for 90 minutes.
6. Ramp to 270 ± 10°F at 1-5°F/min (132 ± 5°C at 0.6-2.8°C/min) and hold for 120 minutes.
7. Cool temperature down to 130°F at max rate of 5°F/min (54°C at 2.8°C/min).

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