Fast Cure & Clear Resin System

FC811T

FC811T is a 150°C 4 minute curable epoxy resin system. It is flow controlled for good surface quality of cured parts. FC811T is particularly suitable for use in automotive exterior and electronics housing composite part manufacturing with high production rate.

WLSEKFCOMPOSITE PROPERTIES

UD Tape

PROPERTY	T-700S (TORAY)	METHOD
0° Tensile Strength	2916 MPa	ASTM D 3039
0° Tensile Modulus	135 GPa	
90° Tensile Strength	55 MPa	
90° Tensile Modulus	8.6 GPa	
0° Compressive Strength	1127 MPa	ASTM D 3410
0° Compressive Modulus	124 GPa	
90° Compressive Strength	180 MPa	
90° Compressive Modulus	8.7 GPa	
Flexural Strength	1816 MPa	ASTM D 790
Flexural Modulus	124 GPa	
In-Plan Shear strength(G12)	113 MPa	ASTM D 3518
In-plane shear 5% strength(G12)	63 MPa	
In-plane shear modulus(G12)	4.1 GPa	

※ The prepreg for mechanical testing is the carbon UD prepreg (FAW:250 gsm, R/C:30±2 wt.%, Fiber Volume:60%).

3K 2X2 Twill Weave

PROPERTY	T300 3K Twill (TORAY)	METHOD
0° Tensile Strength	683 MPa	ASTM D 3039
0° Tensile Modulus	56 GPa	
0° Compressive Strength	641 MPa	ASTM D 3410
0° Compressive Modulus	50 GPa	
0° Flexural Strength	884 MPa	ASTM D 790
0° Flexural Modulus	51 GPa	
In-Plan Shear strength(G12)	132 MPa	ASTM D 3518
In-plane shear 5% strength(G12)	68 MPa	
In-plane shear modulus(G12)	3.3 GPa	

※ The prepreg for mechanical testing is the carbon fabric (FAW:208 gsm, R/C:42±2 wt.%, Fiber Volume:48%).

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THERMAL PROPERTIES

PROPERTY	VALUE
Tg by DSC, ℃	130
Storage Modulus by DMA, ℃	130
Tan-delta by DMA, ℃	163

※ Tg defined by DSC after curing as below typical curing cycle.
※ Thermal testing was measured by DMA at 40-250℃, 5℃/min.

PROCESSING CONDITION

TEMPERATURE	*95% CONVERSION
100℃	39 min
110℃	20 min
120℃	12 min
130℃	7 min
140℃	5 min
150℃	4 min
160℃	3 min

* 95% Conversion is the value of the ideal heat transfer state as measured by DSC.

CURING CYCLE

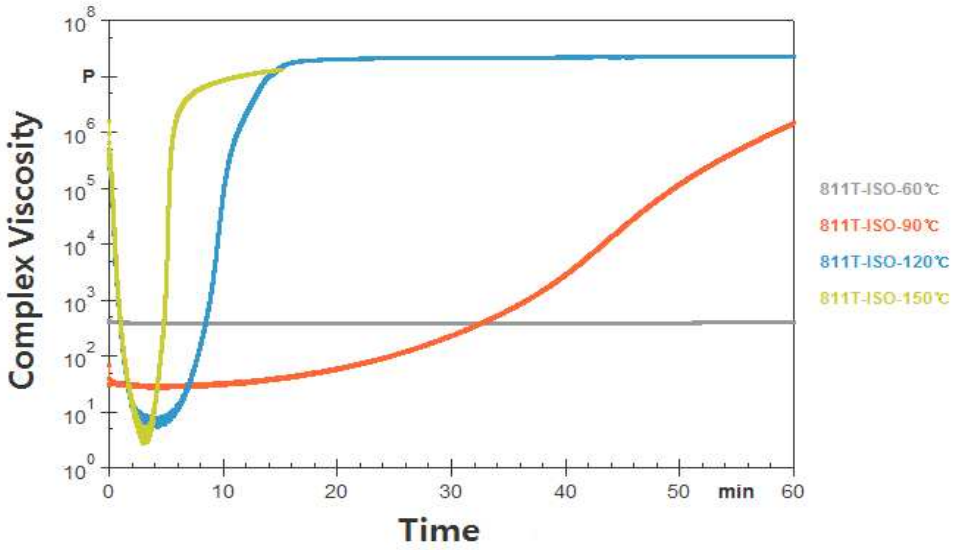
PRESS MOLDING	
Thickness of the parts	1 - 2mm
Cure Pressure	10 - 20bar
Mold temperature	150℃
Cure time	4min

※ It may be necessary to optimize the pressure and time according to thickness of the parts.

RHEOLOGY

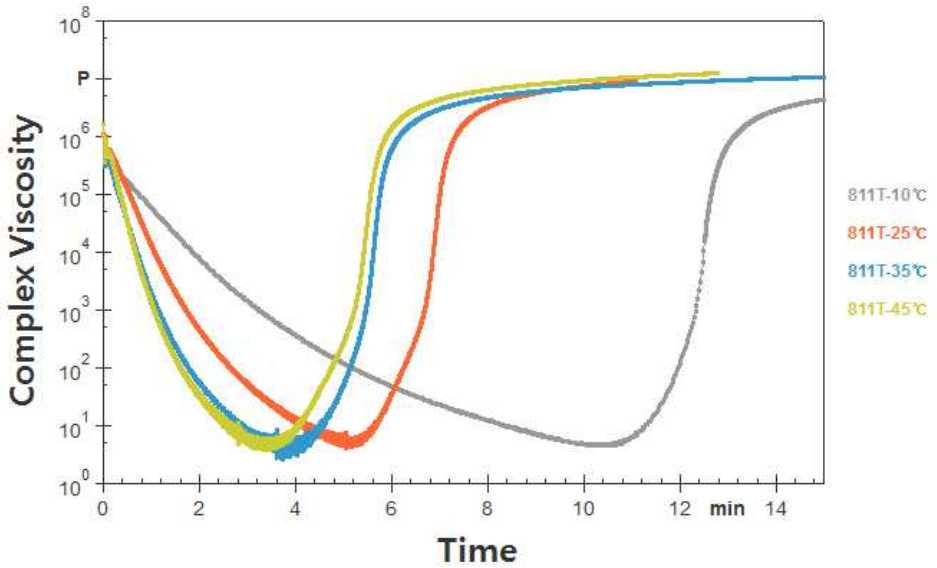
COMPLEX VISCOSITY @ ISOTHERMAL

ISOTHERMAL	MINIMUM VISCOSITY
60℃	375 Poise
90℃	27 Poise
120℃	7 Poise
150℃	3 Poise



COMPLEX VISCOSITY @ DYNAMIC HEATING

HEATING RATE	MINIMUM VISCOSITY	TIME
10℃/min	4 Poise	622 sec
25℃/min	4 Poise	306 sec
35℃/min	3 Poise	223 sec
45℃/min	3 Poise	200 sec



SHELF LIFE

STORAGE TEMPERATURE	SHELF LIFE
Room Temperature +25℃	1 month
Frozen -18℃	12 month

HANDING & USE

Prepreg which is impregnated with FC811T resin system must be stored in a freezer. When material is removed from the freezer, it is essential that the roll be allowed to thaw and reach room temperature before the plastic bag is opened. For example, the thaw time for a 20 linear meter roll taken from -18℃(0℉)storage into a 21℃(70℉) room is typically between 4 and 6 hours. Condensation may form on the surface of the material if it is not fully thawed. Moisture within a curing laminate may be detrimental to final part quality and appearance. When materials are returned to the freezer, they must be resealed to prevent ingress of moisture.