Fast Cure & Toughened Resin System

FC706T

FC706T is a 150°C 3 minute curable epoxy resin system. It is toughened resin designed for structural application and flow controlled for good surface quality of cured parts. FC706T is particularly suitable for use in automotive exterior and electronics housing composite part manufacturing with high production rate.

COMPOSITE PROPERTIES

UD Tape

PROPERTY	T-700S (TORAY)	METHOD
0° Tensile Strength	2670 MPa	ASTM D 3039
0° Tensile Modulus	135 GPa	
90° Tensile Strength	51 MPa	
90° Tensile Modulus	8.9 GPa	
0° Compressive Strength	1487 MPa	ASTM D 3410
0° Compressive Modulus	119 GPa	
90° Compressive Strength	185 MPa	
90° Compressive Modulus	9.4 GPa	
Flexural Strength	2002 MPa	ASTM D 790
Flexural Modulus	128 GPa	
In-Plan Shear strength(G12)	82 MPa	ASTM D 3518
In-plane shear 5% strength(G12)	62 MPa	
In-plane shear modulus(G12)	4.5 GPa	
G1c, J/㎡	450 J/㎡	BSS7273

※ The prepreg for mechanical testing is the carbon UD prepreg (FAW:300 gsm, R/C:30±2 wt.%, Fiber Volume:60%).

THERMAL PROPERTIES

PROPERTY	VALUE
Tg by DSC, ℃	172
Storage Modulus by DMA, ℃	167
Tan-delta by DMA, ℃	194

※ Tg defined by DSC after curing as below typical curing cycle.

※ Thermal testing was measured by DMA at 40-250℃, 5℃/min.

Tel 82-55-350-8888, Fax 82-55-350-0088, Web www.hcarbon.com

PROCESSING CONDITION

TEMPERATURE	*95% CONVERSION
100℃	40 min
110℃	23 min
120℃	14 min
130℃	9 min
140℃	6 min
150℃	3 min
160℃	2.5 min

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

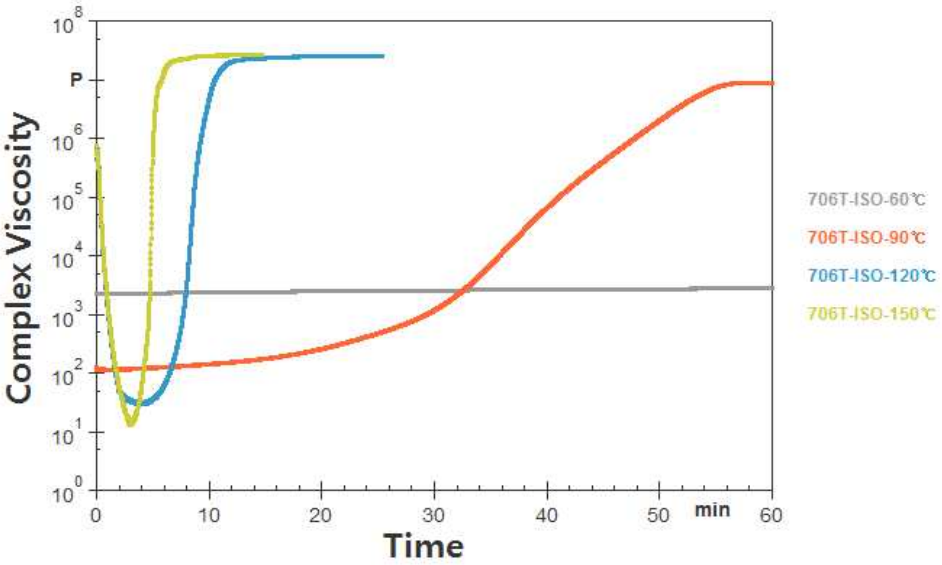
CURING CYCLE

PRESS MOLDING	
Thickness of the parts	1 - 2mm
Cure process	Hot-in, Hot-out Press
Cure Pressure	10 - 20bar
Mold temperature	150℃
Cure time	3min

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

RHEOLOGY

COMPLEX VISCOSITY @ ISOTHERMAL	
ISOTHERMAL	MINIMUM VISCOSITY
60℃	2235 Poise
90℃	124 Poise
120℃	30 Poise
150℃	13 Poise



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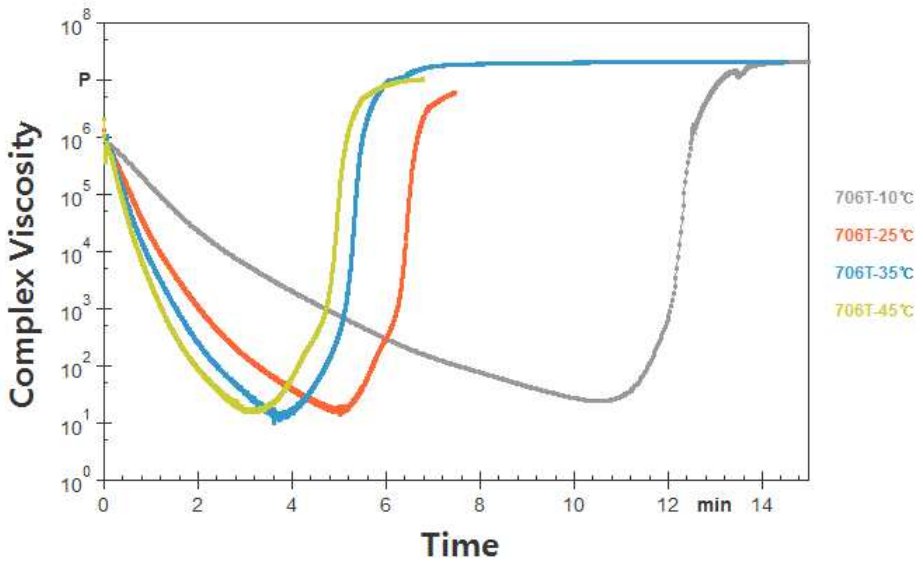
COMPLEX VISCOSITY @ DYNAMIC HEATING

HEATING RATE	MINIMUM VISCOSITY	TIME
10℃/min	24 Poise	634 sec
25℃/min	16 Poise	299 sec
35℃/min	13 Poise	224 sec
45℃/min	13 Poise	182 sec



SHELF LIFE

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

HANDING & USE

Prepreg which is impregnated with FC706T 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°F)storage into a 21℃(70°F) 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.