High Strength Resin System

F200

HANKUK CARBON

F200 is a high strength epoxy resin system. It has excellent compressive, flexural, and shear strength properties. This resin system is suitable for the realization of high performance composite structure and it is based on 250°F (121°C) curing cycle.

COMPOSITE PROPERTIES

UD Tape

PROPERTY	T-700S (TORAY)	TR 50S (MITSUBISHI)	T-800S (TORAY)	METHOD
Tensile Strength	2660 MPa	2371 MPa	3442 MPa	ASTM D 3039
Tensile Modulus	140 GPa	147 GPa	162 GPa	
Compressive Strength	1678 MPa	1963 MPa	1703 MPa	ASTM D 695
Compressive Modulus	129 GPa	136 GPa	146 GPa	
Flexural Strength	1900 MPa	2109 MPa	1849 MPa	ASTM D 790
Flexural Modulus	122 GPa	141 GPa	142 GPa	
ILSS	101 MPa	106 MPa	98 MPa	SACMA 8R-94

※ The prepreg for mechanical testing is the carbon UD prepreg (FAW:150 gsm, R/C:33±2 wt.%).
※ Tensile and compressive properties were normalized to fiber volume 60%

3K Plain Weave

PROPERTY	T300 3K Plain (TORAY)	METHOD
0° Tensile Strength	627 MPa	ASTM D 3039
0° Tensile Modulus	57 GPa	
90° Tensile Strength	630 MPa	
90° Tensile Modulus	55 GPa	
0° Compressive Strength	608 MPa	ASTM D 6641
0° Compressive Modulus	52 GPa	
90° Compressive Strength	608 MPa	
90° Compressive Modulus	53 GPa	
In-Plan Shear	76 MPa	SACMA 8R-94

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

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THERMAL PROPERTIES

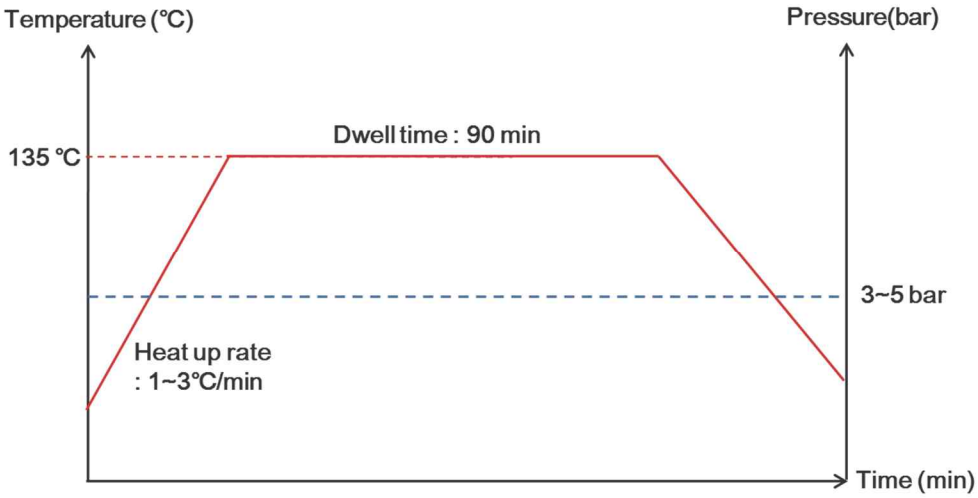
PROPERTY	VALUE
Tg by DSC	135℃
Storage Modulus by DMA	145℃
Tan-delta by DMA	165℃

※ 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	CURING TIME
120℃	120 min
130℃	90 min
140℃	45 min
150℃	30 min

Typical autoclave cure cycle is shown as below.



RHEOLOGY

HEATING RATE	MINIMUM VISCOSITY
1℃/min	39 Poise
2℃/min	32 Poise
3℃/min	25 Poise

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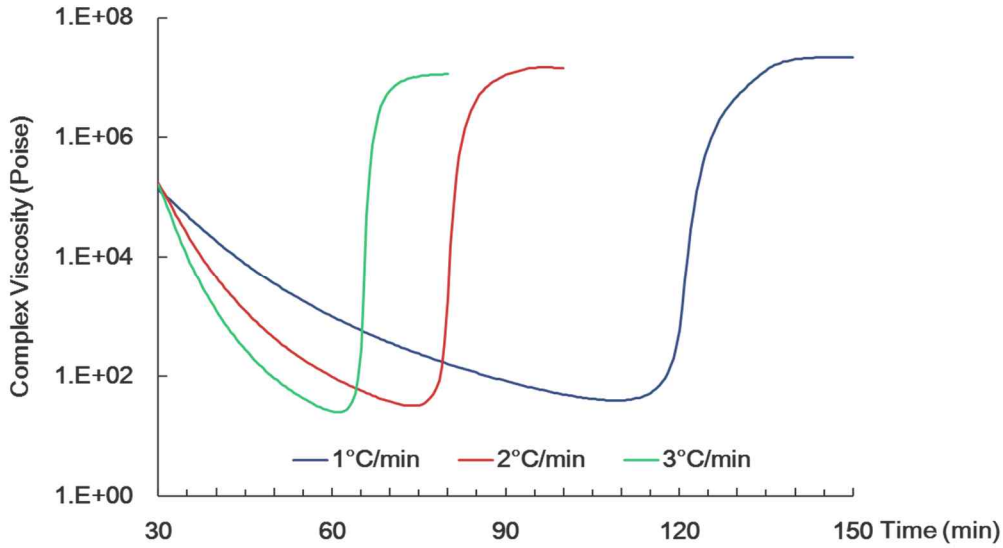
The viscosity of F200 was measured according to the rate of temperature rise of 1,2,3℃/min.



SHELF LIFE

STORAGE TEMPERATURE	SHELF LIFE
Room Temperature +21℃	1 month
Cold Storage -5℃	3 month
Frozen -21℃	12 month

HANDING & USE

Prepreg which is impregnated with F200 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.