High Toughened & High Tg Resin System

3434-5E

HANKUK CARBON

3434-5E resin system is suitable for a composite material requiring high Tg and high toughness. This resin system has excellent CAI and fracture toughness performance. It is suitable for the realization of high performance composite structure. In particular, it is suitable for a composite material requiring high thermal properties.

COMPOSITE PROPERTIES

UD Tape

PROPERTY	Toho IMS60	METHOD
Tensile Strength ksi	452 MPa	ASTM D3039
Tensile Modulus Msi	23 GPa	
Compressive Strength ksi	246 MPa	ASTM D6641
Compressive Modulus Msi	23 GPa	
Open Hole Tensile ksi	78 MPa	ASTM D5766
Filled Hole Tensile ksi	76 MPa	ASTM D6742
Open Hole compression ksi	43 MPa	ASTM D6484
In-Plane Shear Strength ksi	21 MPa	ASTM D3518
In-Plane Shear Modulus Msi	0.67 GPa	
CAI 270 in-lbf impact level Ksi	45 MPa	ASTM D7136
G_{IC}(DCB), in-lbf/in^2	403 J/m^2	BSS 7273(GIC),
G_{IIC}(ENF), in-lbf/in^2	2364 J/m^2	BMS 8-276(GIIC)

※ The prepreg for mechanical testing is the carbon UD prepreg (FAW:190 gsm, R/C:35±2 wt.%).

※ The prepreg was cured according to the typical autoclave cure cycle shown in this TDS.

THERMAL PROPERTIES

PROPERTY	VALUE
Tg by DSC, ℃	185
Tan-delta by DMA, ℃	187

※ Thermal testing was measured by DMA at 40-300℃, 5℃/min.

PROCESSING CONDITION

Cure cycle	Dwell 180℃ / 120min
	Heat up rate 2-3℃/min
	Pressure 6 bar

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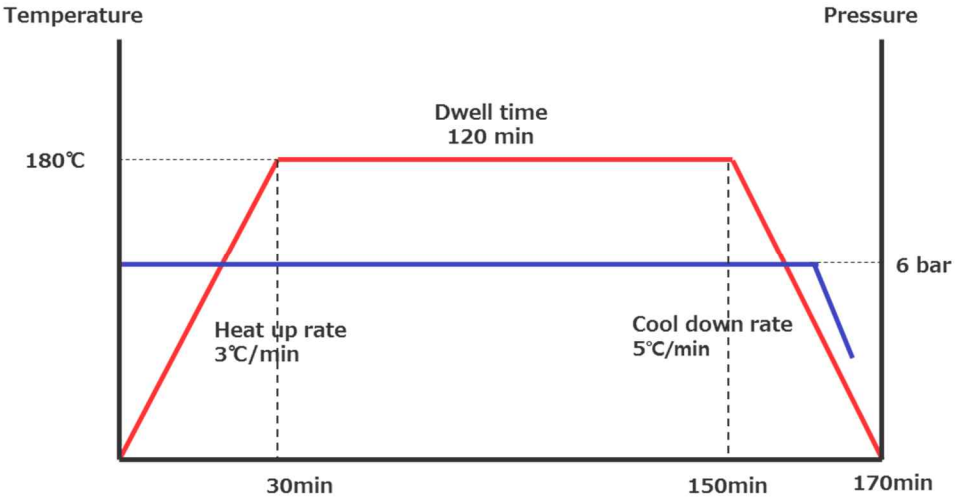
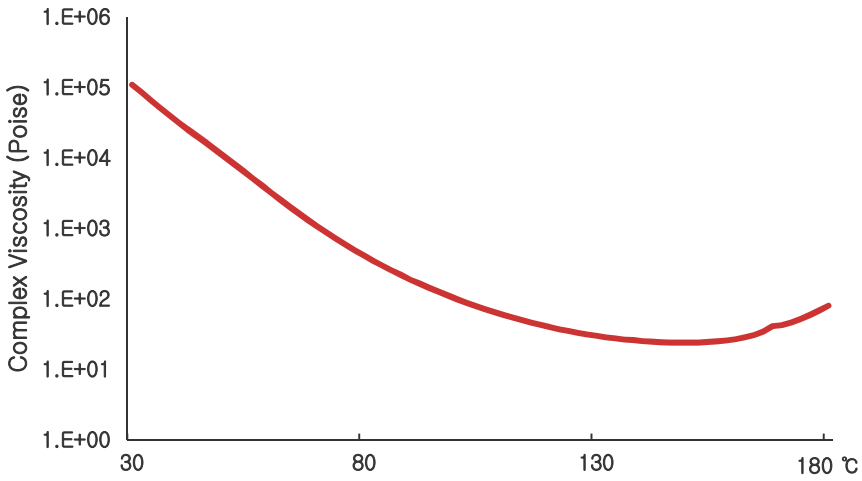
Typical autoclave cure cycle is shown as below.



RHEOLOGY

HEATING RATE	MINIMUM VISCOSITY
3℃/min	23 Poise

The viscosity of 3434-5E was measured according to the rate of temperature rise of 3℃/min.



SHELF LIFE

STORAGE TEMPERATURE	SHELF LIFE
Room Temperature +21℃	20 Days
Cold Storage -5℃	1.5 month
Frozen -21℃	12 month

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HANDING & USE

Prepreg which is impregnated with 3434-5E 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.

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