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SHIMTEQ™ TP CA140

Unidirectional Carbon Fiber Prepreg (CF/PA6)

SUMMARY

A polyamide 6- (PA6)-impregnated material reinforced with unidirectionally aligned carbon fibers can be molded (formed) by hot pressing and de-molded after cooling. The molded material has unique physical and mechanical properties due to its anisotropic nature. This empowers customers to design products with flexibility.

SPECIFICATIONS

Fiber tensile modulus [GPa]	230	Material configuration	Sheet roll
Fiber areal weight [g/m ²]	40	Package configuration	Cardboard with 3" core
Resin areal weight [g/m ²]	23	Sheet length [m]	450
V _f [%]	53	Sheet width [mm]	250
RC [%]	36	Matrix resin Melting point [°C]	225
T _g [°C]	50	Thickness [μm]	42

MATERIAL CONFIGURATION

	Material	Configuration
Reinforcement	CF	Uni-direction
Matrix	PA6	N/A

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APPLICATION EXAMPLES

Light-weight and/or high mechanical-/physical-strength-demanding fields (e.g., automotive and aerospace) molded by press-molding, autoclaves, or fiber placement.

MATERIAL PROPERTIES

Test condition: 23±3°C, 50±10%RH

Test items	Test Results	Test Method
0° tensile strength [MPa]	2300	JIS K 7165
0° tensile modulus [GPa]	120	JIS K 7165
Compression strength [MPa]	550	ASTM D 6641
Compression modulus [GPa]	105	ASTM D 6641

MOLDING PROCESS (EXAMPLE OF PRESS MOLDING)

1. Materials are charged in a release-treated mold die.
2. The mold die is closed and pressured up to 3±0.1 MPa. Material-charged cavity is heated up to 260±5°C at a rate of 3–10°C/min.
3. Pressure is maintained for 10±5 min.
4. Mold die is cooled to <50°C while maintaining the pressure.

ATTENTION

- PA6 is an hygroscopic polymer. The material should be stored in a sealed bag to avoid hot and/or humid conditions. In cases where in the storage temperature is significantly below room temperature, the material should be kept in the package for a stabilization period (>12 h) to prevent condensation of any moisture. When drying is necessary, the conditioning temperature should be in the range of 80–90°C.
- Cooling shrinkage will occur because PA6 is crystalline polymer. The cooling process parameters of both temperature and pressure should be controlled because they will have an impact on the polymer crystallinity.

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