Product Comparison

Technical Data

Product Description	
Generic PESU - Carbon Fiber	This data represents typical values that have been calculated from all products classified as: Generic PESU - Carbon Fiber This information is provided for comparative purposes only.
Generic PEI - Carbon Fiber	This data represents typical values that have been calculated from all products classified as: Generic PEI - Carbon Fiber This information is provided for comparative purposes only.
Generic PVDF - Carbon Fiber	This data represents typical values that have been calculated from all products classified as: Generic PVDF - Carbon Fiber This information is provided for comparative purposes only.
Generic PEEK - Carbon Fiber	This data represents typical values that have been calculated from all products classified as: Generic PEEK - Carbon Fiber This information is provided for comparative purposes only.
Generic PI, TP - Carbon Fiber	This data represents typical values that have been calculated from all products classified as: Generic PI, TP - Carbon Fiber This information is provided for comparative purposes only.

General	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber
Manufacturer / Supplier	• Generic	• Generic	• Generic	• Generic	• Generic
Generic Symbol	• PESU	• PEI	• PVDF	• PEEK	• PI, TP
Material Status	• Commercial: Active	• Commercial: Active	• Commercial: Active	• Commercial: Active	• Commercial: Active
Availability	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Filler / Reinforcement	• Carbon Fiber	• Carbon Fiber	• Carbon Fiber	• Carbon Fiber	• Carbon Fiber

Product Comparison

Physical	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Density / Specific Gravity							
--	1.39 to 1.59	1.30 to 1.48	1.75 to 1.79	1.33 to 1.57	1.42 to 1.45	g/cm³	ASTM D792
--	--	1.34 to 1.49	--	1.36 to 1.47	--	g/cm³	ISO 1183
Apparent (Bulk) Density	--	--	--	0.59 to 0.67	--	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR) (380°C/5.0 kg)	--	--	--	2.0 to 3.0	--	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (380°C/5.0 kg)	--	--	--	5.5 to 42	--	cm³/10min	ISO 1133
Spiral Flow	--	--	--	6.50 to 37.5	--	cm	
Molding Shrinkage							
Flow	0.050 to 0.23	0.030 to 0.40	0.28 to 0.40	0.035 to 0.26	0.0 to 5.0E-3	%	ASTM D955
Across Flow	--	0.23 to 0.40	--	0.47 to 2.0	--	%	ASTM D955
--	--	0.10 to 0.41	--	0.0 to 0.74	--	%	ISO 294-4
Water Absorption							
24 hr	0.30 to 0.42	0.11 to 0.20	--	0.038 to 0.15	--	%	ASTM D570
24 hr, 23°C	--	--	--	0.050 to 0.10	--	%	ISO 62
Saturation	--	--	--	0.042 to 0.50	--	%	ASTM D570
Saturation, 23°C	--	--	--	0.040 to 0.41	--	%	ISO 62
Equilibrium, 23°C, 50% RH	--	0.20 to 0.28	--	0.010 to 0.22	--	%	ISO 62

Mechanical	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Tensile Modulus							
--	6880 to 23600	2960 to 31200	3450 to 17100	7010 to 43900	--	MPa	ASTM D638
--	--	11600 to 35500	--	8250 to 41200	--	MPa	ISO 527-1
Tensile Strength							
Break	--	160 to 276	--	104 to 310	--	MPa	ASTM D638
Break	--	156 to 249	--	78.0 to 323	--	MPa	ISO 527-2
--	121 to 210	130 to 241	--	110 to 276	194 to 266	MPa	ASTM D638
--	--	--	--	107 to 276	--	MPa	ISO 527-2

Product Comparison

Mechanical	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Tensile Elongation							
Yield	1.0 to 3.2	1.0 to 3.1	--	1.5 to 2.6	--	%	ASTM D638
Yield	--	--	--	1.4 to 2.2	--	%	ISO 527-2
Break	--	0.90 to 2.2	--	0.99 to 2.6	--	%	ASTM D638
Break	--	0.90 to 2.1	--	0.70 to 2.6	--	%	ISO 527-2
Flexural Modulus							
--	8000 to 24100	1080 to 27100	3450 to 17200	7810 to 31700	12400 to 25500	MPa	ASTM D790
--	--	12800 to 30600	--	8660 to 37000	--	MPa	ISO 178
Flexural Strength							
--	164 to 303	66.0 to 345	65.5 to 214	233 to 424	262 to 368	MPa	ASTM D790
--	--	180 to 364	--	50.0 to 401	--	MPa	ISO 178
Break	--	140 to 372	--	257 to 369	--	MPa	ASTM D790
Compressive Modulus	--	--	--	2280 to 124000	--	MPa	ASTM D695
Compressive Strength							
--	--	--	--	119 to 1360	--	MPa	ASTM D695
--	--	--	--	46.0 to 305	--	MPa	ISO 604
Shear Strength	--	--	--	67.0 to 121	--	MPa	ASTM D732
Coefficient of Friction	--	0.39 to 0.52	--	0.16 to 0.38	--		ASTM D1894
Wear Factor	--	43 to 150	--	2.0 to 460	--	10^-8 mm³/N·m	ASTM D3702

Product Comparison

Impact	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Charpy Notched Impact Strength	--	--	--	4.8 to 8.0	--	kJ/m²	ISO 179
Charpy Unnotched Impact Strength	--	--	--	25 to 60	--	kJ/m²	ISO 179
Notched Izod Impact							
--	53 to 65	42 to 80	53 to 97	35 to 98	--	J/m	ASTM D256
--	--	4.9 to 7.1	--	4.0 to 11	--	kJ/m²	ISO 180
Unnotched Izod Impact							
--	420 to 540	270 to 710	--	420 to 870	110 to 650	J/m	ASTM D4812
--	--	18 to 35	--	30 to 49	--	kJ/m²	ISO 180
Instrumented Dart Impact							
--	--	6.00 to 11.2	--	3.88 to 17.0	--	J	ASTM D3763
--	--	2.00 to 7.00	--	1.00 to 3.00	--	J	ISO 6603-2

Hardness	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Rockwell Hardness	--	--	--	99 to 125	--		ASTM D785
Shore Hardness	--	--	--	86 to 88	--		ISO 868

Thermal	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Deflection Temperature Under Load							
0.45 MPa, Unannealed	--	210	--	288 to 366	--	°C	ASTM D648
0.45 MPa, Unannealed	--	--	--	290 to 350	--	°C	ISO 75-2/B
1.8 MPa, Unannealed	210 to 213	207 to 214	--	285 to 335	237 to 316	°C	ASTM D648
1.8 MPa, Unannealed	--	207 to 217	--	255 to 333	--	°C	ISO 75-2/A
Continuous Use Temperature	--	--	--	250	--	°C	ASTM D794
Glass Transition Temperature	--	--	--	143	--	°C	ISO 11357-2
Vicat Softening Temperature	--	--	--	295 to 301	--	°C	ISO 306
Melting Temperature							
--	--	--	--	334 to 343	--	°C	
--	--	--	--	340 to 343	--	°C	ISO 11357-3
--	--	--	--	338 to 344	--	°C	ASTM D3418

Product Comparison

Thermal	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
CLTE							
Flow	--	--	--	1.0E-5 to 1.5E-5	--	cm/cm/°C	ASTM D696
Flow	--	2.7E-6 to 3.3E-5	--	1.7E-6 to 5.3E-5	--	cm/cm/°C	ASTM E831
Flow	--	7.5E-6 to 2.0E-5	--	1.0E-6 to 2.5E-5	--	cm/cm/°C	ISO 11359-2
Transverse	--	2.6E-5 to 4.0E-5	--	2.7E-5 to 5.4E-5	--	cm/cm/°C	ASTM E831
Transverse	--	2.7E-5 to 6.0E-5	--	2.7E-5 to 1.0E-4	--	cm/cm/°C	ISO 11359-2
Thermal Conductivity							
--	--	--	--	0.35 to 1.7	--	W/m/K	ASTM C177
--	--	--	--	0.90 to 2.0	--	W/m/K	ISO 8302

Electrical	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Surface Resistivity							
--	5.1E+2 to 1.2E+10	4.5E+2 to 1.3E+9	--	50 to 1.3E+11	--	ohms	ASTM D257
--	--	--	--	5.8E+2 to 3.0E+11	--	ohms	IEC 60093
Volume Resistivity							
--	10 to 1.2E+8	10 to 1.4E+9	--	1.4E-5 to 2.5E+7	--	ohms·cm	ASTM D257
--	--	--	--	2.4E+2 to 2.5E+13	--	ohms·cm	IEC 60093
Insulation Resistance	--	--	--	1.0E+3 to 1.0E+9	--	ohms	IEC 60167

Fill Analysis	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit	Test Method
Melt Viscosity	--	--	--	150 to 920	--	Pa·s	ASTM D3835

Product Comparison

Injection	Generic PESU - Carbon Fiber	Generic PEI - Carbon Fiber	Generic PVDF - Carbon Fiber	Generic PEEK - Carbon Fiber	Generic PI, TP - Carbon Fiber	Unit
Drying Temperature	148 to 149	148 to 150	121 to 135	120 to 152	--	°C
Drying Time	4.0 to 6.1	3.9 to 5.1	2.0 to 4.0	3.0 to 7.0	--	hr
Suggested Max Moisture	0.040 to 0.050	0.020 to 0.040	--	0.020 to 0.10	--	%
Rear Temperature	--	360 to 371	--	354 to 376	--	°C
Middle Temperature	--	365 to 380	--	367 to 400	--	°C
Front Temperature	--	370 to 390	--	372 to 399	--	°C
Nozzle Temperature	--	394 to 395	--	365 to 382	--	°C
Processing (Melt) Temp	360 to 362	369 to 381	223 to 249	369 to 395	--	°C
Mold Temperature	149 to 156	149 to 161	77 to 93	152 to 200	--	°C
Injection Pressure	86.2 to 87.8	--	--	103 to 105	--	MPa
Back Pressure	0.500 to 0.675	0.500 to 0.517	--	0.500 to 0.675	--	MPa
Screw Speed	55 to 80	55 to 56	--	55 to 80	--	rpm
Vent Depth	--	0.051 to 0.057	--	--	--	mm