Product Comparison

Technical Data

Product Description	
Generic PAI	This data represents typical values that have been calculated from all products classified as: Generic PAI This information is provided for comparative purposes only.
Generic PAEK	This data represents typical values that have been calculated from all products classified as: Generic PAEK This information is provided for comparative purposes only.
Generic PTFE	This data represents typical values that have been calculated from all products classified as: Generic PTFE This information is provided for comparative purposes only.
Generic PVDF	This data represents typical values that have been calculated from all products classified as: Generic PVDF This information is provided for comparative purposes only.
Generic PEEK	This data represents typical values that have been calculated from all products classified as: Generic PEEK This information is provided for comparative purposes only.

General	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK
Manufacturer / Supplier	• Generic	• Generic	• Generic	• Generic	• Generic
Generic Symbol	• PAI	• PAEK	• PTFE	• PVDF	• PEEK
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

Physical	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Density / Specific Gravity							
--	1.40 to 1.59	1.29 to 1.32	2.12 to 2.20	1.64 to 1.79	1.28 to 1.30	g/cm³	ASTM D792
--	--	--	2.15 to 2.31	1.75 to 1.80	1.28 to 1.30	g/cm³	ISO 1183
--	--	--	--	--	1.31 to 1.32	g/cm³	ASTM D1505

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Physical	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Apparent (Bulk) Density							
--	--	--	0.32 to 0.83	--	--	g/cm³	ASTM D1895
--	--	--	0.44 to 0.56	--	0.29 to 0.75	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR)							
230°C/5.0 kg	--	--	--	1.8 to 24	--	g/10 min	ASTM D1238
400°C/2.16 kg	--	--	--	--	2.5 to 36	g/10 min	ASTM D1238
380°C/5.0 kg	--	--	--	--	8.0 to 90	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)							ISO 1133
230°C/5.0 kg	--	--	--	0.50 to 10	--	cm³/10min	
380°C/5.0 kg	--	--	--	--	7.0 to 71	cm³/10min	
Spiral Flow	--	--	--	--	11.0 to 70.0	cm	
Molding Shrinkage							
Flow	--	--	2.6 to 5.8	2.5 to 2.6	0.67 to 1.6	%	ASTM D955
Across Flow	--	--	--	--	1.1 to 1.8	%	ASTM D955
--	--	--	2.8 to 6.5	2.0 to 3.0	0.87 to 1.3	%	ISO 294-4
Water Absorption							
24 hr	0.28 to 0.41	0.022 to 0.21	0.010 to 0.10	0.039 to 0.043	0.020 to 0.21	%	ASTM D570
24 hr, 23°C	--	--	--	0.040 to 0.042	0.020 to 0.50	%	ISO 62
Saturation	--	--	--	0.020 to 0.052	0.17 to 1.7	%	ASTM D570
Saturation, 23°C	--	--	--	0.018 to 0.030	0.061 to 0.51	%	ISO 62
Equilibrium	--	--	0.010 to 0.10	0.028 to 0.10	--	%	ASTM D570
Equilibrium, 23°C, 50% RH	--	--	--	0.0 to 0.40	0.12 to 0.21	%	ISO 62

Mechanical	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Tensile Modulus							
--	3450 to 6860	2900 to 4430	533 to 1750	68.8 to 2350	2910 to 4190	MPa	ASTM D638
--	--	2.50 to 19800	--	276 to 2620	3030 to 4150	MPa	ISO 527-1

Product Comparison

Mechanical	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Tensile Strength							
Yield	--	--	18.6 to 34.5	15.1 to 57.6	78.7 to 115	MPa	ASTM D638
Yield	--	86.6 to 96.2	--	11.0 to 56.4	93.7 to 111	MPa	ISO 527-2
Break	--	--	--	21.4 to 46.1	35.6 to 98.5	MPa	ASTM D638
Break	--	--	--	--	68.4 to 78.1	MPa	ISO 527-2
--	62.1 to 152	84.0 to 169	9.70 to 42.0	25.0 to 35.1	87.3 to 104	MPa	ASTM D638
--	--	--	--	--	93.1 to 101	MPa	ISO 527-2
Tensile Elongation							
Yield	--	--	200 to 450	6.3 to 19	4.9 to 10	%	ASTM D638
Yield	--	--	--	7.9 to 19	4.2 to 5.1	%	ISO 527-2
Break	0.80 to 15	0.90 to 41	200 to 450	3.0 to 480	1.5 to 62	%	ASTM D638
Break	--	0.90 to 41	42 to 380	23 to 110	1.0 to 46	%	ISO 527-2
Nominal Tensile Strain at Break	--	--	--	50	8.5 to 51	%	ISO 527-2
Flexural Modulus							
--	3590 to 5220	3000 to 3570	552 to 2440	265 to 2850	3240 to 4670	MPa	ASTM D790
--	--	3000 to 17300	--	630 to 1650	3020 to 4220	MPa	ISO 178
Flexural Strength							
--	86.7 to 241	124 to 212	--	25.8 to 69.8	96.1 to 185	MPa	ASTM D790
--	--	70.0 to 290	--	--	9.00 to 179	MPa	ISO 178
Yield	--	--	--	--	110 to 172	MPa	ASTM D790
Compressive Modulus	--	--	--	--	3370 to 3460	MPa	ASTM D695
Compressive Strength							
--	136 to 221	--	11.7 to 12.6	31.2 to 92.3	118 to 171	MPa	ASTM D695
--	34.0 to 145	--	10.0 to 25.0	--	22.3 to 204	MPa	ISO 604
Shear Strength	--	--	9.31 to 21.1	--	19.9 to 95.4	MPa	ASTM D732
Coefficient of Friction	0.030 to 0.48	--	0.045 to 0.25	0.14 to 0.34	0.20 to 0.33		ASTM D1894
Taber Abrasion Resistance	--	--	--	6.74 to 31.1	--	mg	ASTM D1044
Deformation Under Load	--	--	3.00 to 17.0	--	--	%	ASTM D621
Wear Factor	1.4 to 650	--	16 to 5000	--	40 to 770	10^-8 mm³/N·m	ASTM D3702

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Films	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Tensile Strength - MD (Yield)	--	--	1.38 to 124	--	--	MPa	ASTM D882
Tensile Elongation - MD (Break)	--	--	89 to 340	--	--	%	ASTM D882
Elastomers	**Generic PAI**	**Generic PAEK**	**Generic PTFE**	**Generic PVDF**	**Generic PEEK**	**Unit**	**Test Method**
Tensile Strength	--	--	12.0 to 22.5	--	--	MPa	ASTM D412
Tensile Elongation (Break)	--	--	67 to 200	--	--	%	ASTM D412
Impact	**Generic PAI**	**Generic PAEK**	**Generic PTFE**	**Generic PVDF**	**Generic PEEK**	**Unit**	**Test Method**
Charpy Notched Impact Strength	--	--	--	5.0 to 16	4.8 to 7.0	kJ/m²	ISO 179
Charpy Unnotched Impact Strength	--	--	--	180 to 240	3.5 to 190	kJ/m²	ISO 179
Notched Izod Impact							
--	27 to 140	4.0 to 100	--	100 to 1000	41 to 93	J/m	ASTM D256
--	--	5.8 to 7.6	--	--	4.4 to 9.1	kJ/m²	ISO 180
Notched Izod Impact (Area)	--	--	--	2.70 to 4.56	--	kJ/m²	ASTM D256
Unnotched Izod Impact							
--	--	--	--	2600 to 2700	44 to 2100	J/m	ASTM D4812
--	--	--	--	--	5.5 to 100	kJ/m²	ISO 180
Hardness	**Generic PAI**	**Generic PAEK**	**Generic PTFE**	**Generic PVDF**	**Generic PEEK**	**Unit**	**Test Method**
Rockwell Hardness							
--	--	--	29 to 32	--	89 to 107		ASTM D785
--	--	--	--	--	87 to 107		ISO 2039-2
Durometer Hardness							
--	--	--	54 to 59	53 to 78	85 to 90		ASTM D2240
--	--	--	60 to 68	68 to 80	84 to 88		ISO 868

Product Comparison

Thermal	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Deflection Temperature Under Load							
0.45 MPa, Unannealed	--	--	--	65.0 to 134	--	°C	ASTM D648
0.45 MPa, Unannealed	--	--	--	54.8 to 136	205 to 211	°C	ISO 75-2/B
1.8 MPa, Unannealed	277 to 279	--	--	44.9 to 111	146 to 164	°C	ASTM D648
1.8 MPa, Unannealed	--	--	--	31.0 to 111	149 to 156	°C	ISO 75-2/A
1.8 MPa, Annealed	--	--	--	--	155 to 162	°C	ASTM D648
Continuous Use Temperature	--	--	259 to 260	--	240 to 264	°C	ASTM D794
Glass Transition Temperature							
--	--	--	--	-40.3 to -34.8	143 to 150	°C	ASTM E1356
--	--	--	--	-40.1 to -39.9	143 to 150	°C	ISO 11357-2
--	--	--	--	--	147 to 150	°C	DSC
Vicat Softening Temperature	--	--	--	75.0 to 173	304 to 335	°C	ISO 306
Melting Temperature							
--	--	--	327 to 344	156 to 175	334 to 343	°C	
--	--	--	--	--	340	°C	DSC
--	--	--	--	134 to 178	340 to 344	°C	ISO 11357-3
--	--	--	327	159 to 176	338 to 344	°C	ASTM D3418
Peak Crystallization Temperature (DSC)	--	--	--	135 to 141	--	°C	ASTM D3418
CLTE							
Flow	--	--	--	1.1E-4 to 2.4E-4	4.4E-5 to 4.8E-5	cm/cm/°C	ASTM D696
Flow	--	--	--	--	4.2E-5 to 5.0E-5	cm/cm/°C	ASTM E831
Flow	3.5E-5 to 5.0E-5	--	5.0E-5 to 1.8E-4	1.2E-4 to 1.6E-4	3.1E-5 to 1.3E-4	cm/cm/°C	ISO 11359-2
Transverse	--	--	--	--	5.3E-5 to 1.4E-4	cm/cm/°C	ISO 11359-2
Specific Heat	--	1170 to 2000	--	832 to 1610	1290 to 1990	J/kg/°C	ASTM C351
Thermal Conductivity							
--	0.26 to 0.27	0.21 to 0.25	--	0.16 to 0.20	0.24 to 0.31	W/m/K	ASTM C177
--	--	--	--	--	0.24 to 0.36	W/m/K	ISO 8302
RTI Elec	--	--	--	130 to 150	258 to 260	°C	UL 746B
RTI Imp	--	--	--	130 to 150	179 to 260	°C	UL 746B

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Thermal	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
RTI Str	--	--	--	130 to 150	240 to 260	°C	UL 746B
Electrical	**Generic PAI**	**Generic PAEK**	**Generic PTFE**	**Generic PVDF**	**Generic PEEK**	**Unit**	**Test Method**
Surface Resistivity							
--	--	--	--	5.0E+11 to 2.5E+14	1.0E+2 to 1.9E+17	ohms	ASTM D257
--	--	--	--	1.0E+4 to 1.0E+15	5.1E+4 to 1.0E+18	ohms	IEC 60093
Volume Resistivity							
--	--	--	--	0.80 to 2.5E +14	10 to 1.9E+16	ohms·cm	ASTM D257
--	--	--	--	2.0E+14	5.1E+5 to 1.2E+17	ohms·cm	IEC 60093
--	--	--	--	--	9.8E+12 to 1.0E+13	ohms·m	IEC 62631-3-1
Dielectric Strength							
--	--	--	17 to 160	8.9 to 300	12 to 26	kV/mm	ASTM D149
--	--	--	--	18 to 23	15 to 24	kV/mm	IEC 60243-1
Dielectric Constant							
--	3.87 to 4.20	3.06 to 3.13	2.05 to 2.10	6.46 to 10.1	2.73 to 3.54		ASTM D150
--	--	--	--	--	2.80 to 3.23		IEC 60250
--	--	--	--	8.71	--		IEC 60250
--	--	--	--	--	2.81		IEC 62631-2-1
Dissipation Factor							
--	0.025 to 0.034	1.0E-3 to 4.1E-3	2.0E-4 to 2.1E-3	0.010 to 0.12	9.0E-4 to 0.076		ASTM D150
--	--	--	--	0.018 to 0.23	1.0E-3 to 4.1E-3		IEC 60250
--	--	--	--	--	2.0E-3 to 5.2E-3		IEC 62631-2-1
Comparative Tracking Index	--	--	--	--	149 to 200	V	IEC 60112
Insulation Resistance	--	--	--	--	9.8E+11 to 1.0E+12	ohms	IEC 60167

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Flammability	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Glow Wire Ignition Temperature	--	--	--	--	800 to 875	°C	IEC 60695-2-13
Oxygen Index							
--	--	--	--	41 to 44	35 to 40	%	ASTM D2863
--	--	--	--	43 to 44	35 to 38	%	ISO 4589-2

Optical	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Refractive Index	--	--	--	1.410 to 1.420	--		ASTM D542

Fill Analysis	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit	Test Method
Melt Viscosity	--	235 to 245	--	6.00 to 2730	90.0 to 580	Pa·s	ASTM D3835

Injection	Generic PAI	Generic PAEK	Generic PTFE	Generic PVDF	Generic PEEK	Unit
Drying Temperature	--	135 to 180	--	--	120 to 152	°C
Drying Time	--	--	--	--	3.0 to 5.1	hr
Suggested Max Moisture	--	--	--	--	0.020 to 0.10	%
Rear Temperature	--	354 to 380	--	--	346 to 379	°C
Middle Temperature	--	365 to 380	--	--	354 to 395	°C
Front Temperature	--	370 to 381	--	--	357 to 400	°C
Nozzle Temperature	--	374 to 380	--	--	368 to 379	°C
Processing (Melt) Temp	--	--	--	--	370 to 395	°C
Mold Temperature	--	163 to 205	--	--	180 to 200	°C
Injection Pressure	--	--	16.0 to 69.2	--	101 to 105	MPa
Back Pressure	--	--	--	--	0.500 to 0.613	MPa
Screw Speed	--	--	--	--	55 to 75	rpm