Physical Material Guiding Values

Material		Nylon Cast PA6C	Nylon Oil Filled	Nylon PA6	Nylon PA66	POM-C	PET	PTFE [Teflon]	HDPE PE300	HMW-PE PE500	UHMW-PE PE1000	pp	PEEK
Mechanical Properties													
Density	g/cm³	1.15	1.14	1.14	1.14	1.41	1.38	2.18	0.95	0.95	0.94	0.91	1.32
Yield Stress	MPa	80/60	80/55	70/45	85/65	65	80	25	18	20	22	32	95
Elongation at break	%	40/100	50/120	50/180	30/150	4	40	380	>50	>50	350	70	45
E-Module (Tensile)	MPa	3,100/1,800	2,800/1,700	2,700/1,800	3,000/1,900	3,000	3,000	750	1000	1300	800	1,400	3,600
E-Module (Bending)	MPa	3,400/2,000	3,000/1,900	2,500/1,400	2,900/1,200	2,900	2,600	540	1000	1300	800	1,400	4,100
Flexural strength	MPa	140/60	135/55	130/40	135/60	115	125	6			27	45	160
Impact strength	KJ/m²	o. B.	o. B.	o. B.	o. B.	o. B.	82	o. B.	o. B.	o. B.	o. B.	o. B.	o. B.
Notched-bar impact strength	KJ/m²	>4/>15	>5/>15	>3/o.B.	>3/>15	>10	14	16	o. B.	o. B.	o. B.	7	7
Ball indentation Hardness $H_{358/30}$	MPa	160/125	150/100	160/70	170/100	150	140	30	-	50	40	70	230
Creep rate stress at 1% elongation	MPa	>7	>7	>8	>8	13	13	1.5	-	-	-	4	-
Sliding friction coefficient against steel (dry running) [3]	-	0.36/0.42	0.15/0.20	0.38/0.42	0.35/0.42	0.32	0.25	0.08	0.30	0.25	0.29	0.35	0.34
Sliding wear against steel (dry running) [3]	µm/km	0.10	0.03	0.23	0.1	8.9	0.35	21.0			0.45	11.0	-
Thermal Properties													
Melting temperature	ºC	+220	+220	+218	+265	+168	+255	+327	+127	+133	+133	+162	+340
Thermal conductivity	W//(k m)	0.23	0.23	0.23	0.23	0.31	0.25	0.23	0.38	0.38	0.38	0.22	0.25
Specific thermal capacity	J/(g K)	1.7	1.7	1.7	1.7	1.45	1.1	1			1.84	1.7	1.06
Coefficient of linear expansion	10^{-5} - K^{-1}	7-8	7-8	8-9	9-10	9-10	7-8	18-20	14	16	20	16	4-5
Operating temperature range (long-term)	ºC	-40 to +105	-40 to +105	-30 to +100	-30 to +100	-30 to +100	-20 to +100	-200 to +260	-50 TO +80	-50 TO +80	-260 to +50	0 to +80	-40 to +250
Operating temperature range (short-term)	ºC	+170	+160	+140	+150	+140	+160	+280	+80	+80	+80	+100	+310
Fire behaviour after UL 94 IEC 60695	-	HB	HB	HB	HB	HB	HB	V-0	HB	HB	HB	HB	V-0
Electrical Properties													
Dielectric constant [6] IEC 60250	-	3.7	3.7	7	5.0	3.9	3.6	2.1	2.4	2.4	3	2.25	3.2
Dielectric loss facto [6]	-	0.03	0.03	0.3	0.2	0.003	0.008	0.0005	0.0002	0.0002	0.0004	0.00033	0.002
Specific volume resistance	Ω-cm	$10^{15}/10^{12}$	$10^{15}/10^{12}$	$10^{15}/10^{12}$	$10^{15}/10^{12}$	10^{15}	10^{16}	10^{18}	10^{14}	10^{14}	$>10^{16}$	$>10^{16}$	10^{16}
Surface resistance	Ω	$10^{13}/10^{12}$	$10^{13}/10^{12}$	$10^{13}/10^{10}$	$10^{12}/10^{10}$	10^{13}	10^{14}	10^{17}	10^{12}	10^{12}	10^{14}	10^{14}	10^{16}
Dielectric strength	KV/mm	50/20	50/20	50/20	50/20	20	50	40	45	46	44	52	24
Creep resistance	-	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600	CM 600	CTI 150
Moisture absorption in NK	$W(H_2O)$%	2.2	1.8	3.0	2.5	0.2	0.25	0.01	0.01	0.01	0.01	<0.01	0.2
Water absorption until saturated	W_5%	6.5	5.5	10.0	9.0	0.8	0.5	<0.01	<0.1	<0.01	<0.01	<0.01	0.45

*** The below information is given in good faith and must only be used as a guideline / overview. These are average values obtained on test specimens under specific conditions. Values are not a legally binding assurance of a product's suitability for use in a specific application. Technical data on other plastics is available upon request.

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