

MATERIAL PROPERTIES

PROPERTIES	UNITS	ASTM test method	Nylon 6/6 (Molded)	Nylon 6/6 30% glass-filled	Polyphenyl-sulfone (Radel®R*)	Acetal (homo-polymer)	Polycarbonate
Tensile strength at yield	psi Mpa	D-638	9000 62	25,000 172	10,100 70	9700-10,000 68	9000 62
Elongation at yield at fail	% %	D-638	20 200	5-10 40	7.2 60-120	NR 4	100-130 135
Flexural Modulus at yield	10 ³ psi Mpa	D-790	190 1310	800-900 5516-6206	350 2413	380-430 2620-2965	340-350 2344-2413
Izod impact strength notched	ft-lb/in joules/m	D-256	3.0 160	2 107	13 694	1.2-2.3 64-123	17 908
Deflection temp. at 66 psi at 264 psi	°F (°C) °F (°C)	D-648	430 (221) 160 (71)	500 (260) 485-490 (251-255)	417 (214) 405 (207)	330-342 (165-172) 270-277 (132-136)	300-305 (149-152) 290-295 (143-146)
Melting point	°F °C	D-789	482 250	500-509- 260-26S T _m	428T _g 220 T _g	347-358 175-181 T _m	284-302 140 -150 T _g
Dielectric strength	V/mil	D-149	550	500	380 (@.125" thk)	500	380-399
Volume resistivity	ohm-cm	D-257	2 x 10E+13	1 x 10E+15	9 x 10E+15	>1 x 10E+15	>1 x 10E+16
Water absorption	%/24hr.	D-570	1.1	0.9	0.37	.21-.25	0.15
UL flammability	----	UL 94	94 V-2	94 HB	94 V-0	94 HB	94 V-2
Rockwell Hardness	R, M scales	D-785	R105	M96	R124	M90-M94	R118
Flexural Strength	10 ³ psi Mpa	D-790	17.9 123	36-38 255	13.2 91	13.6-14.1 95	14-14.2 97
Thermal conductivity	Btu-in/hr-ft ² -°F W/m-K	C177	1.7 .25	1.4-1.5 .20-.22	2.42 .35	1.6 .23	1.3 .19
Specific Gravity	----	D-792	1.16	1.37-1.39	1.29-1.30	1.42	1.2
Max. service temperature	°F °C	----	221 105	230-240 110-116	356 180	195 91	212 100

* Radel R-5000 and R-5100 NT15

NR: Not Reported.

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MATERIAL PROPERTIES (continued)

PROPERTIES	UNITS	ASTM test method	PVC	CPVC	Polyurethane 40% long glass filled	Ultem 1000	Ultem 2300 30% glass filled
Tensile strength at yield (at break*)	psi Mpa	D-638	7450 51	8000 48	27,000 190	15,200 105	24,500* 160*
Elongation at yield at fail	% %	D-638	NR 40-80	NR NR	2 2	7-8 60	N.A. 3
Flexural Modulus at yield	10 ³ psi Mpa	D-790	400 2760	NR NR	1500 10,000	480 3300	1300 9000
Izod impact strength notched	ft-lb/in joules/M	D-256	>5.0 >270	1.5 80	8 430	1 50	2.0 110
Deflection temp. at 66 psi at 264 psi	°F (°C) °F (°C)	D-648	NR 170 (77)	215-247 (101-120) 202-234 (94-112)	NR 210 (99)	410 (210) 392 (200)	412 (212) 410 (210)
Melting point	°F °C	D-789	193-246 75-105 T _g	395 201	366 (Vicat) 186	338 (Vicat) 170	356 (Vicat) 180
Dielectric strength	V/mil	D-149	1413	1250	500	830	770
Volume resistivity	ohm-cm	D-257	1.2 x 10E+12	3.4 x 10E+15	NR	6.7 x 10E+17	3.0 x 10E+16
Water absorption	%/24hr.	D-570	0.05	0.03	0.11	0.25	0.16
UL flammability	----	UL 94	94 V-0	94 V-0	94 HB	94 V-0	94 V-0
Rockwell Hardness	R, M scales	D785	R115	R117-122	R119	M109	M114
Flexural Strength	10 ³ psi Mpa	D-790	14.45 99.63	14.5-17 109	40 275	22 150	33 230
Thermal conductivity	Btu-in/hr-ft ² -°F W/m-K	C177	.96 .14	.96 .14	NR NR	1.5 .22	1.6 .23
Specific Gravity	----	D-792	1.37	1.55	1.5	1.27	1.51
Max. service temperature	°F °C	----	140 60	200 93	150 65	338 170	342 172

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MATERIAL PROPERTIES (continued)

PROPERTIES	UNITS	ASTM test method	PCTFE	PVDF (Kynar®)	ECTFE (Halar® 300-500LC)	PTFE (Teflon®)	PFA
Tensile strength at yield (at break*)	psi Mpa	D-638	4600-5725 32-40	5000-7000 34-48	4200-4300 29-30	3000 21	4000-4300* 28-30*
Elongation at yield at fail	% %	D-638	NR 150	NR 50-250	5 250-260	NR 300	N.A. 300
Flexural Modulus at yield	10 ³ psi Mpa	D-790	185-255 1280-1750	170-325 1172-2240	242-245 1670-1690	500 3447	20 827
Izod impact strength notched	ft-lb/in joules/M	D-256	7.6 406	20-80 1068-4270	No Break No Break	3.0 160	No Break No Break
Deflection temp. at 66 psi	°F (°C)	D-648	258 (126)	234-284 (112-140)	194-197 (90-92)	260 (127)	NR
at 264 psi	°F (°C)		167 (70)	176-194 (80-90)	145-152 (63-67)	132 (55)	NR
Meltingpoint	°F °C	D-789	410-420 210-215	330 165	464 240	612 322	590 310T _m
Dielectric strength	V/mil	D-149	500	260	2000 (@.001" thk)	600	NR
Volume resistivity	ohm-cm	D-257	1.2 x 10E+18	1 x 10E+12- 1 x 10E+14	5.5 x 10E+16	>1 x 10E+18	NR
Water absorption	%/24hr.	D-570	0	<.05	<.10	<.01	NR
UL flammability	-----	UL 94	94 VE-0	94 V-0	94 V-0	94 V-0	94 V-0
Rockwell Hardness	-----	R, M scales	75-80 (Shore D)	R79-83	R90 (75 Shore D)	R58	64 (Shore D)
Flexural Strength	10 ³ psi Mpa	D-790	8.5 59	6.5-9.0 45-62	7 48.3	NR	NR
Thermal conductivity	Btu-in/hr- ft ² -°F W/m-K	C177	1.4-1.5 .20-.22	.87 .13	1.09 (@203°F) .16	1.7 .25	1.7 .25
Specific Gravity	-----	D-792	2.1	1.75	1.68	2.2	2.12-2.17
Max. service temperature	°F °C	-----	300 150	300 150	292 144	500 260	300 150

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MATERIAL PROPERTIES (continued)

PROPERTIES	UNITS	ASTM test method	MFA (640 Hyflon®)	Polypropylene	PEEK 30% glass-filled	PPS 40% glass fiber filled	LCP 40% glass-filled
Tensile strength at yield	psi Mpa	D-638	3480-4350 24-30	4000 28	22,800 157	20,500 141	16,000
Elongation at yield at fail	% %	D-638	<5 300-360	18 150	NR 2.2	.9 .9	NR 1.5
Flexural Modulus at yield	10 ³ psi Mpa	D-790	100 689.5	150 1030	1495 10,310	1900 13,100	NR
Izod impact strength notched	ft-lb/in joules/M	D-256	No Break No Break	2.0 107	1.8 96	1.5 80	1.9 101
Deflection temp. at 66 psi at 264 psi	°F (°C) °F (°C)	D-648	145 (63) NR NR	194 (90) 150 (65)	NR 600 (315)	NR >500 (260)	NR 590 (310)
Melting point	°F °C	D-789	536-554 280-290	340 171	633 334	527-554 275-290	NR
Dielectric strength	V/mil	D-149	816-912	650	190 (KV/cm)	450	510
Volume resistivity	ohm-cm	D-257	>1 x 10E+17	1 x 10E+17	4.9 x 10E+16	1 x 10E+16	1 x 10E+15
Water absorption	%/24hr.	D-570	<.03	0.01	0.11	0.115	<.01
UL flammability	----	UL 94	94 V-0	94 HB	94 V-0	94 V-0/5V	94 V-0
Rockwell Hardness	R, M scales	D785	R55-R60 (50-60 Shore D)	R85	R124, M103	R123	R80
Flexural Strength	10 ³ psi Mpa	D-790	<3 <20.7	7000 48	33.8 233	28 193	22 150
Thermal conductivity	Btu-in/hr-ft ² -°F W/m-K	C177	1.32 .19	.81 .12	1.4 .20	2.0-3.1 .29-.45	NR NR
Specific Gravity	----	D-792	2.12-2.17	0.9	1.49	1.65	1.69
Max. service temperature	°F °C	----	500 260	212 100	480 250	392 200	600 315

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