



TECHNICAL INFORMATION

General Properties of PTFE, FEP, PFA, E-CTFE and CTFE

Properties	Units	Method	PTFE	FEP	PFA	E-CTFE	CTFE
Physical							
Tensile Strength 73° F	psi	D638-D651	2500-6000	2700-3100	4000-4300	7000	4500-6000
Elongation 73° F	%	D638	150-600	250-330	300-350	200	80-250
Modulus, 73° F							
Tensile	psi	D638	95,000-115,000		—	240,000	206,000
Flexural	psi	D790	70,000-110,000	95,000	95,000-100,000	240,000	238,000
Elasticity in Tension		D747	58,000	250,000	—	—	1.5-3.0x10 ⁵
Flexural Strength, 73° F	psi	D790	Does not break	Does not break	Does not break	7000	8500
Izod Impact Strength, (½ x ½ - in. notched bar)							
+ 75° F	ft. lb/in. of notch	D256	3.0	No break	No break	No break	5.0
- 65° F	ft. lb/in. of notch		2.3	2.9	—	—	—
Tensile Impact Strength							
+ 73° F	ft. lb/sq. in.	D1822	320	1020	—	—	—
- 65° F	ft. lb/sq. in.		105	365	—	—	—
Fatigue resistance (cycles to failure)							
1000 psi stress		Sonntag	20 million	7 million	—	—	—
1400 psi stress		Universal	7 million	7.2 million	—	—	—
1450 psi stress		Machine	12,000	1,300	—	—	—
1500 psi stress			1,200	960	—	—	—
Hardness 73° F, Durometer D		D785	D50-D65	D55	D60	D75	D79
Abrasion resistance, 1000 gr load on 4" dia. disk							
Taber abrasion test, 10 cycles	wt. loss(mg)cumulative		0.35	0.30	—	—	—
Taber abrasion test, 100 cycles	wt. loss(mg)cumulative		2.2	1.0	—	—	—
Taber abrasion test, 1000 cycles	wt. loss(mg)cumulative		8.9	7.5	—	—	—
Compressive stress, 73° F	psi	D695	1700	—	—	—	4600-7400
Deformation under load							
78° F 1,000 psi 24 hrs.	%	D621	2.4	1.8	—	—	N/A
78° F 2,000 psi 24 hrs.		D621	15	—	—	—	—
122° F 2,000 psi 24 hrs.		D621	—	—	—	—	—
Specific Gravity		D792	2.14-2.24	2.12-2.17	2.12-2.17	1.68	2.10-2.13
Specific Volume	cu. in/lb.	D792	12.9-12.3	12.7-13.0	12.7-13.0	16.47	29-31
Co-efficient of Friction, static & kinetic against polished steel			0.05 - 0.08	.06 - .09	.05 - .06	.15 - .65	.2 - .3
Machining Qualities			Excellent	Excellent	Excellent	Excellent	Excellent
Clarity			Opaque	Transparent to Translucent	Translucent	Translucent	Transparent to Translucent

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Electrical							
Dielectric Strength							
Short Time, 10 mil	volts/mil	D149	2000	2000	2000	2000	2000
Short Time, 1/8 in.	volts/mil	D149	600	600	600	500	500
Step-by-Step 1/8 in.	volts/mil	D149	430	—	—	—	—
Arc Resistance	seconds	D495	>300 does not track	>300		135	>360
Volume Resistivity (50% R.H., 75° F)	ohm-cm.	D257	>10 ¹⁶	>2 x 10 ¹⁶	>10 ¹⁸	1015	>10 ¹⁶
Surface Resistivity, 100% R.H.	ohms	D257	>10 ¹⁶		>10 ¹⁷	—	10 ¹⁵
Dielectric Constant							
60 cycles		D150	2.1	2.1	2.1	—	2.6
10 ³ cycles			2.1	2.1	2.1	2.5	—
10 ⁶ cycles			2.1	2.1	2.1	2.6	—
10 ⁸ cycles			2.1	2.1	2.1	—	—
Dissipation Factor (Power Factor)							
60 cycles		D150	0.0002	0.0003	0.0002-0.0003	< 0.0005	0.02
10 ³ cycles			0.0002	0.0003	0.0002	0.003	—
10 ⁶ cycles			0.0002	0.0007	0.0003	0.009	—
10 ⁸ cycles			0.0002	—	—	—	—
Water Absorption, 24 hrs, 1/8" thick	%	D570	0.01	0.01	0.03	<.1	0
Thermal							
Co-efficient of Linear Thermal-Expansion	/°F	D696	5.5 x 10 ⁵	5.5 x 10 ⁵	6.7 x 10 ⁵	14 x 10 ⁵	2.64 x 10 ⁵
Thermal Conductivity	BTU/hr/sq ft/°F/in	Cenco Fitch	1.7	1.4	1.8	1.1	1.0
Heat Distortion Temperature							
66 psi	°F (°C)	D648	250 (121)	158 (70)	164 (73)	240 (116)	258 (126)
264 psi	°F (°C)		132 (55)	124 (51)	118 (48)	170 (77)	167 (70)
Specific Heat	BTU/lb/F		0.25	0.28	—	—	215
Burning Rate		D635	None	None	None	None	None
Continuous Service Temperature	°F (°C)		550 (288)	400 (205)	500 (260)	300 (150)	400 (200)
Melting Point	°F (°C)		—	525-563 (275-295)	575-590 (300-310)	465 (240)	410-420
Gel Point	°F (°C)		621 (327)	—	—	—	—
Resistance							
Resistance to Weathering			Excellent	Excellent	Excellent	Excellent	Excellent
Chemical Resistance			Excellent	Excellent	Excellent	Excellent	Excellent
Effect of weak or strong acids		D543	None	None	None	None	None
Effect of weak or strong alkalies		D543	None	None	None	None	None

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