

Typical Properties of Surlyn® Ionomer Grades*

			1601	1605	1650	1652	1702	1705-1	1706	1707	1802	1857	1901	2601
Resin	Units	ASTM Method												
Ion Type	-	-	Na	Na	Zn	Zn	Zn	Zn	Zn	Na	Na	Zn	Na	Na
Melt Flow Index	g/10min	D-1238	1.3	2.8	1.6	5.2	14.0	5.5	0.7	0.9	4.3	4.0	1.3	1.3
Density	g/cc	D-792	0.94	0.95	0.95	0.94	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94
Melt Point	°F (°C)	D-3418	208 (98)	203 (95)	207 (97)	212 (100)	199 (93)	203 (95)	194 (90)	198 (92)	210 (99)	190 (88)	203 (95)	207 (97)
Freeze Point	°F (°C)	D-3418	154 (68)	153 (67)	163 (73)	178 (81)	147 (61)	142 (61)	129 (54)	124 (51)	167 (75)	151 (66)	129 (54)	139 (60)
Vicat Softening Point	°F (°C)	D-1525	165 (74)	147 (64)	163 (73)	174 (79)	149 (65)	149 (65)	149 (65)	136 (58)	167 (75)	133 (56)	158 (70)	159 (71)
Blown Film**														
Ultimate Tensile Strength, MD	psi (MPa)	D-882	4900 (34)	5300 (37)	5500 (38)	3500 (24)	3600 (25)	5300 (37)	5600 (34)	5500 (38)	4100 (28)	4500 (31)	5900 (41)	4600 (32)
TD	psi (MPa)	D-882	5900 (41)	5500 (38)	5500 (38)	4100 (28)	3300 (23)	5100 (35)	5400 (41)	5200 (36)	4800 (33)	4700 (32)	5100 (35)	4400 (30)
Ultimate Elongation, MD	%	D-882	350	300	400	400	350	350	250	350	350	500	460	390
TD	%	D-882	400	300	350	400	350	400	250	350	400	450	450	390
Secant Modulus, MD	psi (MPa)	D-882	35,000 (240)	42,000 (290)	40,000 (280)	22,000 (150)	34,000 (230)	35,000 (240)	49,000 (340)	70,000 (480)	31,000 (210)	6600 (46)	24,100 (170)	40,500 (279)
TD	psi (MPa)	D-882	38,000 (260)	42,000 (290)	42,000 (290)	23,000 (160)	30,000 (200)	34,000 (230)	53,000 (360)	59,000 (410)	29,000 (200)	6500 (45)	23,600 (160)	42,100 (290)
Graves Tear, MD	g	D-1004	400	600	610	630	500	540		700	520	420	460	
TD	g	D-1004	440	630	700	610	500	560		760	520	460	440	
Elmendorf Tear Strength, MD	g/mil (N/mm)	D-1922	18 (6.9)	8.4 (3.2)	51 (20)	97 (37)	83 (31)	70 (28)	7 (2.7)	16 (6.2)	43 (17)	210 (81)	28 (11)	31 (12)
TD	g/mil (N/mm)	D-1922	19 (7.3)	8.6 (3.3)	53 (21)	97 (37)	94 (36)	80 (32)	7 (2.8)	19 (7.3)	42 (16)	280 (110)	35 (13)	36 (14)
Spencer Impact	in-lb/mil (J/mm)	D-3410	7.0 (31)	7.0 (31)	7.5 (33)	5.0 (22)	4.0 (18)	5.0 (22)	8.0 (36)	8.0 (36)	6.0 (27)	7.0 (31)	9.3 (41)	7.0 (31)
Dart Drop Strength	g/mil (g/mm)	D-1709(B)	300 (12)	250 (9.8)	250 (9.8)	150 (5.0)	150 (5.9)	180 (7.1)	250 (9.8)	350 (14)	200 (7.9)	200 (7.9)	280 (11)	240 (9.4)
Gloss, 20°		D-2547	90	50	25	50	85	70	60	80	95	20	100	104
Haze	%	D-1003	2.0	3.0	7.0	4.0	2.0	3.0	4.0	2.0	2.0	7.0	2.0	1.3
Clarity	%	D-1746	60-80	40-60	40-60	20-40	45-65	25-45		40-60	50-70	25-45	45-65	
Permeability - WVTR (2-mil film)	g/100 in ² -day-atm (g/m ² -day-atm)	38 °C, 100% RH	0.8 (12)	0.8(12)	0.8 (12)	0.6 (9)	0.7 (11)	0.9 (14)	0.8 (12)	0.8 (12)	1.0 (16)	2.0 (31)	1.6 (24)	
Permeability - OTR (2-mil film)	cc/100 in ² -day-atm (cc/m ² -day-atm)	23 °C, 50% RH	265 (4100)	200 (3100)	220 (3400)	180 (2800)	175 (2700)	175 (2700)	165 (2600)	165 (2600)	215 (3300)	275 (4300)	250 (3800)	



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