

Property Comparison of Eastman™ Clear Medical-Grade Plastics

		Injection Molded Properties																			
Physical Comparison	ASTM Test Method	Eastman DuraStar™ Polymers			Eastman Eastar™ Polyester	Eastman Eastar™ Copolyesters				Eastman Eastalloy™ Polymers		Eastman Provista™ Copolymers	Eastman Tenite™ Cellulosics			Eastman EcdeI™ Elastomers					
		MN611	MN621	MN631	MN052	MN058	MN021	MN211		MN005	MN006	MB002	DA003	MA510	MP002	350A-14 ^a	360A-7	360A-16	9965	9966	9967
Physical Properties																					
Clarity																					
Haze (%)	D1003	0.3	0.3	0.3	—	<1	1	0.3		1	0.4	1.3	3.6	0.5	1.3	<8.5%	<8.5%	<8.5%	1 ^b	1 ^b	1 ^b
Transmittance (%)	D1003	91	91	91	—	82	84	91		90	89	91	81	87	91	>90	>90	>90	93 ^b	93 ^b	94 ^b
Notched Impact, Notched J/m (ft-lb/in.), 0.125 in.	D256	80 (1.5)	370 (7)	80 (1.5)	51 (1)	51 (1)	40 (0.8)	101 (1.9)		NB ^c	NB ^c	NB ^c	NB ^c	NB ^c	NB ^c	416 (7.8)	203 (3.8)	>533 (>10)	NB ^c	NB ^c	NB ^c
Flex Modulus MPa (10 ⁵ psi)	D790	2,000 (2.9)	1,900 (2.8)	1,900 (2.7)	2,500 (3.6)	2,400 (3.5)	2,500 (3.6)	2,100 (3.0)		1,900 (2.7)	1,800 (2.6)	1,900 (2.7)	2,140 (3.1)	2,100 (3.1)	1,900 (2.7)	1,500 (2.2)	1,900 (2.7)	1,200 (1.8)	150 (2.2)	150 (2.2)	150 (2.2)
Elongation @ Break (%)	D638	300	310	300	—	90	120	110		260	330	300	150	195	300	40	50	45	300	400	400
Tensile Strength @ Break MPa (psi)	D638	51 (7,400)	53 (7,700)	43 (6,300)	26 (3,800)	24 (3,500)	25 (3,600)	28 (4,100)		38 (5,600)	54 (7,800)	48 (7,000)	60 (8,700)	56 (8,175)	48 (7,000)	37 (5,300)	41 (5,900)	30 (4,400)	20 (2,900)	22 (3,200)	23 (3,300)
Tensile Strength @ Yield MPa (psi)	D638	47 (6,900)	46 (6,700)	50 (7,200)	57 (8,300)	58 (8,400)	58 (8,400)	51 (7,300)		47 (6,800)	45 (6,500)	47 (6,900)	56 (8,100)	50 (7,230)	47 (6,900)	32 (4,600)	41 (6,000)	27 (3,900)	14 (2,030)	14 (2,030)	13 (1,900)
Heat Deflection Temperature @ 66 psi °C (°F)	D648	75 (165)	73 (164)	70 (163)	66 (151)	69 (156)	69 (156)	70 (158)		70 (158)	73 (163)	73 (163)	103 (218)	90 (195)	73 (163)	84 (183)	92 (198)	80 (176)	58 (136)	58 (136)	58 (136)
Heat Deflection Temperature @ 264 psi °C (°F)	D648	65 (149)	65 (149)	65 (149)	62 (144)	63 (145)	65 (149)	63 (145)		67 (152)	64 (147)	63 (145)	90 (194)	77 (170)	63 (145)	76 (169)	82 (180)	72 (162)	46 (115)	44 (111)	42 (108)
Specific Gravity	D792	1.2	1.19	1.19	1.32	1.33	1.33	1.27		1.23	1.23	1.25	1.2	1.2	1.25	1.2	1.21	1.19	1.13	1.13	1.13
Vicat Softening Point °C (°F)	D1525	—	—	—	79 (174)	80 (176)	—	85 (185)		84 (183)	88 (190)	85 (185)	118 (244)	—	85 (185)	100 (212)	107 (225)	92 (198)	170 (338)	170 (338)	170 (338)
T _g °C (°F)	—	87 (189)	87 (189)	87 (189)	80 (176)	80 (176)	80 (176)	81 (178)		84 (183)	85 (185)	85 (185)	117 (243)	110 (230)	85 (185)	110 (230)	118 (244)	97 (207)	-3 (27)	-3 (27)	-3 (27)
Barrier																					
Oxygen	—	●	●	●	●	●	●	●		●	●	●	●	●	●	○	○	○	●	●	●
Water	—	●	●	●	●	●	●	●		●	●	●	●	●	●	○	○	○	○	○	○
Processing																					
Drying Temperature	—	160°F 70°C	160°F 70°C	160°F 70°C	300–320°F 150–160°C	300–320°F 150–160°C	300–320°F 150–160°C	160°F 70°C		160°F 70°C	160°F 70°C	160°F 70°C	200°F 93°C	190°F 88°C	160°F 70°C	160°F 70°C	160°F 70°C	160°F 70°C	150°F 65°C	150°F 65°C	150°F 65°C
Drying Time	—	3–4 hrs	3 hrs	4 hrs	4–6 hrs	4–6 hrs	4–6 hrs	4–6 hrs		6 hrs	6 hrs	4–6 hrs	4–6 hrs	4–6 hrs	4–6 hrs	4 hrs	4 hrs	4 hrs	4 hrs	4 hrs	4 hrs
Melt Temperature	—	450–530°F 230–280°C	480–550°F 250–290°C	450–530°F 230–280°C	530–565°F 275–295°C	530–565°F 275–295°C	530–565°F 275–295°C	480–520°F 250–270°C		480–520°F 250–270°C	480–520°F 250–270°C	430–450°F 220–235°C	520–550°F 270–290°C	520–550°F 270–290°C	415–440°F 210–225°C	390–430°F 200–225°C	390–430°F 200–225°C	390–430°F 200–225°C	435–500°F 225–260°C	435–500°F 225–260°C	435–500°F 225–260°C
Mold Temperature	—	60–80°F 15–30°C	60–80°F 15–30°C	60–80°F 15–30°C	50–90°F 10–30°C	60–80°F 15–30°C	50–90°F 10–30°C	60–100°F 15–40°C		60–80°F 15–30°C	60–100°F 15–40°C	40–90°F 5–32°C	90–150°F 30–65°C	90–140°F 30–60°C	60–100°F 15–40°C	130–140°F 55–60°C	130–140°F 55–60°C	130–140°F 55–60°C	120–180°F 50–80°C	120–180°F 50–80°C	120–180°F 50–80°C
Injection Speeds	—	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate		slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate	slow to moderate
Product Summary																					
Sterilization																					
Gamma	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
EtO	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
E-Beam	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
Gas Plasma	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
Autoclave	—	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	●	●	●
Joining																					
Solvent Bonding	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
Ultrasonic Bonding	—	●	●	●	●	●	●	●		●	●	●	●	●	●	○	○	○	○	○	○
Laser Welding	—	●	●	●	●	●	●	●		●	●	●	●	●	●	○	○	○	○ ^d	○ ^d	○ ^d
Adhesives	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
Swaging (Cold Bending)	—	●	●	●	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○
Radio Frequency Welding	—	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○
Thermal Bonding	—	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○
Process																					
Injection Molded	—	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	○	○	○
Extrusion Blow Molded	—	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○
Injection Blow Molded	—	●	●	●	●	○	●	●		○	○	○	○	○	○	○	○	○	○	○	○

^aNot medical-grade ^bFilm properties ^cNo break ^dWith special additives

● Excellent ● Good ● Average ● Fair ○ Poor