Mechanical Properties of Plastic Materials

Material	Formula	Abrasive resistance - ASTM D1044 mg/1000 cycles	Coefficient of friction	Compression set after 24 hr at 175C %	Compressive modulus GPa	Compressive strength MPa	Elongation at break %	Hardness - Rockwell	Izod impact strength J m^{-1}	Poisson's ratio	Tear strength N mm^{-1}	Tensile modulus GPa	Tensile strength MPa
Cellulose Acetate Butyrate	CAB	-	-	-	-	-	60	99	260	-	-	0.3-2.0	20-60
Ethylene-Chlorotrifluoroethylene copolymer	E-CTFE	5	0.07-0.08	-	-	-	200	R95	<1000	-	-	1.4-1.6	48
Ethylene-Tetrafluoroethylene Copolymer	ETFE	-	-	-	-	-	250-350	R50	>1000	-	-	0.8	28-48
Fluorinated Ethylene Propylene Copolymer	FEP	-	0.27-0.67	-	-	-	150-300	R25-45, 60 Shore D	No break	0.48	-	0.5 - 0.6	14 - 30
Polyacrylonitrile-butadiene-styrene	ABS	-	0.5	-	-	-	45	R100-110	200-400	0.35	-	2.1-2.4	41-45
Polyamide - Nylon 6	PA 6	5	0.2-0.3	-	-	-	-	M82	30-250	0.39	-	2.6-3.0	78
Polyamide - Nylon 6, 6	PA 6,6	3-5	0.2-0.3	-	-	-	-	M89	40-110	0.41	-	3.3	82
Polyamide - Nylon 6, 6 - 30% Carbon Fiber Reinforced	PA 6, 6 - 30% CFR	-	-	-	-	-	2	-	-	-	-	24	260

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Polyamide - Nylon 6, 6 - 30% Glass Fiber Reinforced	PA 6,6 30% GFR	-	-	-	-	-	5	M100	120	-	-	10-11	160-210
Polyamide - Nylon 12	PA 12	-	-	-	-	-	290-300	R84-107	-	-	-	-	50-55
Polyamide/imide	PAI	-	-	-	-	170-220	7-15	E72-86	60-140 - notched	0.38	-	4.5-6.8	110-190
Polybenzimidazole	PBI	-	0.19-0.27	-	6.2	400	3	K115	590 unnotched	0.34	-	5.9	160
Polybutylene terephthalate	PBT	-	-	-	-	-	250	M70	60	-	-	2	50
Polycarbonate	PC	10-15	0.31	-	-	>80	100-150	M70	600-850	0.37	-	2.3-2.4	55-75
Polycarbonate - 30% Carbon Fiber Reinforced	PC - 30% CFR	-	-	-	-	-	2	-	-	-	-	18	170
Polycarbonate - 30% Glass Fiber Filled	PC - 30% GFR	-	-	-	-	-	3	-	-	-	-	5.8	70
Polycarbonate - Conductive	PC	-	-	-	-	-	5-9	-	-	-	-	~3.8	60-70
Polychlorotrifluoroethylene	PCTFE	-	-	-	-	9-12	80-250	R75-112	D75-90 - Shore	267	-	-	1.3-1.8
		-	-	-	-	-	-	D75-90 - Shore	-	-	-	-	-
Polyetheretherketone	PEEK	-	0.18	-	-	-	50	M99	85	0.4	-	3.7-4.0	70-100
Polyetherimide	PEI	10	-	-	2.9	140	60	R125	50	0.44	-	2.9	85

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Polyethersulfone	PES	6	-	-	-	-	40-80	M88	85	0.4	-	2.4-2.6	70-95
Polyethylene - High density	HDPE	-	0.29	-	-	-	-	D60-73 - Shore	20-210	0.46	-	0.5-1.2	15-40
Polyethylene - Low Density	LDPE	-	-	-	-	-	400	D41-46 - Shore	>1000	-	-	0.1-0.3	5-25
Polyethylene - U.H.M.W.	UHMW PE	-	0.1-0.2	-	-	-	500	R50-70	>1000	0.46	-	0.2-1.2	20-40
Polyethylene terephthalate	Polyester, PET, PETP	-	0.2-0.4	-	-	-	-	M94-101	13-35	0.37-0.44(oriented)	-	2-4	80, for biax film 190-260
Polyimide	PI	-	0.42	-	-	-	8-70	E52-99	80	-	-	2.0-3.0	70-150
Polymethylmethacrylate	PMMA, Acrylic	-	-	-	-	-	2.5-4	M92-100	16-32	0.35 - 0.4	-	2.4-3.3	80
Polymethylpentene	TPX®	-	-	-	-	-	15	R85	49	-	-	1.5	25.5
Polyoxymethylene - Copolymer	Acetal - Copolymer POMC	-	-	-	-	-	15 - 40	M80	70-80	0.35	-	2.3 - 2.8	60-70
Polyoxymethylene - Homopolymer	Acetal - Homopolymer POMH	-	0.2 - 0.35	-	-	-	40 - 75	M94	75 - 130	0.35	-	2.9 - 3.1	70
Polyphenyleneoxide	PPO (modified), PPE (modified)	20	0.35	-	-	-	50	M78/R115	200	0.38	-	2.5	55-65
Polyphenyleneoxide (modified), 30% Glass Fiber Reinforced	PPO 30% GFR	35	-	-	-	-	2-3	L108	80	0.27	-	8-9	100-120
Polyphenylenesulfide - 40% Glass Fiber Reinforced	PPS - 40% GFR	-	-	-	-	-	1.2	R123	75-80	-	-	7.6-12.0	124-160
Polyphenylsulfone	PPSu	-	-	-	-	-	30	M80	-	-	-	2.5	76

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Polypropylene	PP	13-16	0.1-0.3	-	-	-	150-300, for biax film >50	R80-100	20-100	-	-	0.9-1.5, for biax film 2.2-4.2,	25-40, for biax film 130-300,
Polystyrene	PS	-	-	-	-	-	1.6	M60-90	19-24	0.35	-	2.3-4.1	30-100
Polystyrene - Conductive	High Impact Conductive Polystyrene	-	-	-	-	-	36	-	no break	-	-	1.6	27
Polystyrene - Cross-linked	PS - X - Linked	60-100	-	-	-	-	3-5	R110-120	-	-	-	1.65	55-70
Polysulphone	PSu	-	-	-	-	-	50-100	M91	69	-	-	2.48	70
Polytetrafluoroethylene	PTFE	-	0.05-0.2	-	-	-	400	D50-55 - Shore	160	0.46	-	0.3-0.8	10-40
Polytetrafluoroethylene filled with Glass	PTFE 25% GF	-	0.08-0.10	-	-	-	100-300	D60-70 - Shore	144	-	-	1.7	7-20
Polyvinylchloride - Unplasticized	UPVC	-	-	-	-	-	60	R106-120	20-1000	-	-	2.5-4.0	25-70
Polyvinylfluoride	PVF	-	-	-	-	-	90-250	D80 - Shore	180	0.4	130-200 (initial)	2.1 - 2.6	55-110
Polyvinylidenefluoride	PVDF	24	0.2-0.4	-	-	-	50	R77-83	120-320	0.34	-	1.0-3.0	25-60
Silicone Elastomer	MQ /VNQ /PMQ /PVMQ	-	-	-	-	-	-	60 degrees Shore A	-	-	-	-	6.5
Tetrafluoroethylene-perfluoro(alkoxy vinyl ether) - Copolymer	PFA. Teflon PFA.	-	-	-	-	-	300	-	-	-	-	-	25

All information and technical data are given as a guide only. Although every effort has been made to ensure that the information is correct, no warranty is given as to its completeness or accuracy.

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