

Thermal Properties of Polymers

Material	Temperature Range (°C)	Density (g/cm³)	Thermal Conductivity (W/(m·K))	Young's Modulus (MPa)	Thermal Expansion Coefficient (10⁻⁶/K)	Specific Heat Capacity (J/(g·K))
ABS Acrylonitrile-butadiene-styrene copolymer	-85/95 to 105 (125)	1.03 to 1.07	0.15 to 0.20	420 to 3000	80 to 100	1.26 to 1.68
SAN Styrene-acrylonitrile copolymer	95 to 105 (125)	1.08	0.15 to 0.17	420 to 3700	60 to 80	1.18 to 1.20
ASA Acrylonitrile-styrene-acrylate copolymer	-40 to 95	1.04 to 1.07	0.17 to 0.19	(na) to 2900	85 to 105	1.3 to 1.4
SB Styrene/Polybutadiene copolymer	-90 to -50 / 80 to 90	1.05	0.17 to 0.18	(na) to 2500	70	1.2 to 1.3
PS Polystyrene	90 to 105	1.05	0.14 to 0.18	443 to 3300	50 to 70	1.3
PE-LD Polyethylene low density	<-100 to 100	0.91 to 0.93	0.3 to 0.34	140 to 498	200 to 400	1.8 to 3.4
PE-LLD Polyethylene linear low density	-125 to -70	0.91 to 0.94	(na)	(na) to 700	200	(na)
PE-HD Polyethylene high density	<-100 to 125	0.94 to 0.96	0.33 to 0.53	293 to 487	600 to 200	1.8 to 2.7
PE-UHMW Polyethylene ultra high molecular weight	(na) to 130	0.93 to 0.94	0.41 to 0.51	(na) to 490	570 to 200	1.84
EVA Polyethylene-co-vinyl acetate	-40 to +20	0.92 to 0.95	(na)	10 to 100	7 to 160	2.3
PP (isotactic) Polypropylene	0 to 20 / 160 to 165	0.90 to 0.91	0.17 to 0.25	447 to 1300	130 to 180	1.8
PB Polybutene	-25 to 130	0.89/0.91 to 0.94	0.17 to 0.22	(na) to 240/600	110 to 140	1.8 to 2.0
PIB Polyisobutylene	-73 to -44	0.91 to 0.93	0.12 to 0.20	(na) to (na)	120	1.97
PVC-P Polyvinylchloride (with plasticizer)	-50 to 80	1.16 to 1.35	0.13 to 0.20	290 to 460	25 to 120	0.8 to 0.9
PVC-U Polyvinylchloride (without plasticizer)	80	1.38 to 1.55	0.126 to 0.293	290 to 460	60 to 80	0.84 to 1.17
PVDC Polyvinylidene chloride	-18 to +15	1.63	0.13	(na)	300 to 550	190
PVAL Polyvinylalcohol	70 to 100	1.21	(na)	156 to (na)	(na)	(na)
PLA Polylactide	45 to 65 / 150 to 160	1.43 to 1.45	0.19 to 0.21	350 to 370	350 to 2800	(na)
PA11 Polyamide 11	40 (3) to 50	1.03 to 1.05	0.23 to 0.28	(na)	1400 (3)	85 to 120
PA12 Polyamide 12	40 (3) to 50	1.01 to 1.04	0.22 to 0.24	95 to 464	1400 (3)	120 to 140
PA46 Polyamide 46	80 (3) to 94	1.18 to 1.21	0.3	(na) to 3300 (3)	70 to 80	2.1
PA6 Polyamide 6	50 (3) to 80	1.12 to 1.15	0.22 to 0.33	190 to 435	2800 (3)	80 to 90
PA610 Polyamide 610	50 (3) to 80	1.07 to 1.09	0.2	210 to 230	230	(na)
PA612 Polyamide 612	55 (3) to 65	1.06	(na)	(na) to 2100 (3)	120 to 130	1.91
PA66 Polyamide 66	70 (3) to 90	1.13 to 1.16	0.24 to 0.33	185 to 430	3000 (3)	35 to 45
PBT Polybutylene terephthalate	45 (3) to 60	1.30 to 1.32	0.25 to 0.29	142 to 408	2500 to 2800	80 to 100
PET Polyethylene terephthalate	70 (3) to 80	1.32 to 1.38	0.19 to 0.21	140 to 425	2600 to 3100	100 to 117
PC Polycarbonate	<-100 to 150	1.20 to 1.24	0.19 to 0.21	480 to 485	2200 to 2400	75 to 80
PMMA Polymethylmethacrylate	115 (5) to 105 (atact.) / 45 (isotac.)	1.15 to 1.19	0.16 to 0.25	360 to 390	3100 to 3300	90 to 110
POM (homo) Polyoxymethylene (homopolymer)	-85 to -75	1.39 to 1.43	0.30 to 0.37	316 to 335	299 to 365	2600 to 3200
POM (copo) Polyoxymethylene (copolymer)	-30 to 140	1.39 to 1.43	0.23 to 0.31	181 to 192	2600 to 3200	110 to 150
PVDF Polyvinylidene fluoride	170 to 175	1.76 to 1.78	0.19	40 to 170	2000 to 2900	110 to 130
FEP Tetrafluoroethylene/hexafluoropropylene copolymer	253 to 282	2.12 to 2.17	0.25	(na)	350	80
ETFE Ethylene-tetrafluoroethylene	225 to 275	1.7	0.23	46	500 to 1100	40
PVF Polyvinylfluoride	-20 to +40	1.37 to 1.39	(na)	164	(na) to 2100	50 to 97
PA6-3-T Polyamide 6-3-T	149 to 153	1.12	0.23	(na)	2000	80
PA6/6T Polyamide 6/6T	60 to 100	1.18	(na)	(na)	(na) to 3500	70
PEI Polyetherimide	215 to 230	1.2	(na)	(na)	2900 to 3000	50
TPC Ester-Ether based TPE	60 to 75	1.0	(na)	30	420 to 440	50 to 200
NBR Acrylonitrile-butadiene rubber	-44 to 5	1.0	(na)	(na)	450 to 457	2 to 5
EP Epoxy resin	0 to 180	1.15	0.17 to 0.52	(na)	400 to 450	3000 to 5000
MF Melamine-formaldehyde resin	20 to 60	1.48 to 1.50	0.35 to 0.40	(na)	6000 to 10000	40 to 60
PF Phenol-formaldehyde resin	80 to 120	1.40 to 1.80	0.35 to 0.70	(na)	450 to 480	5600 to 12000
PUR Polyurethane	10 to 220	1.10 to 1.70	< 0.19	(na)	(na)	130 to 200
CM Chlorinated polyethylene rubber	0 to 180	1.08 to 1.27	0.11 to 0.13	337 to 341	2 to 15	7
CR Chloroprene rubber	-45 to -30	1.25	0.18 to 0.20	5 to 10	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	15 to 25
EPDM Ethylene-propylene-diene rubber	-20 to 60	0.87 to 1.20	(na)	4	350 to 460	90 to 1400
TPU Urethane based TPE	-50 to -30	1.10 to 1.25	0.19	3	330 to 400	20 to 400
TPU Urethane based TPE	135 to 220	1.85	(na)	3	330 to 400	20 to 180
CR Chloroprene rubber	45 to 75/110	0.18 to 0.20	(na)	5	382 to 458	(na) to 7.1
EPDM Ethylene-propylene-diene rubber	-55 to -30	0.86	0.26	5	470 to 487	2 to 10
HNBR Hydrogenated acrylonitrile-butadiene rubber	-30 to -10	0.95 to 1.00	(na)	(na)	460 to 465	1