

Thermal Properties of Polymers

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ABS Acrylonitrile-butadiene-styrene copolymer -85/95 to 105 (125) °C 1.03 to 1.07 g/cm ³ 0.15 to 0.20 W/(m·K) 420 to 435 °C 2200 to 3000 MPa 80 to 100 *10 ³ /K 1.26 to 1.68 J/(g·K)	SAN Styrene-acrylonitrile copolymer 95 to 110(125) °C 1.08 g/cm ³ 0.15 to 0.17 W/(m·K) 415 to 425 °C 3500 to 3700 MPa 60 to 80 *10 ³ /K 1.18 to 1.20 J/(g·K)	ASA Acrylonitrile-styrene-acrylate copolymer -50 to -40 / 95 to 105 °C 1.04 to 1.07 g/cm ³ 0.17 to 0.19 W/(m·K) 415 to 425 °C 2300 to 2900 MPa 85 to 105 *10 ³ /K 1.3 to 1.4 J/(g·K)	SB Styrene/Polybutadiene copolymer -90 to -50 / 80 to 110 °C 1.05 g/cm ³ 0.17 to 0.18 W/(m·K) 440 to 455 °C 1800 to 2500 MPa 70 to 130 *10 ³ /K 1.2 to 1.3 J/(g·K)	PS Polystyrene 80 to 105 °C 1.05 g/cm ³ 0.14 to 0.18 W/(m·K) 415 to 425 °C 3100 to 3300 MPa 50 to 70 *10 ³ /K 1.3 J/(g·K)	PE-LD Polyethylene low density -130 to -100 / -30 to -10 °C 0.91 to 0.93 g/cm ³ 0.3 to 0.34 W/(m·K) 475 to 490 °C 200 to 400 MPa 400 to 400 *10 ³ /K 1.8 to 3.4 J/(g·K)	PE-LLD Polyethylene linear low density -130 to -100 / -70 to -25 °C 0.91 to 0.94 g/cm ³ (na) 475 to 485 °C 250 to 700 MPa 200 to 200 *10 ³ /K (na) J/(g·K)	PE-HD Polyethylene high density -130 to -100 °C 0.94 to 0.96 g/cm ³ 0.33 to 0.53 W/(m·K) 293 to 480 °C 400 to 200 MPa 200 to 200 *10 ³ /K 1.8 to 2.7 J/(g·K)	PE-UHMW Polyethylene ultra high molecular weight -130 to -100 °C 0.93 to 0.94 g/cm ³ 0.41 to 0.51 W/(m·K) (na) to 480 °C 490 to 790 MPa 200 to 200 *10 ³ /K 1.84 J/(g·K)	EVA Polyethylene-co-vinyl acetate -40 to +20 °C 0.92 to 0.95 g/cm ³ 0.35 W/(m·K) 30 to 100 °C 345 to 470 / 360 to 480 MPa 7 to 120 MPa 160 to 200 *10 ³ /K 2.3 to 2.3 J/(g·K)	
PP (isotactic) Polypropylene -20 to 20 °C 0.90 to 0.91 g/cm ³ 0.17 to 0.25 W/(m·K) 207 to 209 °C 450 to 470 °C 1300 to 180 MPa 130 to 180 *10 ³ /K 1.8 J/(g·K)	PB Polybutene -30 to -20 °C 0.89/0.91 to 0.94 g/cm ³ 0.17 to 0.22 W/(m·K) 128 to 140 °C 450 to 460 °C 240/600 to 700 MPa 110 to 140 *10 ³ /K 1.8 to 2.0 J/(g·K)	PIB Polyisobutylene -70 to -60 °C 0.91 to 0.93 g/cm ³ 0.12 to 0.20 W/(m·K) (na) to 390 °C (na) to 400 °C (na) to 120 MPa 120 to 120 *10 ³ /K 1.97 J/(g·K)	PVC-P Polyvinylchloride (with plasticizer) -50 to -20 °C 1.16 to 1.35 g/cm ³ 0.13 to 0.20 W/(m·K) 290 to 460 °C 315 to 475 °C 25 to 160 MPa 60 to 120 *10 ³ /K 0.8 to 0.9 J/(g·K)	PVC-U Polyvinylchloride (without plasticizer) 80 to 90 °C 1.38 to 1.55 g/cm ³ 0.126 to 0.293 W/(m·K) 285 to 460 °C 315 to 475 °C 2700 to 3000 MPa 60 to 80 *10 ³ /K 0.84 to 1.17 J/(g·K)	PVDC Polyvinylidene chloride -18 to +15 °C 1.63 g/cm ³ 0.13 W/(m·K) (na) to 245 °C 255 to 550 MPa 190 to 190 *10 ³ /K (na) J/(g·K)	PVAL Polyvinylalcohol 70 to 100 °C 1.21 g/cm ³ (na) to 220 °C 260 to 420 MPa (na) to 400 *10 ³ /K 1.5 J/(g·K)	PLA Polylactide 45 to 65 °C 1.25 to 1.43 g/cm ³ (na) to 150 °C 180 to 190 °C 93 to 140 °C 350 to 375 °C 350 to 2800 MPa (na) to 200 *10 ³ /K (na) J/(g·K)	PA11 Polyamide 11 40 (3) to 55 °C 1.03 to 1.05 g/cm ³ 0.23 to 0.28 W/(m·K) 224 to 430 °C 455 to 455 MPa 1400 (3) to 85 *10 ³ /K 1.26 J/(g·K)	PA12 Polyamide 12 40 (3) to 50 °C 1.01 to 1.04 g/cm ³ 0.22 to 0.24 W/(m·K) 210 to 316 °C 465 to 390 °C 1400 (3) to 120 MPa 120 to 180 *10 ³ /K 1.17 to 1.26 J/(g·K)	
PA46 Polyamide 46 70 (3) to 94 °C 1.18 to 1.21 g/cm ³ 0.3 W/(m·K) (na) to 290 °C 440 to 450 °C 3300 (3) to 70 MPa 70 to 80 *10 ³ /K 2.1 J/(g·K)	PA6 Polyamide 6 45 (3) to 80 °C 1.12 to 1.15 g/cm ³ 0.22 to 0.33 W/(m·K) 190 to 225 °C 445 to 460 °C 2800 (3) to 80 MPa 80 to 90 *10 ³ /K 1.5 J/(g·K)	PA610 Polyamide 610 40 (3) to 70 °C 1.07 to 1.09 g/cm ³ 0.2 W/(m·K) 210 to 230 °C 445 to 460 °C 2800 (3) to 80 MPa 80 to 90 *10 ³ /K 1.5 J/(g·K)	PA612 Polyamide 612 40 (3) to 65 °C 1.06 g/cm ³ (na) to 210 °C 220 to 220 °C 445 to 460 °C 2800 (3) to 80 MPa 80 to 130 *10 ³ /K 1.91 J/(g·K)	PA66 Polyamide 66 65 (3) to 90 °C 1.13 to 1.16 g/cm ³ 0.24 to 0.33 W/(m·K) 195 to 225 °C 430 to 473 °C 3000 (3) to 35 MPa 35 to 45 *10 ³ /K 1.67 to 1.70 J/(g·K)	PBT Polybutylene terephthalate 40 (3) to 60 °C 1.30 to 1.32 g/cm ³ 0.25 to 0.29 W/(m·K) 142 to 220 °C 400 to 420 MPa 2500 to 100 MPa 80 to 100 *10 ³ /K 1.3 to 1.17 J/(g·K)	PET Polyethylene terephthalate 70 (3) to 85 °C 1.20 to 1.24 g/cm ³ 0.19 to 0.21 W/(m·K) 140 to 245 °C 425 to 445 °C 2000 to 3100 MPa 80 to 100 *10 ³ /K 1.04 to 1.17 J/(g·K)	PC Polycarbonate 115 (synd., 105 (atact.), 45 (isotac.) °C 1.15 to 1.19 g/cm ³ 0.16 to 0.25 W/(m·K) 360 to 390 °C 3100 to 3300 MPa 90 to 110 *10 ³ /K 1.45 to 1.47 J/(g·K)	PMMA Polymethylmethacrylate -85 to -75 °C 1.15 to 1.19 g/cm ³ 0.16 to 0.25 W/(m·K) 316 to 335 °C 365 to 390 °C 2600 to 3200 MPa 160 to 180 *10 ³ /K 1.48 to 1.50 J/(g·K)	POM (homo) Polyoxymethylene (homopolymer) -85 to -75 °C 1.39 to 1.43 g/cm ³ 0.30 to 0.37 W/(m·K) 175 to 190 °C 316 to 335 °C 365 to 390 °C 2600 to 3200 MPa 160 to 180 *10 ³ /K 1.48 to 1.50 J/(g·K)	
POM (copo) Polyoxymethylene (copolymer) -75 to -60 °C 1.39 to 1.43 g/cm ³ 0.23 to 0.31 W/(m·K) 181 to 220 °C 385 to 400 °C 2600 to 3200 MPa 110 to 150 *10 ³ /K 1.48 to 1.50 J/(g·K)	PEI Polyetherimide 215 to 230 °C 1.3 g/cm ³ 1.5 W/(m·K) 540 to 550 °C 2900 to 3000 MPa 50 to 50 *10 ³ /K 1.5 J/(g·K)	TPC Ester-Ether based TPE 0 to 60 °C 1.1 g/cm ³ 1.5 W/(m·K) 30 to 190 °C 395 to 420 °C 50 to 1000 MPa 165 to 200 *10 ³ /K 1.5 to 2.2 J/(g·K)	NBR Acrylonitrile-butadiene rubber -44 to 5 °C 1.0 g/cm ³ (na) to 450 °C 2 to 5 MPa 150 to 150 *10 ³ /K 1.5 to 1.5 J/(g·K)	UP Unsaturated polyester resin 60 (5) to 110 °C 1.17 to 1.26 g/cm ³ 0.3 to 0.7 W/(m·K) 340 to 470 °C 350 to 490 °C 3000 to 4800 MPa 20 to 40 *10 ³ /K 1.26 to 2.30 J/(g·K)	PVDF Polyvinylidene fluoride -40 to 170 °C 1.76 to 1.78 g/cm ³ 0.19 W/(m·K) 170 to 175 °C 440 to 480 °C 2000 to 2900 MPa 110 to 130 *10 ³ /K 0.96 to 1.40 J/(g·K)	FEP Tetrafluoroethylene/hexafluoropropylene copolymer (na) to 253 °C 2.12 to 2.17 g/cm ³ 0.25 W/(m·K) 253 to 282 °C 510 to 600 °C 350 to 80 MPa 80 to 80 *10 ³ /K 1.12 J/(g·K)	ETFE Ethylene-tetrafluoroethylene 75 to 85 °C 1.7 g/cm ³ 0.23 W/(m·K) 225 to 275 °C 46 to 50 °C 500 to 530 °C 1100 to 40 MPa 40 to 40 *10 ³ /K 0.9 J/(g·K)	PVF Polyvinylfluoride -20 to +40 °C 1.37 to 1.39 g/cm ³ (na) W/(m·K) 190 to 200 °C 164 to 430 °C 2100 to 2600 MPa 50 to 97 *10 ³ /K 1.0 to 1.8 J/(g·K)	PA6/3T Polyamide 6/3T 145 to 153 °C 1.12 g/cm ³ 0.23 W/(m·K) 460 to 470 °C 2000 to 80 MPa 80 to 80 *10 ³ /K 1.6 J/(g·K)	PA6/6T Polyamide 6/6T 60 to 100 °C 1.18 g/cm ³ (na) W/(m·K) 250 to 300 °C (na) to 460 °C 3500 to 3600 MPa 70 to 70 *10 ³ /K (na) J/(g·K)
PLA Polylactide 45 to 65 °C 1.43 to 1.45 g/cm ³ (na) W/(m·K) 150 to 160 °C 93 to 140 °C 350 to 375 °C 350 to 2800 MPa (na) to 200 *10 ³ /K (na) J/(g·K)	PFA Perfluoroalkoxy 90 to 120 °C 1.38 to 1.82 g/cm ³ 1.8 W/(m·K) 208 to 295 °C 510 to 530 °C 7000 to 20000 MPa 0 to 25 (partial) to 25 to 50 (perpen.) *10 ³ /K (na) J/(g·K)	TPO, TPV Polyolefine based TPE -60 to -50 °C 0.87 to 1.20 g/cm ³ (na) W/(m·K) -20 to 40 (EPDM), 150 to 160 (PP) °C 460 to 480 °C 90 to 1400 MPa 15 to 130 *10 ³ /K (na) J/(g·K)	TPU Urethane based TPE -50 to -30 / 0 to 60 °C 1.10 to 1.25 g/cm ³ 0.19 W/(m·K) 135 to 220 °C 3 to 15 °C 390 to 415 °C 20 to 400 MPa 130 to 180 *10 ³ /K 1.85 J/(g·K)	EPDM Ethylene-propylene-diene rubber -55 to -30 °C 0.86 g/cm ³ 0.26 W/(m·K) -20 to 60 °C 5 to 20 °C 470 to 487 °C 2 to 10 MPa 180 to 200 *10 ³ /K 1.80 to 2.00 J/(g·K)	HNBR Hydrogenated acrylonitrile-butadiene rubber -30 to -10 °C 0.95 to 1.00 g/cm ³ (na) W/(m·K) 465 to 480 °C 15 to 25 MPa 225 to 260 *10 ³ /K (na) J/(g·K)	EP Epoxy resin 50 (5) to 200 °C 1.15 g/cm ³ 0.20 to 0.25 W/(m·K) 380 to 450 °C 3000 to 5000 MPa 60 to 60 *10 ³ /K 1.67 to 2.10 J/(g·K)	MF Melamine-formaldehyde resin 70 (5) to 130 °C 1.48 to 1.50 g/cm ³ 0.35 to 0.40 W/(m·K) 340 to 400 °C 5000 to 10000 MPa 40 to 60 *10 ³ /K 1.2 J/(g·K)	PF Phenol-formaldehyde resin 70 (5) to 250 °C 1.40 to 1.80 g/cm ³ 0.35 to 1.3 W/(m·K) 450 to 475 °C 3000 to 4000 MPa 15 to 50 *10 ³ /K 1.0 to 1.3 J/(g·K)	PUR Polyurethane 10 (5) to 180 °C 1.10 to 1.70 g/cm ³ < 0.19 W/(m·K) 240 to 350 °C (na) to 200 MPa 130 to 210 *10 ³ /K 1.70 to 2.10 J/(g·K)	

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Glass Transition Temperature 4) DSC, STA, TMA, DMA	Polymer type Name	Density
Melting Temperature 4) DSC, STA		Thermal Conductivity 4) LFA, HFM, GHP 1)
Melting Enthalpy 4) DSC, STA	Decomposition Temperature 4) TGA, STA 2)	Young's Modulus 4) DMA 1)
	Coefficient of Linear Thermal Expansion 4) DIL, TMA 1)	Specific Heat Capacity 4) DSC, STA, LFA 1)

- at room temperature
- DTG peak temperature, determined at 10 K/min under nitrogen
- dry conditions
- thermoanalytical technique
- for cured sample, depending on degree of curing
- (na) not available

Commodity Thermoplastics
Engineering Thermoplastics
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Thermoplastic Elastomers
Elastomers
Thermosets

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