THERMAL PROPERTIES OF POLYMERS

ポリマーの熱特性

Vol.: 6305

DAIKI

※数値は代表的な参考値であり、グレードや試験条件によって異なる場合があります。/ Values are typical reference data and may vary depending on grade and test conditions

Vision Driver, Polymer Powered

構想はビジョン、実現はポリマー

70 [3] to 80 °C	PET				1.33 to 1.38 g/cm³
245 to 260 °C					0.24 to 0.30 W/(m.K)
40 to 60 J/g	350 to 400 °C	2500 to 3000 MPa	50 to 80	x10⁶ /K	1.00 to 1.20 J/(g.K)
-130 to -100 °C	HD-PE				0.94 to 0.97 g/cm³
125 to 135 °C					0.33 to 0.53 W/(m.K)
293 J/g	480 to 498 °C	600 to 1400 MPa	200 to 250	x10⁶ /K	1.8 to 2.7 J/(g.K)
80 to 90 °C	PVC-U (hard)				1.38 to 1.55 g/cm³
— °C					0.126 to 0.293 W/(m.K)
J/g	285 to 315 / 460 to 475 °C	2700 to 3000 MPa	60 to 80	x10⁶ /K	0.84 to 1.17 J/(g.K)
-130 to -100 / -30 to -10 °C	LD-PE				0.91 to 0.93 g/cm³
100 to 115 °C					0.3 to 0.34 W/(m.K)
N/A J/g	470 to 490 °C	200 MPa	400	x10⁶ /K	1.8 to 2.3 J/(g.K)
-20 to 20 °C	PP (Isotactic)				0.90 to 0.91 g/cm³
160 to 165 °C					0.17 to 0.25 W/(m.K)
207 to 209 J/g	450 to 470 °C	1300 to 1800 MPa	130 to 180	x10⁶ /K	1.8 J/(g.K)
80 to 105 °C	PS				1.05 g/cm³
°C					0.14 to 0.18 W/(m.K)
J/g	415 to 425 °C	3100 to 3300 MPa	50 to 70	x10⁶ /K	1.3 J/(g.K)
95 to 105 °C	EPS				0.01 to 0.04 g/cm³
240 °C					0.033 to 0.040 W/(m.K)
90 to 100 J/g	≈300 to 350 °C	2 to 50 MPa	50 to 70	x10⁶ /K	1.20 to 1.40 J/(g.K)
-30 to -20 °C	PB				0.90 to 0.92 g/cm³
115 to 135 °C					0.17 to 0.22 W/(m.K)
128 J/g	450 to 460 °C	250/600 to 700 MPa	110 to 140	x10⁶ /K	1.8 to 2.0 J/(g.K)
45 [3] to 65 °C	PLA				1.21 to 1.43 g/cm³
150 to 160 °C					N/A W/(m.K)
93 to 140 J/g	350 to 375 °C	350 to 2800 MPa	N/A	x10⁶ /K	N/A J/(g.K)
70 to 85 °C	PVA				1.26 to 1.31 g/cm³
180 to 230 °C					0.20 to 0.30 W/(m.K)
40 to 80 J/g	≈200 to 230 °C	2000 to 4000 MPa	70 to 100	x10⁶ /K	1.5 to 1.7 J/(g.K)
-130 to -100 °C	UHMW-PE				0.93 to 0.94 g/cm³
130 to 145 °C					0.41 to 0.51 W/(m.K)
N/A J/g	480 to 490 °C	570 to 790 MPa	200	x10⁶ /K	1.84
-50 to 80 °C	PVC-P (soft)				1.16 to 1.35 g/cm³
— °C					0.13 to 0.20 W/(m.K)
J/g	290 to 315 / 460 to 475 °C	25 to 1600 MPa	60 to 120	x10⁶ /K	0.8 to 0.9 J/(g.K)
-130 to -100 / -70 to -25 °C	LLD-PE				0.91 to 0.94 g/cm³
122 to 127 °C					N/A W/(m.K)
N/A J/g	475 to 485 °C	250 to 700 MPa	200	x10⁶ /K	N/A J/(g.K)
-40 to +20 °C	EVA				0.92 to 0.95 g/cm³
30 to 110 °C					0.35 W/(m.K)
10 to 100 J/g	345 to 360 / 470 to 480 °C	7 to 120 MPa	160 to 200	x10⁶ /K	2.3 J/(g.K)
-18 to +15 °C	PVDC				1.63 g/cm³
140 to 210 °C					0.13 W/(m.K)
J/g	245 to 255 °C	300 to 550 MPa	190	x10⁶ /K	N/A J/(g.K)
15 to 30 °C	PVB				1.07 to 1.09 g/cm³
N/A °C					0.15 to 0.20 W/(m.K)
N/A J/g	≈200 to 250 °C	20 to 100 MPa	80 to 120	x10⁶ /K	1.5 to 1.7 J/(g.K)
-120 (PE) +40 -60 (PA) °C	PA-PE (50:50)				1.00 to 1.10 g/cm³
110 to 260 °C					0.25 to 0.35 W/(m.K)
N/A J/g	≈350 to 450 °C	1000 to 2500 MPa	70 to 120	x10⁶ /K	1.3 to 1.6 J/(g.K)
-50 to -40 95 to 105 °C	ASA				1.04 to 1.07 g/cm³
— °C					0.22 W/(m.K)
J/g	415 to 425 °C	2300 to 2900 MPa	85 to 105	x10⁶ /K	N/A J/(g.K)
-85/95 to 105/ (125) °C	ABS				1.03 to 1.07 g/cm³
N/A °C					0.15 to 0.17 W/(m.K)
N/A J/g	420 to 435 °C	2000 to 3000 MPa	80 to 100	x10⁶ /K	1.26 to 1.68 J/(g.K)
100 to 145 °C	PC-ABS				1.10 to 1.15 g/cm³
N/A °C					0.18 to 0.22 W/(m.K)
N/A J/g	≈ 380 to 450 °C	2000 to 2600 MPa	70 to 90	x10⁶ /K	1.20 to 1.40 J/(g.K)
90 to 100 °C	SBC				0.90 to 1.05 g/cm³
N/A °C					0.15 to 0.2 W/(m.K)
N/A J/g	≈300 to 400 °C	5 to 100 MPa	150 to 250	x10⁶ /K	1.6 to 2.0 J/(g.K)
45 [3] to 80 °C	PA6				1.12 to 1.15 g/cm³
220 to 235 °C					0.22 to 0.33 W/(m.K)
190 J/g	445 to 460 °C	2800 MPa	80 to 90	x10⁶ /K	1.59 to 1.70 J/(g.K)
65 [3] to 95 °C	PA66				1.13 to 1.16 g/cm³
225 to 265 °C					0.24 to 0.33 W/(m.K)
195 J/g	430 to 473 °C	3000 MPa	35 to 45	x10⁶ /K	1.67 to 1.70 J/(g.K)
40 [3] to 60 °C	PBT				1.30 to 1.32 g/cm³
220 to 230 °C					0.25 to 0.29 W/(m.K)
145 J/g	400 to 420 °C	2500 to 2800 MPa	80 to 100	x10⁶ /K	1.3 J/(g.K)
210 to 220 °C	PPE (PPO)				1.06 to 1.10 g/cm³
N/A °C					0.22 to 0.30 W/(m.K)
N/A J/g	≈ 450 °C	2300 to 2600 MPa	50 to 70	x10⁶ /K	1.20 to 1.40 J/(g.K)
140 to 150 °C	PC				1.20 to 1.24 g/cm³
N/A °C					0.19 to 0.21 W/(m.K)
N/A J/g	480 to 535 °C	2200 to 2400 MPa	75 to 80	x10⁶ /K	1.17 to 1.50 J/(g.K)
115(synd) 105(atact) 45(isotac) °C	PMMA				1.15 to 1.19 g/cm³
N/A °C					0.16 to 0.25 W/(m.K)
N/A J/g	360 to 390 °C	3100 to 3300 MPa	90 to 110	x10⁶ /K	1.45 to 1.47 J/(g.K)
80 to 180 °C	COP				1.00 to 1.02 g/cm³
N/A °C					0.16 to 0.20 W/(m.K)
N/A J/g	≈420 °C	2200 to 2800 MPa	60 to 80	x10⁶ /K	1.10 to 1.30 J/(g.K)
-75 to -60 °C	POM (copo) Ex.: M450				1.39 to 1.43 g/cm³
140 to 175 °C					0.23 to 0.31 W/(m.K)
181 to 220 J/g	385 to 400 °C	2600 to 3200 MPa	110 to 150	x10⁶ /K	1.48 to 1.50 J/(g.K)
-85 to -75 °C	POM (homo) Ex.: M90				1.39 to 1.43 g/cm³
175 to 190 °C					0.30 to 0.37 W/(m.K)
316 to 335 J/g	365 to 390 °C	2600 to 3200 MPa	160 to 180	x10⁶ /K	1.48 to 1.50 J/(g.K)
220 to 230 °C	PES				1.36 to 1.38 g/cm³
N/A °C					0.22 to 0.26 W/(m.K)
N/A J/g	≈450 to 500 °C	2300 to 2700 MPa	50 to 60	x10⁶ /K	1.20 to 1.3 J/(g.K)
70 [3] to 94 °C	PA46				1.13 to 1.21 g/cm³
290 to 295 °C					0.3 W/(m.K)
N/A J/g	440 to 450 °C	3300 MPa	70 to 80	x10⁶ /K	2.1 J/(g.K)
145 to 153 °C	PA6/3T				1.12 g/cm3
N/A °C					0.23 W/(m.K)
N/A J/g	460 to 470 °C	2000 MPa	80	x10⁶ /K	1.6 J/(g.K)
60 to 100 °C	PA6/6T				1.18 g/cm³
250 to 300 °C					N/A W/(m.K)
N/A J/g	460 to 480 °C	3500 to 3600 MPa	70	x10⁶ /K	N/A J/(g.K)
120 to 130 °C	PA9T				1.18 to 1.22 g/cm³
300 to 310 °C					0.25 to 0.30 W/(m.K)
40 to 60 J/g	≈400 °C	2500 to 3500 MPa	30 to 60	x10⁶ /K	1.2 to 1.4 J/(g.K)
85 to 100 °C	PPS				1.34 to 1.36 g/cm³
275 to 290 °C					N/A W/(m.K)
80 J/g	510 to 550 °C	3700 MPa	50 to 70	x10⁶ /K	N/A J/(g.K)
215 to 230 °C	PEI				1.27 g/cm³
N/A °C					0.22 W/(m.K)
N/A J/g	540 to 550 °C	2900 to 3000 MPa	50	x10⁶ /K	N/A J/(g.K)
225 to 230 °C	PESU				1.37 g/cm³
N/A °C					0.18 W/(m.K)
N/A J/g	580 to 595 °C	2600 to 2800 MPa	60	x10⁶ /K	1.37 J/(g.K)
185 to 190 °C	PSF				1.24 to 1.25 g/cm³
N/A °C					0.15 W/(m.K)
N/A J/g	530 to 540 °C	2500 to 2700 MPa	50 to 60	x10⁶ /K	1.37 J/(g.K)
145 to 155 °C	PEEK				1.32 (semi-cr) 1.27(am) g/cm³
335 to 345 °C					0.25 W/(m.K)
130 J/g	600 to 620 °C	3700 MPa	50 to 70	x10⁶ /K	1.37 J/(g.K)
120 to 130 °C	PTFE				2.13 to 2.23 g/cm³
325 to 330 °C					0.23 to 0.25 W/(m.K)
82 J/g	575 to 590 °C	400 to 750 MPa	100 to 150	x10⁶ /K	1.0 J/(g.K)
-40 °C	PVDF				1.75 to 1.78 g/cm³
170 to 175 °C					0.19 W/(m.K)
105 J/g	440 to 480 °C	2000 to 2900 MPa	110 to 130	x10⁶ /K	0.96 to 1.40 J/(g.K)
N/A °C	FEP				2.12 to 2.17 g/cm³
253 to 282 °C					0.25 W/(m.K)
N/A J/g	510 to 600 °C	350 MPa	80	x10⁶ /K	1.12 J/(g.K)
75 to 85 °C	ETFE				1.7 g/cm³
225 to 275 °C					0.23 W/(m.K)
46 to 50 J/g	500 to 530 °C	1100 MPa	40	x10⁶ /K	0.9 J/(g.K)
N/A °C	PVF				1.37 to 1.39 g/cm³
~305 °C					N/A W/(m.K)
N/A J/g	>500 °C	800 MPa	120	x10⁶ /K	N/A J/(g.K)
45 to 55 °C	PFA				2.14 to 2.16 g/cm³
210 to 220 °C					N/A W/(m.K)
15 to 30 J/g	≈300 to 350 °C	1500 to 2500 MPa	60 to 80	x10⁶ /K	0.9 to 1.1 J/(g.K)
≈50 to 60 °C	PCTFE				2.10 to 2.18 g/cm³
≈240 to 245 °C					0.18 to 0.21 W/(m.K)
25 to 35 J/g	≈350 to 380 °C	1300 to 1700 MPa	60 to 80	x10⁶ /K	0.90 to 1.10 J/(g.K)
90 to 120 °C	(HAB/HNA)-LCP				1.38 to 1.82 g/cm³
208 to 295 °C					N/A W/(m.K)
3 to 4 J/g	510 to 530 °C	7000 to 20000 MPa	0 to 25 (parallel) 25 to 50 (Perpendicular)	x10⁶ /K	N/A J/(g.K)
300 to 400 °C	PI				1.43 to 1.45 g/cm³
N/A °C					0.12 to 0.35 W/(m.K)
N/A J/g	≈500 to 600 °C	2500 to 4000 MPa	20 to 50	x10⁶ /K	1.0 to 1.2 J/(g.K)
-60 to -50 °C	TPO,TPV (Polyolefine based TPE)				0.87 to 1.20 g/cm³
-20 to 40 (EPDM) 150 to 160 (PP) °C					N/A W/(m.K)
10(EPDM) 20(PP) J/g	460 to 480 °C	90 to 1400 MPa	15 to 130	x10⁶ /K	N/A J/(g.K)
-50 to -30 / 0 to 60 °C	TPU				1.10 to 1.25 g/cm³
135 to 220 °C					0.19 W/(m.K)
3 to 15 J/g	390 to 415 °C	20 to 400 MPa	130 to 180	x10⁶ /K	1.85 J/(g.K)
-25 to -5 °C	CM				1.08 to 1.7 g/cm³
N/A °C					0.11 to 0.13 W/(m.K)
N/A J/g	320 to 340 / 465 to 480 °C	2 to 15 MPa	175 to 200	x10⁶ /K	N/A J/(g.K)
-45 to -30 °C	CR				1.25 g/cm³
40 to 75 °C					0.18 to 0.20 W/(m.K)
1 to 10 J/g	365 to 380 / 445 to 460 °C	N/A MPa	185 to 250	x10⁶ /K	N/A J/(g.K)
-55 to -30 °C	EPDM				0.86 g/cm3
-20 to 60 °C					0.26 W/(m.K)
5 to 20 J/g	470 to 487 °C	2 to 10 MPa	180	x10⁶ /K	1.80 to 2.00 J/(g.K)
-106 to -95 (1,4 cr) -107 to -83 -15(1,2) °C	BR				0.9 to 1.0 g/cm³
-25 to 12 1,4-cis 1,4-trans 1,2-vinyl °C					0.25 W/(m.K)
46/170 (1,4cis) 70 to 140 (1,4 trans) J/g	70 to 385 460 to 475 °C	N/A MPa	N/A	x10⁶ /K	1.76 to 1.96 J/(g.K)
-44 to 5 °C	NBR				1.0 g/cm³
N/A °C					N/A W/(m.K)
N/A J/g	450 to 475 °C	2 to 5 MPa	150 to 180	x10⁶ /K	1.93 to 1.96 J/(g.K)
-70 °C	NR 天然ゴム				0.91 to 0.94 g/cm³
N/A °C					0.23 to 0.31 W/(m.K)
181 to 220 J/g	385 to 400 °C	1 to 10 MPa	110 to 150	x10⁶ /K	1.48 to 1.50 J/(g.K)
-135 to -120 °C	Q シリコンゴム				1.25 g/cm³
-50 to -40 °C					0.22 W/(m.K)
35 J/g	530 to 600 °C	1 to 10 MPa	190 to 255	x10⁶ /K	1.3 to 1.5 J/(g.K)
-55 to -35 °C	SBR				0.94 g/cm³
(-20) °C					0.20 to 0.25 W/(m.K)
170(cis) J/g	435 to 470 °C	2 to 10 MPa	180	x10⁶ /K	1.88 to 2.00 J/(g.K)
-50 [5] to 200 °C	EP				1.15 g/cm³
N/A °C					0.17 to 0.52 W/(m.K)
N/A J/g	380 to 450 °C	3000 to 5000 MPa	60	x10⁶ /K	1.67 to 2.10 J/(g.K)
70 [5] to 130 °C	MF				1.48 to 1.50 g/cm³
N/A °C					0.35 to 0.40 W/(m.K)
N/A J/g	340 to 400 °C	5000 to 10000 MPa	40 to 60	x10⁶ /K	1.2 J/(g.K)
70 [5] to 250 °C	PF				1.40 to 1.80 g/cm³
N/A °C					0.35 to 0.70 W/(m.K)
N/A J/g	450 to 555 °C	3000 to 4000 MPa	15 to 50	x10⁶ /K	1.0 to 1.3 J/(g.K)
10 [5] to 180 °C	PUR				1.10 to 1.70 g/cm³
N/A °C					<0.19 W/(m.K)
N/A J/g	240 to 350 °C	N/A MPa	130 to 200	x10⁶ /K	1.70 to 2.10 J/(g.K)
60 [5] to 110 °C	UF				1.5 g/cm³
N/A °C					0.35 to 0.40 W/(m.K)
N/A J/g	260 to 355 °C	7000 to 10500 MPa	40 to 60	x10⁶ /K	1.2 to 1.3 J/(g.K)
60 [5] to 170 °C	UP				1.17 to 1.26 g/cm³
N/A °C					0.3 to 0.7 W/(m.K)
N/A J/g	340 to 350 470 to 490 °C	3000 to 4800 MPa	20 to 40	x10⁶ /K	1.26 to 2.30 J/(g.K)

Glass Trans'n Temp ガラス転移温度 4)DSC, STA, TMA, DMA	Polymer type 樹脂名		Density 密度 1)
Melting Temp. 融点 4)DSC, STA			Thermal Conducti'y 熱伝導率 4)LFA, HFM, GHP 1)
Melting Enthalpy 融解エンタルピー 4)DSC, STA	Decom'n Temp. 分解温度 4)TGA, STA 1)	Young's Modulus 弾性率 4)DMA 1)	Coefficient of Linear Thermal Expansion 線膨張係数 4)DIL, TMA 1)	Specific Heat Capacity 比熱容量 4)DSC, STA, LFA 1)

1) At room temperature /室温において
2) DTG peak temperature, determined at a heating rate of 10 K/min under nitrogen atmosphere
窒素雰囲気中、昇温速度10 K/minの条件で求めたDTGピーク温度
3) Under dry conditions
乾燥条件下で
4) Thermoanalytical technique /熱分析手法
5) For cured samples, depending on the degree of curing
硬化試料では、硬化度に応じて変化する
N/A: Not available

- Commodity thermoplastics 汎用熱可塑性樹脂
- Engineering Thermoplastics エンジニアリング熱可塑性樹脂
- High-Temperature Resistant Thermoplastics 耐熱性熱可塑性樹脂
- Thermoplastic Elastomers 熱可塑性エラストマー
- Elastomers エラストマー
- Thermosets 熱硬化性樹脂

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