



# THERMAL PROPERTIES OF POLYMERS

Vol.: 6221

## ポリマーの熱特性

Vision Driver, Polymer Powered  
構想はビジョン、実現はポリマー

#Values are typical reference data and may vary depending on grade and test conditions

Material	Temperature Range (°C)	Density (g/cm³)	Thermal Conductivity (W/m.K)	Young's Modulus (MPa)	Tensile Strength (MPa)	Elongation at Break (%)	Heat Capacity (J/g.K)
PET	245 to 260	1.38	0.24	350	50	1.00	1.33
HD-PE	125 to 135	0.94	0.33	490	200	1.8	1.38
PVC-U (hard)	293	1.26	0.126	285 to 315	60	0.84	0.91
LD-PE	100 to 115	0.91	0.33	2700	200	1.8	0.91
PP (Isotactic)	160 to 165	0.90	0.17	450	130	1.8	0.90
PS	415 to 425	1.05	0.14	3100	50	1.3	1.05
EPS	240	0.01	0.033	2	50	1.20	0.01
PB	115 to 135	0.90	0.17	450	110	1.8	0.90
PLA	150 to 160	1.21	N/A	350	350	N/A	1.21
PVA	180 to 230	1.26	0.20	2000	70	1.5	1.26
UHMW-PE	130 to 145	0.93	0.41	480	200	1.84	0.93
PVC-P (soft)	293	1.16	0.13	25	60	0.8	1.16
LLD-PE	122 to 127	0.91	N/A	475	250	200	0.91
EVA	30 to 110	0.92	0.35	345 to 360	7	160	0.92
PVDC	140 to 210	1.63	0.13	245	300	190	1.63
PVB	15 to 30	1.07	0.15	200	80	1.5	1.07
PA-PE (50:50)	110 to 260	1.00	0.25	350	1000	70	1.00
ASA	415 to 425	1.04	0.22	2300	85	1.0	1.04
ABS	420 to 435	1.03	0.15	2000	80	1.26	1.03
PC-ABS	100 to 145	1.10	0.18	380	2000	70	1.10
SBC	90 to 100	0.90	0.15	300	5	150	0.90
PA6	220 to 235	1.12	0.22	445	2800	80	1.12
PA66	225 to 265	1.13	0.24	430	3000	35	1.13
PBT	220 to 230	1.30	0.25	400	2500	80	1.30
PPE (PPO)	210 to 220	1.06	0.22	450	2300	50	1.06
PC	140 to 150	1.20	0.19	480	2200	75	1.20
PMMA	115 to 105	1.15	0.16	360	3100	90	1.15
COP	80 to 180	1.00	0.16	420	2200	60	1.00
POM (copo)	140 to 175	1.39	0.23	385	2600	110	1.39
POM (homo)	175 to 190	1.43	0.30	335	3200	180	1.43
PES	220 to 230	1.36	0.22	450	2300	50	1.36
PA46	290 to 295	1.13	0.3	440	3300	70	1.13
PA6/3T	145 to 153	1.12	0.23	460	2000	80	1.12
PA6/6T	60 to 100	1.18	N/A	460	3500	70	1.18
PA9T	120 to 130	1.18	0.25	40	400	2500	1.18
PPS	275 to 290	1.34	N/A	80	510	3700	1.34
PEI	215 to 230	1.27	0.22	540	2900	50	1.27
PESU	225 to 230	1.37	0.18	580	2600	60	1.37
PSF	185 to 190	1.24	0.15	530	2500	50	1.24
PEEK	145 to 155	1.32	0.25	130	600	3700	1.32
PTFE	325 to 330	2.13	0.23	82	575	400	2.13
PVDF	170 to 175	1.75	0.19	105	440	2000	1.75
FEP	253 to 282	2.12	0.25	N/A	510	350	2.12
ETFE	46 to 50	1.7	0.23	46	500	1100	1.7
PVF	190 to 200	1.37	N/A	164	430	2100	1.37
PFA	-305 to 40	2.14	N/A	N/A	>500	800	2.14
PCTFE	210 to 220	2.10	0.18	15	300	1500	2.10
ECTFE	25 to 245	1.65	0.19	25	350	1300	1.65
(HAB/HNA)-LCP	208 to 295	1.38	N/A	3 to 4	510	7000	1.38
PI	300 to 400	1.43	0.12	N/A	~500	2500	1.43
TPO,TPV (Polyolefine based TPE)	-60 to -50	0.87	0.12	100EPDM	460	90	0.87
TPU	-50 to -30	1.10	0.19	3	390	20	1.10
CM	-25 to -5	1.08	0.11	N/A	320 to 340	2	1.08
CR	-45 to -30	1.25	0.18	1 to 10	365 to 380	N/A	1.25
EPDM	-55 to -30	0.86	0.26	5 to 20	470	2	0.86
BR	-106 to -95	0.9	0.25	N/A	46/170	11/400	0.9
NBR	-44 to 5	1.0	N/A	N/A	450	2	1.0
NR 天然ゴム	-70 to 180	0.91	0.23	181	385	1	0.91
Q シリコゴム	-135 to -120	1.25	0.22	35	530	1	1.25
SBR	-55 to -35	0.94	0.20	170(cis)	435	2	0.94
EP	-50 to 200	1.15	0.17	N/A	390	3000	1.15
MF	70 to 130	1.48	0.35	N/A	340	5000	1.48
PF	70 to 250	1.40	0.35	N/A	450	3000	1.40
PUR	10 to 180	1.10	0.19	N/A	240	N/A	1.10
UF	60 to 110	1.5	0.35	N/A	260	7000	1.5
UP	60 to 170	1.17	0.3	N/A	340 to 350	3500	1.17

Glass Trans'n Temp	Melting Temp	Melting Enthalpy	Decom'n Temp	Young's Modulus	Coefficient of Linear Expansion	Specific Heat Capacity	Density
400°C STA, TMA, DMA	400°C STA	11.4 (J/g)	410°C STA 1)	40DMA 1)	40DL TMA 1)	400°C STA, LFA 1)	1)

- At room temperature /室温において
- 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の条件下で求めたDTGピーク温度
- Under dry conditions  
乾燥条件下で
- Thermoanalytical technique /熱分析手法  
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

- 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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