

PBM 8Y

Code(d) 596393

Code(e) 599390

Refractive Index n_d	1.595 51 1.595 509	Abbe Number v_d	39.26	Dispersion $n_F - n_C$	0.015 169
Refractive Index n_e	1.599 108	Abbe Number v_e	38.99	Dispersion $n_{F'} - n_{C'}$	0.015 365

Refractive Indices		
$\lambda(\mu\text{m})$		
n_{2325}	2.325 42	1.562 24
n_{1970}	1.970 09	1.567 16
n_{1530}	1.529 58	1.572 63
n_{1129}	1.128 64	1.577 97
n_t	1.013 98	1.579 92
n_s	0.852 11	1.583 52
$n_{A'}$	0.768 19	1.586 11
n_r	0.706 52	1.588 55
n_C	0.656 27	1.591 03
$n_{C'}$	0.643 85	1.591 73
$n_{\text{He-Ne}}$	0.632 80	1.592 39
n_D	0.589 29	1.595 38
n_d	0.587 56	1.595 51
n_e	0.546 07	1.599 11
n_F	0.486 13	1.606 20
$n_{F'}$	0.479 99	1.607 10
$n_{\text{He-Cd}}$	0.441 57	1.613 77
n_g	0.435 84	1.614 95
n_h	0.404 66	1.622 49
n_i	0.365 02	1.636 04
n_{334}	0.334 15	1.651 85
n_{326}	0.326 11	1.657 18

Constants of Dispersion Formula ※1	
A_1	1.353 513 22E+00
A_2	1.302 129 12E-01
A_3	1.583 372 66E-01
B_1	1.056 246 26E-02
B_2	4.966 066 52E-02
B_3	2.079 658 06E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group WS	1
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	2.0

Mechanical Properties	
Young's Modulus E (GPa)	58.8
Rigidity Modulus G (GPa)	24.1
Poisson's Ratio σ	0.222
Knoop Hardness Hk(Class)	430 4
Abrasion Aa	154

※1 Refractive Indices of the wavelength nm can be calculated from 326 to 1129 nm by this constant.

Use the appended list of the constants to calculate 1129-2325nm.

Partial Dispersions	
$n_C - n_t$	0.011 109
$n_C - n_{A'}$	0.004 923
$n_d - n_C$	0.004 479
$n_e - n_C$	0.008 078
$n_g - n_d$	0.019 438
$n_g - n_F$	0.008 748
$n_h - n_g$	0.007 545
$n_i - n_g$	0.021 090
$n_{C'} - n_t$	0.011 813
$n_e - n_{C'}$	0.007 374
$n_{F'} - n_e$	0.007 991
$n_i - n_{F'}$	0.028 938

Relative Partial Dispersions	
$\theta_{C,t}$	0.732 3
$\theta_{C,A'}$	0.324 5
$\theta_{d,C}$	0.295 3
$\theta_{e,C}$	0.532 5
$\theta_{g,d}$	1.281 4
$\theta_{g,F}$	0.576 7
$\theta_{h,g}$	0.497 4
$\theta_{i,g}$	1.390 3
$\theta'_{C,t}$	0.768 8
$\theta'_{e,C'}$	0.479 9
$\theta'_{F',e}$	0.520 1
$\theta'_{i,F'}$	1.883 4

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.001 4
$\Delta\theta_{C,A'}$	0.001 1
$\Delta\theta_{g,d}$	-0.001 8
$\Delta\theta_{g,F}$	-0.001 2
$\Delta\theta_{i,g}$	-0.006 0

Coloring			
λ_{80}	340	λ_5	315
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	336	$\lambda_{0.05}$	318

CCI		
B	G	R
0.00	0.04	0.04

Internal Transmittance		
λ (nm)	τ_i (10 mm)	τ_i (25 mm)
240		
250		
260		
270		
280		
290		
300		
310		
320	0.17	0.01
330	0.65	0.34
340	0.89	0.75
350	0.966	0.918
360	0.987	0.968
365	0.991	0.977
370	0.993	0.983
380	0.996	0.990
390	0.997	0.993
400	0.998	0.995
420	0.998	0.996
440	0.998	0.996
460	0.998	0.996
480	0.999	0.997
500	0.999	0.998
550	0.999	0.998
600	0.999	0.998
650	0.999	0.998
700	0.999	0.998
800	0.999	0.998
900	0.999	0.998
1 000	0.998	0.995
1 200	0.998	0.995
1 400	0.995	0.988
1 600	0.994	0.986
1 800	0.981	0.953
2 000	0.960	0.903
2 200	0.916	0.80
2 400	0.88	0.74

Thermal Properties	
Strain Point StP (°C)	390
Annealing Point AP (°C)	426
Transformation Temperature Tg (°C)	441
Yield Point At (°C)	496
Softening Point SP (°C)	590
Expansion Coefficients (-30 °C ~ 70 °C)	87
α_t (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	104
Thermal Conductivity λ (W/(m·K))	0.878

Linear coefficient of thermal expansion	
Temperature range (°C)	α_t (10 ⁻⁷ K ⁻¹)
-100 ~ -90	76
-90 ~ -80	77
-80 ~ -70	78
-70 ~ -60	79
-60 ~ -50	80
-50 ~ -40	81
-40 ~ -30	82
-30 ~ -20	83
-20 ~ -10	84
-10 ~ 0	85
0 ~ 10	86
10 ~ 20	87
20 ~ 30	88
30 ~ 40	89
40 ~ 50	90
50 ~ 60	91
60 ~ 70	92
70 ~ 80	93
80 ~ 90	94
90 ~ 100	94
100 ~ 110	95
110 ~ 120	96
120 ~ 130	97
130 ~ 140	98
140 ~ 150	99
150 ~ 160	100
160 ~ 170	101
170 ~ 180	102
180 ~ 190	103
190 ~ 200	103
200 ~ 210	104
210 ~ 220	105
220 ~ 230	106
230 ~ 240	107
240 ~ 250	108
250 ~ 260	108
260 ~ 270	109
270 ~ 280	110
280 ~ 290	111
290 ~ 300	112

Other Properties	
Photoelastic Constant β (nm/(cm·10 ⁵ Pa))	2.89
Specific Gravity d	3.36
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (°C)	$\Delta n_{\text{rel}} / \Delta T$ (10 ⁻⁶ K ⁻¹)											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	1.1	1.3	1.8	2.0	2.0	2.2	2.5	3.0	3.2	3.8	4.6	6.1
-60 ~ -40	1.1	1.3	1.8	2.0	2.0	2.3	2.5	3.1	3.1	3.8	4.7	6.2
-40 ~ -20	1.1	1.3	1.8	2.0	2.1	2.4	2.6	3.2	3.3	4.0	4.7	6.4
-20 ~ 0	1.2	1.5	1.9	2.1	2.1	2.4	2.8	3.4	3.5	4.2	5.0	6.7
0 ~ 20	1.3	1.6	2.1	2.3	2.4	2.6	2.9	3.5	3.6	4.4	5.3	6.9
20 ~ 40	1.5	1.8	2.3	2.5	2.6	2.8	3.1	3.8	3.9	4.6	5.5	7.3
40 ~ 60	1.7	1.9	2.5	2.7	2.7	3.0	3.3	4.0	4.0	5.0	5.8	7.6
60 ~ 80	1.9	2.1	2.7	2.9	2.9	3.3	3.6	4.2	4.3	5.2	6.0	7.8
80 ~ 100	1.9	2.2	2.9	3.1	3.1	3.5	3.8	4.5	4.6	5.4	6.3	8.2
100 ~ 120	2.1	2.5	3.0	3.2	3.3	3.6	4.0	4.7	4.8	5.6	6.6	8.5
120 ~ 140	2.3	2.6	3.2	3.4	3.4	3.8	4.1	4.8	4.9	5.8	6.8	8.7
140 ~ 160	2.3	2.6	3.3	3.5	3.5	3.9	4.2	5.0	5.1	6.0	7.0	9.1
160 ~ 180	2.4	2.7	3.3	3.7	3.7	4.1	4.4	5.2	5.3	6.2	7.2	9.3

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