

S-BSM14

Code(d) 603607
Code(e) 605604

Refractive Index n_d	1.603 11 1.603 112	Abbe Number ν_d	60.64	Dispersion $n_F - n_C$	0.009 945
Refractive Index n_e	1.605 484	Abbe Number ν_e	60.39	Dispersion $n_{F'} - n_{C'}$	0.010 027

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.573 00
n_{1970}	1.970 09	1.578 80
n_{1530}	1.529 58	1.584 91
n_{1129}	1.128 64	1.590 13
n_t	1.013 98	1.591 80
n_s	0.852 11	1.594 67
$n_{A'}$	0.768 19	1.596 60
n_F	0.706 52	1.598 35
n_C	0.656 27	1.600 08
$n_{C'}$	0.643 85	1.600 56
n_{He-Ne}	0.632 8	1.601 01
n_D	0.589 29	1.603 02
n_d	0.587 56	1.603 11
n_e	0.546 07	1.605 48
n_F	0.486 13	1.610 02
$n_{F'}$	0.479 99	1.610 59
n_{He-Cd}	0.441 57	1.614 70
n_g	0.435 835	1.615 41
n_h	0.404 656	1.619 87
n_i	0.365 015	1.627 45

Constants of Dispersion Formula	
A_1	1.282 862 70E+00
A_2	2.476 474 29E-01
A_3	1.103 839 99E+00
B_1	1.229 023 99E-02
B_2	-6.131 423 61E-03
B_3	1.068 833 78E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	51.2
Phosphate Resistance PR	2.2

Mechanical Properties	
Young's Modulus E (GPa)	84.9
Rigidity Modulus G (GPa)	33.8
Poisson's Ratio σ	0.257
Knoop Hardness Hk[Class]	580 6
Abrasion Aa	126

Partial Dispersions	
$n_C - n_t$	0.008 275
$n_C - n_{A'}$	0.003 482
$n_d - n_C$	0.003 033
$n_e - n_C$	0.005 405
$n_g - n_d$	0.012 297
$n_g - n_F$	0.005 385
$n_h - n_g$	0.004 461
$n_i - n_g$	0.012 043
$n_{C'} - n_t$	0.008 758
$n_e - n_{C'}$	0.004 922
$n_{F'} - n_e$	0.005 105
$n_i - n_{F'}$	0.016 863

Relative Partial Dispersions	
$\theta_{C,t}$	0.832 1
$\theta_{C,A'}$	0.350 1
$\theta_{d,C}$	0.305 0
$\theta_{e,C}$	0.543 5
$\theta_{g,d}$	1.236 5
$\theta_{g,F}$	0.541 5
$\theta_{h,g}$	0.448 6
$\theta_{i,g}$	1.211 0
$\theta'_{C,t}$	0.873 4
$\theta'_{e,C'}$	0.490 9
$\theta'_{F',e}$	0.509 1
$\theta'_{i,F'}$	1.681 8

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.000 9
$\Delta\theta_{C,A'}$	0.000 7
$\Delta\theta_{g,d}$	-0.002 3
$\Delta\theta_{g,F}$	-0.001 9
$\Delta\theta_{i,g}$	-0.006 2

Coloring			
λ_{80}	350	λ_5	295
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	339	$\lambda_{0.05}$	306
CCI			
B	G	R	
0.00	0.19	0.20	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	0.17
320	0.45
330	0.68
340	0.82
350	0.906
360	0.948
370	0.968
380	0.980
390	0.987
400	0.991
420	0.994
440	0.994
460	0.995
480	0.996
500	0.997
550	0.998
600	0.998
650	0.998
700	0.998
800	0.999
900	0.998
1 000	0.998
1 200	0.998
1 400	0.990
1 600	0.995
1 800	0.988
2 000	0.976
2 200	0.919
2 400	0.81

Thermal Properties	
Strain Point StP (°C)	614
Annealing Point AP (°C)	641
Transformation Temperature Tg (°C)	661
Yield Point At (°C)	704
Softening Point SP (°C)	757
Expansion Coefficients (-30 °C ~ 70 °C)	61
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	73
Thermal Conductivity λ (W/(m·K))	0.891

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	50
-90 ~ -80	51
-80 ~ -70	52
-70 ~ -60	53
-60 ~ -50	54
-50 ~ -40	55
-40 ~ -30	56
-30 ~ -20	57
-20 ~ -10	58
-10 ~ 0	59
0 ~ 10	60
10 ~ 20	61
20 ~ 30	61
30 ~ 40	62
40 ~ 50	63
50 ~ 60	64
60 ~ 70	65
70 ~ 80	66
80 ~ 90	66
90 ~ 100	67
100 ~ 110	68
110 ~ 120	68
120 ~ 130	69
130 ~ 140	70
140 ~ 150	70
150 ~ 160	71
160 ~ 170	71
170 ~ 180	72
180 ~ 190	73
190 ~ 200	73
200 ~ 210	74
210 ~ 220	74
220 ~ 230	75
230 ~ 240	75
240 ~ 250	75
250 ~ 260	76
260 ~ 270	76
270 ~ 280	77
280 ~ 290	77
290 ~ 300	77

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	2.01
Specific Gravity d	3.43
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (°C)	$\Delta n_{rel} / \Delta T$ (10 ⁻⁶ K ⁻¹)											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	1.6	1.8	2.0	2.0	2.1	2.1	2.2	2.5	2.5	2.7	3.0	3.5
-60 ~ -40	1.6	1.7	2.0	2.0	2.0	2.1	2.2	2.4	2.4	2.6	3.0	3.4
-40 ~ -20	1.6	1.7	2.0	2.1	2.1	2.2	2.3	2.5	2.5	2.7	3.0	3.5
-20 ~ 0	1.7	1.8	2.0	2.1	2.1	2.3	2.4	2.6	2.6	2.9	3.1	3.6
0 ~ 20	1.9	2.0	2.2	2.3	2.3	2.4	2.5	2.7	2.7	3.0	3.4	3.9
20 ~ 40	2.0	2.1	2.3	2.4	2.4	2.5	2.6	2.9	2.9	3.2	3.4	4.1
40 ~ 60	2.1	2.2	2.5	2.5	2.5	2.7	2.8	3.0	3.0	3.4	3.7	4.2
60 ~ 80	2.3	2.4	2.6	2.7	2.7	2.8	3.0	3.2	3.2	3.5	3.8	4.4
80 ~ 100	2.4	2.5	2.8	2.9	2.9	3.0	3.1	3.4	3.4	3.7	4.0	4.6
100 ~ 120	2.5	2.7	2.9	3.0	3.0	3.1	3.2	3.5	3.5	3.8	4.2	4.8
120 ~ 140	2.6	2.7	3.0	3.1	3.1	3.2	3.3	3.6	3.6	3.9	4.3	4.9
140 ~ 160	2.6	2.8	3.0	3.1	3.1	3.3	3.4	3.7	3.7	4.0	4.4	5.1
160 ~ 180	2.6	2.8	3.0	3.2	3.2	3.4	3.5	3.8	3.8	4.2	4.5	5.2

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