

S-BSM15

Code(d) 623582

Code(e) 626579

Refractive Index n_d	1.622 99 1.622 992	Abbe Number ν_d	58.16	Dispersion $n_F - n_C$	0.010 711
Refractive Index n_e	1.625 545	Abbe Number ν_e	57.89	Dispersion $n_{F'} - n_{C'}$	0.010 805

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.592 36
n_{1970}	1.970 09	1.597 97
n_{1530}	1.529 58	1.603 99
n_{1129}	1.128 64	1.609 27
n_t	1.013 98	1.611 00
n_s	0.852 11	1.613 99
$n_{A'}$	0.768 19	1.616 03
n_F	0.706 52	1.617 89
n_C	0.656 27	1.619 74
$n_{C'}$	0.643 85	1.620 26
n_{He-Ne}	0.632 8	1.620 74
n_D	0.589 29	1.622 90
n_d	0.587 56	1.622 99
n_e	0.546 07	1.625 55
n_F	0.486 13	1.630 45
$n_{F'}$	0.479 99	1.631 06
n_{He-Cd}	0.441 57	1.635 52
n_g	0.435 835	1.636 30
n_h	0.404 656	1.641 16
n_i	0.365 015	1.649 48

Constants of Dispersion Formula	
A_1	9.531 283 28E-01
A_2	6.376 139 77E-01
A_3	1.652 456 47E+00
B_1	3.876 389 85E-03
B_2	1.850 946 32E-02
B_3	1.594 423 67E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	2~3
Acid Resistance(Surface) Group SR	52.2
Phosphate Resistance PR	3.2

Mechanical Properties	
Young's Modulus E (GPa)	85.4
Rigidity Modulus G (GPa)	33.8
Poisson's Ratio σ	0.265
Knoop Hardness Hk[Class]	560
Abrasion Aa	150

Partial Dispersions	
$n_C - n_t$	0.008 741
$n_C - n_{A'}$	0.003 709
$n_d - n_C$	0.003 253
$n_e - n_C$	0.005 806
$n_g - n_d$	0.013 304
$n_g - n_F$	0.005 846
$n_h - n_g$	0.004 866
$n_i - n_g$	0.013 186
$n_{C'} - n_t$	0.009 259
$n_e - n_{C'}$	0.005 288
$n_{F'} - n_e$	0.005 517
$n_i - n_{F'}$	0.018 420

Relative Partial Dispersions	
$\theta_{C,t}$	0.816 1
$\theta_{C,A'}$	0.346 3
$\theta_{d,C}$	0.303 7
$\theta_{e,C}$	0.542 1
$\theta_{g,d}$	1.242 1
$\theta_{g,F}$	0.545 8
$\theta_{h,g}$	0.454 3
$\theta_{i,g}$	1.231 1
$\theta'_{C,t}$	0.856 9
$\theta'_{e,C'}$	0.489 4
$\theta'_{F,e}$	0.510 6
$\theta'_{i,F'}$	1.704 8

Anomalous dispersion	
$\Delta\theta_{C,t}$	-0.003 5
$\Delta\theta_{C,A'}$	-0.000 1
$\Delta\theta_{g,d}$	-0.001 8
$\Delta\theta_{g,F}$	-0.001 6
$\Delta\theta_{i,g}$	-0.006 9

Coloring			
λ_{80}	360	λ_5	320
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	357	$\lambda_{0.05}$	327
CCI			
B	G	R	
0.00	0.32	0.30	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	0.13
340	0.44
350	0.70
360	0.85
370	0.926
380	0.959
390	0.976
400	0.985
420	0.991
440	0.992
460	0.994
480	0.995
500	0.997
550	0.998
600	0.997
650	0.997
700	0.998
800	0.998
900	0.998
1 000	0.998
1 200	0.998
1 400	0.991
1 600	0.994
1 800	0.987
2 000	0.973
2 200	0.918
2 400	0.81

Thermal Properties	
Strain Point StP (°C)	615
Annealing Point AP (°C)	639
Transformation Temperature Tg (°C)	661
Yield Point At (°C)	704
Softening Point SP (°C)	746
Expansion Coefficients (-30 °C ~ 70 °C)	66
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	79
Thermal Conductivity λ (W/(m·K))	0.845

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	55
-90 ~ -80	56
-80 ~ -70	57
-70 ~ -60	58
-60 ~ -50	59
-50 ~ -40	60
-40 ~ -30	61
-30 ~ -20	62
-20 ~ -10	63
-10 ~ 0	64
0 ~ 10	65
10 ~ 20	66
20 ~ 30	67
30 ~ 40	68
40 ~ 50	69
50 ~ 60	70
60 ~ 70	70
70 ~ 80	71
80 ~ 90	72
90 ~ 100	73
100 ~ 110	73
110 ~ 120	74
120 ~ 130	75
130 ~ 140	76
140 ~ 150	76
150 ~ 160	77
160 ~ 170	77
170 ~ 180	78
180 ~ 190	79
190 ~ 200	79
200 ~ 210	80
210 ~ 220	80
220 ~ 230	81
230 ~ 240	81
240 ~ 250	82
250 ~ 260	82
260 ~ 270	83
270 ~ 280	83
280 ~ 290	83
290 ~ 300	84

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	1.80
Specific Gravity d	3.60
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	0.9	1.0	1.1	1.2	1.2	1.4	1.5	1.7	1.7	2.0	2.3	2.8
-60 ~ -40	0.8	0.9	1.1	1.1	1.2	1.3	1.4	1.7	1.7	2.0	2.2	2.8
-40 ~ -20	0.7	0.9	1.1	1.2	1.2	1.3	1.4	1.6	1.7	2.0	2.3	2.9
-20 ~ 0	0.8	0.9	1.2	1.3	1.3	1.4	1.5	1.8	1.8	2.1	2.4	3.0
0 ~ 20	1.0	1.1	1.3	1.3	1.4	1.5	1.6	1.9	1.9	2.3	2.6	3.2
20 ~ 40	1.1	1.2	1.4	1.5	1.5	1.6	1.8	2.0	2.1	2.4	2.8	3.4
40 ~ 60	1.2	1.3	1.5	1.6	1.6	1.9	2.0	2.3	2.3	2.6	3.0	3.6
60 ~ 80	1.3	1.5	1.7	1.8	1.8	1.9	2.1	2.4	2.4	2.7	3.1	3.9
80 ~ 100	1.5	1.6	1.9	1.9	2.0	2.1	2.2	2.5	2.6	2.9	3.3	4.0
100 ~ 120	1.6	1.7	2.0	2.1	2.1	2.2	2.4	2.7	2.7	3.1	3.4	4.2
120 ~ 140	1.7	1.8	2.1	2.2	2.2	2.3	2.5	2.8	2.8	3.2	3.6	4.3
140 ~ 160	1.7	1.8	2.1	2.2	2.2	2.4	2.6	2.9	2.9	3.3	3.8	4.5
160 ~ 180	1.8	2.0	2.3	2.4	2.4	2.5	2.7	3.0	3.1	3.5	3.9	4.7

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