

S-BSL 7R

Code(d) 516639

Code(e) 518637

Refractive Index n_d	1.516 33 1.516 330	Abbe Number ν_d	63.89	Dispersion $n_F - n_C$	0.008 082
Refractive Index n_e	1.518 258	Abbe Number ν_e	63.67	Dispersion $n_{F'} - n_{C'}$	0.008 140

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.488 60
n_{1970}	1.970 09	1.494 38
n_{1530}	1.529 58	1.500 37
n_{1129}	1.128 64	1.505 30
n_t	1.013 98	1.506 81
n_s	0.852 11	1.509 31
$n_{A'}$	0.768 19	1.510 95
n_F	0.706 52	1.512 41
n_C	0.656 27	1.513 85
$n_{C'}$	0.643 85	1.514 24
n_{He-Ne}	0.632 8	1.514 61
n_D	0.589 29	1.516 26
n_d	0.587 56	1.516 33
n_e	0.546 07	1.518 26
n_F	0.486 13	1.521 93
$n_{F'}$	0.479 99	1.522 38
n_{He-Cd}	0.441 57	1.525 69
n_g	0.435 835	1.526 27
n_h	0.404 656	1.529 87
n_i	0.365 015	1.536 02

Constants of Dispersion Formula	
A_1	1.254 822 60E+00
A_2	1.511 118 08E-02
A_3	1.014 938 83E+00
B_1	8.056 802 14E-03
B_2	5.299 212 82E-02
B_3	1.033 726 90E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E (GPa)	81.4
Rigidity Modulus G (GPa)	33.6
Poisson's Ratio σ	0.211
Knoop Hardness Hk[Class]	580
Abrasion Aa	93

Partial Dispersions	
$n_C - n_t$	0.007 038
$n_C - n_{A'}$	0.002 897
$n_d - n_C$	0.002 484
$n_e - n_C$	0.004 412
$n_g - n_d$	0.009 938
$n_g - n_F$	0.004 340
$n_h - n_g$	0.003 598
$n_i - n_g$	0.009 755
$n_{C'} - n_t$	0.007 436
$n_e - n_{C'}$	0.004 014
$n_{F'} - n_e$	0.004 126
$n_i - n_{F'}$	0.013 639

Relative Partial Dispersions	
$\theta_{C,t}$	0.870 8
$\theta_{C,A'}$	0.358 5
$\theta_{d,C}$	0.307 3
$\theta_{e,C}$	0.545 9
$\theta_{g,d}$	1.229 6
$\theta_{g,F}$	0.537 0
$\theta_{h,g}$	0.445 2
$\theta_{i,g}$	1.207 0
$\theta'_{C,t}$	0.913 5
$\theta'_{e,C'}$	0.493 1
$\theta'_{F',e}$	0.506 9
$\theta'_{i,F'}$	1.675 6

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.024 3
$\Delta\theta_{C,A'}$	0.005 2
$\Delta\theta_{g,d}$	-0.002 4
$\Delta\theta_{g,F}$	-0.001 1
$\Delta\theta_{i,g}$	0.017 0

Coloring			
λ_{80}	410	λ_5	365
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	402	$\lambda_{0.05}$	362
CCI			
B	G	R	
0.00	3.54	3.85	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	0.02
370	0.18
380	0.44
390	0.66
400	0.79
420	0.915
440	0.953
460	0.967
480	0.974
500	0.979
550	0.987
600	0.991
650	0.994
700	0.997
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.974
1 600	0.992
1 800	0.979
2 000	0.955
2 200	0.86
2 400	0.81

Thermal Properties	
Strain Point StP (°C)	535
Annealing Point AP (°C)	562
Transformation Temperature Tg (°C)	589
Yield Point At (°C)	649
Softening Point SP (°C)	724
Expansion Coefficients (-30 °C ~ 70 °C)	68
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	83
Thermal Conductivity λ (W/(mK))	1.16

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	55
-90 ~ -80	56
-80 ~ -70	58
-70 ~ -60	59
-60 ~ -50	60
-50 ~ -40	61
-40 ~ -30	63
-30 ~ -20	64
-20 ~ -10	65
-10 ~ 0	66
0 ~ 10	67
10 ~ 20	68
20 ~ 30	69
30 ~ 40	70
40 ~ 50	71
50 ~ 60	72
60 ~ 70	73
70 ~ 80	74
80 ~ 90	75
90 ~ 100	76
100 ~ 110	77
110 ~ 120	78
120 ~ 130	78
130 ~ 140	79
140 ~ 150	80
150 ~ 160	80
160 ~ 170	81
170 ~ 180	82
180 ~ 190	82
190 ~ 200	83
200 ~ 210	83
210 ~ 220	84
220 ~ 230	84
230 ~ 240	85
240 ~ 250	85
250 ~ 260	86
260 ~ 270	86
270 ~ 280	86
280 ~ 290	87
290 ~ 300	87

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	2.86
Specific Gravity d	2.50
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	1.8	1.9	2.0	2.1	2.1	2.3	2.4	2.6	2.6	2.8	3.0	3.5
-60 ~ -40	1.7	1.8	2.0	2.0	2.0	2.1	2.3	2.5	2.6	2.8	3.0	3.4
-40 ~ -20	1.7	1.8	2.0	2.1	2.1	2.3	2.4	2.6	2.6	2.8	3.1	3.5
-20 ~ 0	1.8	1.9	2.1	2.3	2.3	2.4	2.5	2.7	2.7	2.9	3.2	3.7
0 ~ 20	1.9	2.0	2.2	2.3	2.3	2.4	2.5	2.8	2.8	3.0	3.4	3.9
20 ~ 40	2.1	2.2	2.4	2.4	2.5	2.6	2.7	2.9	2.9	3.3	3.5	4.0
40 ~ 60	2.1	2.2	2.6	2.6	2.6	2.8	2.9	3.1	3.1	3.4	3.7	4.2
60 ~ 80	2.3	2.4	2.6	2.7	2.7	2.8	2.9	3.2	3.3	3.6	3.9	4.4
80 ~ 100	2.4	2.5	2.8	2.8	2.8	3.0	3.1	3.3	3.4	3.6	3.9	4.6
100 ~ 120	2.5	2.6	2.9	2.9	3.0	3.1	3.2	3.4	3.5	3.8	4.1	4.7
120 ~ 140	2.5	2.7	2.9	3.0	3.0	3.2	3.3	3.6	3.6	3.9	4.2	4.8
140 ~ 160	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.7	3.7	4.0	4.3	4.9
160 ~ 180	2.6	2.8	3.0	3.1	3.2	3.3	3.4	3.7	3.7	4.0	4.3	4.9