S-BSL 7

Code(d) **516641**
Code(e) **518639**

Refractive Index n_d	**1.516 33** 1.516 330	Abbe Number ν_d	**64.14**	Dispersion $n_F - n_C$	**0.008 050**
Refractive Index n_e	1.518 251	Abbe Number ν_e	63.93	Dispersion $n_{F'} - n_{C'}$	0.008 107

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.488 99
n_{1970}	1.970 09	1.494 62
n_{1530}	1.529 58	1.500 50
n_{1129}	1.128 64	1.505 36
n_t	1.013 98	1.506 86
n_s	0.852 11	1.509 35
$n_{A'}$	0.768 19	1.510 97
n_r	0.706 52	1.512 43
n_C	0.656 27	1.513 86
$n_{C'}$	0.643 85	1.514 25
$n_{He\text{-}Ne}$	0.632 8	1.514 62
n_D	0.589 29	1.516 26
n_d	0.587 56	1.516 33
n_e	0.546 07	1.518 25
n_F	0.486 13	1.521 91
$n_{F'}$	0.479 99	1.522 36
$n_{He\text{-}Cd}$	0.441 57	1.525 64
n_g	0.435 835	1.526 21
n_h	0.404 656	1.529 77
n_i	0.365 015	1.535 78

Constants of Dispersion Formula	
A_1	1.151 501 90E+00
A_2	1.185 836 12E-01
A_3	1.263 013 59E+00
B_1	1.059 841 30E-02
B_2	-1.182 251 90E-02
B_3	1.296 176 62E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	1～2
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	80.0	
Rigidity Modulus G (GPa)	33.2	
Poisson's Ratio σ	0.205	
Knoop Hardness Hk[Class]	570	6
Abrasion Aa	94	

Partial Dispersions	
$n_C - n_t$	0.006 993
$n_C - n_{A'}$	0.002 882
$n_d - n_C$	0.002 475
$n_e - n_C$	0.004 396
$n_g - n_d$	0.009 884
$n_g - n_F$	0.004 309
$n_h - n_g$	0.003 554
$n_i - n_g$	0.009 571
$n_{C'} - n_t$	0.007 389
$n_e - n_{C'}$	0.004 000
$n_{F'} - n_e$	0.004 107
$n_i - n_{F'}$	0.013 427

Relative Partial Dispersions	
$\theta_{C,t}$	0.868 7
$\theta_{C,A'}$	0.358 0
$\theta_{d,C}$	0.307 5
$\theta_{e,C}$	0.546 1
$\theta_{g,d}$	1.227 8
$\theta_{g,F}$	0.535 3
$\theta_{h,g}$	0.441 5
$\theta_{i,g}$	1.188 9
$\theta'_{C',t}$	0.911 4
$\theta'_{e,C'}$	0.493 4
$\theta'_{F',e}$	0.506 6
$\theta'_{i,F'}$	1.656 2

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.021 1
$\Delta\theta_{C,A'}$	0.004 4
$\Delta\theta_{g,d}$	-0.003 7
$\Delta\theta_{g,F}$	-0.002 4
$\Delta\theta_{i,g}$	0.001 0

Coloring			
λ_{80}	320	λ_5	280
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	315	$\lambda_{0.05}$	278

CCI		
B	G	R
0.00	0.06	0.04

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	0.06
290	0.25
300	0.52
310	0.74
320	0.87
330	0.936
340	0.969
350	0.984
360	0.991
370	0.994
380	0.995
390	0.997
400	0.998
420	0.998
440	0.997
460	0.997
480	0.997
500	0.998
550	0.999
600	0.999
650	0.998
700	0.999
800	0.999
900	0.998
1 000	0.998
1 200	0.998
1 400	0.973
1 600	0.989
1 800	0.968
2 000	0.933
2 200	0.82
2 400	0.77

Thermal Properties		
Strain Point StP (℃)		532
Annealing Point AP (℃)		563
Transformation Temperature Tg (℃)		569
Yield Point At (℃)		641
Softening Point SP (℃)		718
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	73
	(100 ℃ ~ 300 ℃)	89
Thermal Conductivity λ (W/(m·K))		1.13

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ～ -90	58
-90 ～ -80	59
-80 ～ -70	61
-70 ～ -60	62
-60 ～ -50	64
-50 ～ -40	65
-40 ～ -30	67
-30 ～ -20	68
-20 ～ -10	69
-10 ～ 0	70
0 ～ 10	72
10 ～ 20	73
20 ～ 30	74
30 ～ 40	75
40 ～ 50	76
50 ～ 60	77
60 ～ 70	78
70 ～ 80	79
80 ～ 90	80
90 ～ 100	81
100 ～ 110	82
110 ～ 120	83
120 ～ 130	84
130 ～ 140	85
140 ～ 150	85
150 ～ 160	86
160 ～ 170	87
170 ～ 180	88
180 ～ 190	88
190 ～ 200	89
200 ～ 210	89
210 ～ 220	90
220 ～ 230	90
230 ～ 240	91
240 ～ 250	91
250 ～ 260	92
260 ～ 270	92
270 ～ 280	93
280 ～ 290	93
290 ～ 300	93

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.79
Specific Gravity *d*	2.52
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (℃)	$\Delta n_{rel}/\Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.4	2.4	2.6	2.8	3.3
-60 ~ -40	1.6	1.7	1.8	1.9	1.9	1.9	2.1	2.3	2.3	2.5	2.7	3.1
-40 ~ -20	1.5	1.6	1.8	1.8	1.9	2.0	2.1	2.3	2.3	2.5	2.7	3.2
-20 ~ 0	1.6	1.6	1.8	2.0	2.0	2.1	2.2	2.4	2.4	2.6	2.8	3.3
0 ~ 20	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.4	2.4	2.7	3.0	3.5
20 ~ 40	1.8	1.8	2.0	2.1	2.1	2.2	2.3	2.5	2.6	2.8	3.2	3.7
40 ~ 60	1.8	1.9	2.2	2.3	2.3	2.4	2.5	2.8	2.8	3.1	3.3	3.9
60 ~ 80	2.0	2.1	2.3	2.4	2.4	2.5	2.6	2.9	3.0	3.3	3.6	4.1
80 ~ 100	2.1	2.2	2.4	2.5	2.5	2.7	2.8	3.0	3.1	3.4	3.7	4.3
100 ~ 120	2.2	2.4	2.6	2.7	2.7	2.8	2.9	3.2	3.2	3.5	4.0	4.6
120 ~ 140	2.3	2.5	2.7	2.8	2.8	2.9	3.1	3.4	3.5	3.8	4.1	4.8
140 ~ 160	2.5	2.7	2.9	3.0	3.0	3.2	3.3	3.6	3.6	3.9	4.3	4.9
160 ~ 180	2.6	2.7	3.0	3.1	3.1	3.2	3.4	3.7	3.7	4.1	4.4	5.1

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※The name of the glass type is the model number assigned based on the main components of the composition: large, medium, small refractive index and serial number.