L-BAL35P

Code(d) **592610**
Code(e) **594608**

Refractive Index n_d	**1.592 08** 1.592 080	Abbe Number ν_d	**61.00**	Dispersion $n_F - n_C$	**0.009 707**
Refractive Index n_e	1.594 396	Abbe Number ν_e	60.77	Dispersion $n_{F'} - n_{C'}$	0.009 781

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.560 51
n_{1970}	1.970 09	1.566 87
n_{1530}	1.529 58	1.573 53
n_{1129}	1.128 64	1.579 08
n_t	1.013 98	1.580 82
n_s	0.852 11	1.583 73
$n_{A'}$	0.768 19	1.585 66
n_r	0.706 52	1.587 40
n_C	0.656 27	1.589 11
$n_{C'}$	0.643 85	1.589 58
$n_{He\text{-}Ne}$	0.632 8	1.590 02
n_D	0.589 29	1.591 99
n_d	0.587 56	1.592 08
n_e	0.546 07	1.594 40
n_F	0.486 13	1.598 81
$n_{F'}$	0.479 99	1.599 36
$n_{He\text{-}Cd}$	0.441 57	1.603 35
n_g	0.435 835	1.604 04
n_h	0.404 656	1.608 36
n_i	0.365 015	1.615 70

Constants of Dispersion Formula	
A_1	8.067 421 94E-01
A_2	6.904 886 48E-01
A_3	1.264 779 47E+00
B_1	1.488 362 31E-02
B_2	2.519 430 58E-03
B_3	1.113 145 70E+02

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

Mechanical Properties		
Young's Modulus E (GPa)	100.8	
Rigidity Modulus G (GPa)	40.3	
Poisson's Ratio σ	0.252	
Knoop Hardness Hk[Class]	630	6
Abrasion Aa	100	

Partial Dispersions	
$n_C - n_t$	0.008 288
$n_C - n_{A'}$	0.003 444
$n_d - n_C$	0.002 974
$n_e - n_C$	0.005 290
$n_g - n_d$	0.011 957
$n_g - n_F$	0.005 224
$n_h - n_g$	0.004 322
$n_i - n_g$	0.011 660
$n_{C'} - n_t$	0.008 763
$n_e - n_{C'}$	0.004 815
$n_{F'} - n_e$	0.004 966
$n_i - n_{F'}$	0.016 335

Relative Partial Dispersions	
$\theta_{C,t}$	0.853 8
$\theta_{C,A'}$	0.354 8
$\theta_{d,C}$	0.306 4
$\theta_{e,C}$	0.545 0
$\theta_{g,d}$	1.231 8
$\theta_{g,F}$	0.538 2
$\theta_{h,g}$	0.445 2
$\theta_{i,g}$	1.201 2
$\theta'_{C',t}$	0.895 9
$\theta'_{e,C'}$	0.492 3
$\theta'_{F',e}$	0.507 7
$\theta'_{i,F'}$	1.670 1

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.020 9
$\Delta\theta_{C,A'}$	0.005 0
$\Delta\theta_{g,d}$	-0.006 2
$\Delta\theta_{g,F}$	-0.004 6
$\Delta\theta_{i,g}$	-0.013 0

Coloring			
λ_{80}	345	λ_5	295
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	336	$\lambda_{0.05}$	300

CCI		
B	G	R
0.00	0.23	0.20

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	0.06
310	0.27
320	0.53
330	0.73
340	0.85
350	0.922
360	0.956
370	0.975
380	0.984
390	0.989
400	0.992
420	0.993
440	0.993
460	0.995
480	0.996
500	0.998
550	0.999
600	0.998
650	0.998
700	0.998
800	0.999
900	0.998
1 000	0.997
1 200	0.997
1 400	0.991
1 600	0.994
1 800	0.989
2 000	0.978
2 200	0.934
2 400	0.81

Thermal Properties		
Strain Point StP (℃)		489
Annealing Point AP (℃)		520
Transformation Temperature Tg (℃)		531
Yield Point At (℃)		575
Softening Point SP (℃)		619
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	66
	(100 ℃ ~ 300 ℃)	86
Thermal Conductivity λ (W/(m·K))		1.13

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	49
-90 ~ -80	51
-80 ~ -70	52
-70 ~ -60	54
-60 ~ -50	56
-50 ~ -40	57
-40 ~ -30	59
-30 ~ -20	60
-20 ~ -10	62
-10 ~ 0	63
0 ~ 10	64
10 ~ 20	66
20 ~ 30	67
30 ~ 40	69
40 ~ 50	70
50 ~ 60	71
60 ~ 70	72
70 ~ 80	74
80 ~ 90	75
90 ~ 100	76
100 ~ 110	77
110 ~ 120	78
120 ~ 130	79
130 ~ 140	80
140 ~ 150	81
150 ~ 160	82
160 ~ 170	83
170 ~ 180	84
180 ~ 190	85
190 ~ 200	86
200 ~ 210	87
210 ~ 220	88
220 ~ 230	88
230 ~ 240	89
240 ~ 250	90
250 ~ 260	91
260 ~ 270	91
270 ~ 280	92
280 ~ 290	93
290 ~ 300	93

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.29
Specific Gravity *d*	2.82
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	3.3	3.4	3.7	3.8	3.8	3.9	4.0	4.2	4.2	4.5	4.8	5.2
-60 ~ -40	3.2	3.3	3.5	3.7	3.7	3.8	3.9	4.1	4.2	4.4	4.6	5.2
-40 ~ -20	3.2	3.3	3.5	3.6	3.7	3.8	3.9	4.1	4.2	4.4	4.7	5.3
-20 ~ 0	3.2	3.3	3.5	3.6	3.6	3.8	4.0	4.2	4.2	4.5	4.8	5.3
0 ~ 20	3.2	3.4	3.7	3.7	3.8	3.9	4.0	4.3	4.3	4.6	4.9	5.5
20 ~ 40	3.4	3.5	3.7	3.8	3.9	4.0	4.1	4.4	4.4	4.7	5.0	5.7
40 ~ 60	3.4	3.5	3.8	3.9	3.9	4.0	4.2	4.5	4.5	4.9	5.2	5.8
60 ~ 80	3.5	3.6	3.9	4.0	4.0	4.2	4.3	4.6	4.7	5.0	5.3	5.9
80 ~ 100	3.5	3.6	4.0	4.1	4.2	4.3	4.4	4.7	4.8	5.1	5.5	6.1
100 ~ 120	3.6	3.8	4.1	4.2	4.2	4.4	4.5	4.8	4.9	5.2	5.6	6.2
120 ~ 140	3.6	3.8	4.1	4.2	4.3	4.4	4.6	4.9	4.9	5.3	5.7	6.4
140 ~ 160	3.6	3.8	4.2	4.3	4.3	4.5	4.6	5.0	5.0	5.4	5.8	6.6
160 ~ 180	3.6	3.8	4.1	4.3	4.4	4.5	4.7	5.0	5.1	5.5	5.9	6.6

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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.