L-BAL43

Code(d) **586597**
Code(e) **588594**

Refractive Index n_d	**1.585 73** 1.585 730	Abbe Number ν_d	**59.70**	Dispersion $n_F - n_C$	**0.009 812**
Refractive Index n_e	1.588 070	Abbe Number ν_e	59.45	Dispersion $n_{F'} - n_{C'}$	0.009 892

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.556 21
n_{1970}	1.970 09	1.561 85
n_{1530}	1.529 58	1.567 81
n_{1129}	1.128 64	1.572 93
n_t	1.013 98	1.574 58
n_s	0.852 11	1.577 40
$n_{A'}$	0.768 19	1.579 30
n_r	0.706 52	1.581 03
n_C	0.656 27	1.582 74
$n_{C'}$	0.643 85	1.583 21
$n_{He\text{-}Ne}$	0.632 8	1.583 66
n_D	0.589 29	1.585 64
n_d	0.587 56	1.585 73
n_e	0.546 07	1.588 07
n_F	0.486 13	1.592 55
$n_{F'}$	0.479 99	1.593 11
$n_{He\text{-}Cd}$	0.441 57	1.597 16
n_g	0.435 835	1.597 86
n_h	0.404 656	1.602 27
n_i	0.365 015	1.609 76

Constants of Dispersion Formula	
A_1	1.047 452 91E+00
A_2	4.284 528 73E-01
A_3	1.141 113 03E+00
B_1	5.632 097 56E-03
B_2	1.883 214 16E-02
B_3	1.141 970 69E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	51.4
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	90.4	
Rigidity Modulus G (GPa)	36.2	
Poisson's Ratio σ	0.250	
Knoop Hardness Hk[Class]	600	6
Abrasion Aa	118	

Partial Dispersions	
$n_C - n_t$	0.008 157
$n_C - n_{A'}$	0.003 435
$n_d - n_C$	0.002 993
$n_e - n_C$	0.005 333
$n_g - n_d$	0.012 132
$n_g - n_F$	0.005 313
$n_h - n_g$	0.004 404
$n_i - n_g$	0.011 900
$n_{C'} - n_t$	0.008 634
$n_e - n_{C'}$	0.004 856
$n_{F'} - n_e$	0.005 036
$n_i - n_{F'}$	0.016 656

Relative Partial Dispersions	
$\theta_{C,t}$	0.831 3
$\theta_{C,A'}$	0.350 1
$\theta_{d,C}$	0.305 0
$\theta_{e,C}$	0.543 5
$\theta_{g,d}$	1.236 4
$\theta_{g,F}$	0.541 5
$\theta_{h,g}$	0.448 8
$\theta_{i,g}$	1.212 8
$\theta'_{C',t}$	0.872 8
$\theta'_{e,C'}$	0.490 9
$\theta'_{F',e}$	0.509 1
$\theta'_{i,F'}$	1.683 8

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.004 5
$\Delta\theta_{C,A'}$	0.001 9
$\Delta\theta_{g,d}$	-0.004 3
$\Delta\theta_{g,F}$	-0.003 4
$\Delta\theta_{i,g}$	-0.012 3

Coloring			
λ_{80}	340	λ_5	285
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	328	$\lambda_{0.05}$	289

CCI		
B	G	R
0.00	0.10	0.10

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	0.29
310	0.51
320	0.70
330	0.83
340	0.906
350	0.949
360	0.971
370	0.983
380	0.988
390	0.990
400	0.996
420	0.997
440	0.996
460	0.998
480	0.999
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.993
1 600	0.997
1 800	0.988
2 000	0.975
2 200	0.914
2 400	0.84

Thermal Properties		
Strain Point StP (℃)		451
Annealing Point AP (℃)		482
Transformation Temperature Tg (℃)		506
Yield Point At (℃)		549
Softening Point SP (℃)		596
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	73
	(100 ℃ ~ 300 ℃)	93
Thermal Conductivity λ (W/(m·K))		1.03

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	56
-90 ~ -80	58
-80 ~ -70	59
-70 ~ -60	61
-60 ~ -50	63
-50 ~ -40	64
-40 ~ -30	66
-30 ~ -20	67
-20 ~ -10	68
-10 ~ 0	70
0 ~ 10	71
10 ~ 20	73
20 ~ 30	74
30 ~ 40	75
40 ~ 50	77
50 ~ 60	78
60 ~ 70	79
70 ~ 80	80
80 ~ 90	81
90 ~ 100	83
100 ~ 110	84
110 ~ 120	85
120 ~ 130	86
130 ~ 140	87
140 ~ 150	88
150 ~ 160	89
160 ~ 170	90
170 ~ 180	91
180 ~ 190	92
190 ~ 200	93
200 ~ 210	94
210 ~ 220	95
220 ~ 230	96
230 ~ 240	96
240 ~ 250	97
250 ~ 260	98
260 ~ 270	99
270 ~ 280	99
280 ~ 290	100
290 ~ 300	101

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.18
Specific Gravity *d*	3.05
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	2.5	2.6	3.0	3.0	3.1	3.2	3.3	3.5	3.5	3.8	4.2	4.6
-60 ~ -40	2.4	2.5	2.7	2.8	2.8	3.1	3.2	3.4	3.5	3.7	4.0	4.6
-40 ~ -20	2.3	2.4	2.7	2.8	2.8	3.0	3.1	3.4	3.4	3.7	4.0	4.5
-20 ~ 0	2.3	2.4	2.7	2.8	2.8	3.0	3.2	3.5	3.5	3.8	4.1	4.7
0 ~ 20	2.3	2.5	2.8	2.9	2.9	3.1	3.2	3.5	3.5	3.9	4.2	4.9
20 ~ 40	2.3	2.6	2.9	3.0	3.0	3.2	3.3	3.6	3.7	4.0	4.3	4.9
40 ~ 60	2.5	2.6	3.0	3.1	3.1	3.2	3.4	3.7	3.7	4.1	4.5	5.2
60 ~ 80	2.6	2.8	3.1	3.2	3.2	3.4	3.6	3.9	3.9	4.3	4.7	5.3
80 ~ 100	2.6	2.8	3.2	3.3	3.3	3.5	3.7	4.0	4.1	4.4	4.8	5.5
100 ~ 120	2.7	2.8	3.3	3.4	3.4	3.6	3.8	4.1	4.2	4.6	5.0	5.7
120 ~ 140	2.8	3.0	3.4	3.5	3.5	3.7	3.9	4.2	4.3	4.7	5.1	5.8
140 ~ 160	2.8	3.0	3.4	3.5	3.6	3.8	3.9	4.3	4.4	4.8	5.2	6.0
160 ~ 180	2.8	3.0	3.4	3.5	3.6	3.9	4.1	4.5	4.5	5.0	5.4	6.2

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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.