L-BAL42P

Code(d) **586592**
Code(e) **588590**

Refractive Index n_d	**1.585 93** 1.585 930	Abbe Number ν_d	**59.24**	Dispersion $n_F - n_C$	**0.009 890**
Refractive Index n_e	1.588 288	Abbe Number ν_e	58.99	Dispersion $n_{F'} - n_{C'}$	0.009 972

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.556 71
n_{1970}	1.970 09	1.562 22
n_{1530}	1.529 58	1.568 06
n_{1129}	1.128 64	1.573 11
n_t	1.013 98	1.574 75
n_s	0.852 11	1.577 57
$n_{A'}$	0.768 19	1.579 47
n_r	0.706 52	1.581 20
n_C	0.656 27	1.582 92
$n_{C'}$	0.643 85	1.583 40
$n_{He\text{-}Ne}$	0.632 8	1.583 85
n_D	0.589 29	1.585 84
n_d	0.587 56	1.585 93
n_e	0.546 07	1.588 29
n_F	0.486 13	1.592 81
$n_{F'}$	0.479 99	1.593 37
$n_{He\text{-}Cd}$	0.441 57	1.597 46
n_g	0.435 835	1.598 17
n_h	0.404 656	1.602 62
n_i	0.365 015	1.610 20

Constants of Dispersion Formula	
A_1	8.810 900 17E-01
A_2	5.950 388 59E-01
A_3	1.225 820 98E+00
B_1	1.484 966 55E-02
B_2	1.635 773 71E-03
B_3	1.251 137 20E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	1～2
Acid Resistance(Surface) Group SR	5.2
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	89.1	
Rigidity Modulus G (GPa)	35.7	
Poisson's Ratio σ	0.247	
Knoop Hardness Hk[Class]	590	6
Abrasion Aa	117	

Partial Dispersions	
$n_C - n_t$	0.008 169
$n_C - n_{A'}$	0.003 449
$n_d - n_C$	0.003 013
$n_e - n_C$	0.005 371
$n_g - n_d$	0.012 242
$n_g - n_F$	0.005 365
$n_h - n_g$	0.004 451
$n_i - n_g$	0.012 026
$n_{C'} - n_t$	0.008 649
$n_e - n_{C'}$	0.004 891
$n_{F'} - n_e$	0.005 081
$n_i - n_{F'}$	0.016 829

Relative Partial Dispersions	
$\theta_{C,t}$	0.826 0
$\theta_{C,A'}$	0.348 7
$\theta_{d,C}$	0.304 7
$\theta_{e,C}$	0.543 1
$\theta_{g,d}$	1.237 8
$\theta_{g,F}$	0.542 5
$\theta_{h,g}$	0.450 1
$\theta_{i,g}$	1.216 0
$\theta'_{C',t}$	0.867 3
$\theta'_{e,C'}$	0.490 5
$\theta'_{F',e}$	0.509 5
$\theta'_{i,F'}$	1.687 6

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.001 4
$\Delta\theta_{C,A'}$	0.001 0
$\Delta\theta_{g,d}$	-0.003 9
$\Delta\theta_{g,F}$	-0.003 1
$\Delta\theta_{i,g}$	-0.013 0

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

Internal transmission			
$\lambda_{0.80}$	326	$\lambda_{0.05}$	282

CCI		
B	G	R
0.00	0.17	0.14

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	0.03
290	0.14
300	0.32
310	0.55
320	0.73
330	0.85
340	0.924
350	0.960
360	0.978
370	0.987
380	0.992
390	0.994
400	0.995
420	0.996
440	0.996
460	0.996
480	0.998
500	0.998
550	0.999
600	0.999
650	0.998
700	0.999
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.988
1 600	0.993
1 800	0.983
2 000	0.968
2 200	0.901
2 400	0.83

Thermal Properties		
Strain Point StP (℃)		467
Annealing Point AP (℃)		494
Transformation Temperature Tg (℃)		502
Yield Point At (℃)		551
Softening Point SP (℃)		607
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	57
-80 ～ -70	59
-70 ～ -60	61
-60 ～ -50	62
-50 ～ -40	64
-40 ～ -30	65
-30 ～ -20	67
-20 ～ -10	68
-10 ～ 0	70
0 ～ 10	71
10 ～ 20	72
20 ～ 30	74
30 ～ 40	75
40 ～ 50	77
50 ～ 60	78
60 ～ 70	79
70 ～ 80	80
80 ～ 90	82
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	97
240 ～ 250	98
250 ～ 260	98
260 ～ 270	99
270 ～ 280	100
280 ～ 290	100
290 ～ 300	101

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.19
Specific Gravity *d*	3.05
Remarks	

Temperature Coefficients of Refractive Index

Range of Temperature (℃)	Δn_{rel} / ΔT (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	3.0	3.2	3.3	3.5	3.5	3.9	4.2	4.7
-60 ~ -40	2.4	2.5	2.7	2.8	2.8	3.0	3.2	3.4	3.4	3.7	4.0	4.7
-40 ~ -20	2.3	2.4	2.7	2.7	2.8	3.0	3.1	3.4	3.4	3.7	4.0	4.6
-20 ~ 0	2.3	2.4	2.7	2.8	2.8	2.9	3.1	3.4	3.4	3.8	4.1	4.7
0 ~ 20	2.3	2.5	2.8	2.9	2.9	3.0	3.2	3.4	3.5	3.8	4.1	4.8
20 ~ 40	2.3	2.6	2.8	2.9	3.0	3.1	3.2	3.5	3.6	3.9	4.2	5.0
40 ~ 60	2.4	2.6	2.9	3.0	3.0	3.1	3.3	3.6	3.6	4.0	4.4	5.1
60 ~ 80	2.5	2.7	3.0	3.1	3.1	3.3	3.4	3.7	3.8	4.1	4.5	5.2
80 ~ 100	2.5	2.7	3.1	3.2	3.2	3.4	3.5	3.8	3.9	4.3	4.6	5.3
100 ~ 120	2.6	2.8	3.2	3.3	3.3	3.5	3.6	4.0	4.0	4.4	4.8	5.5
120 ~ 140	2.7	2.9	3.2	3.3	3.4	3.5	3.7	4.0	4.1	4.5	4.8	5.6
140 ~ 160	2.7	2.9	3.2	3.4	3.4	3.5	3.7	4.1	4.1	4.5	4.9	5.8
160 ~ 180	2.7	2.9	3.2	3.4	3.4	3.7	3.8	4.2	4.2	4.7	5.1	5.8

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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.