S-BAL42

Code(d) **583594**
Code(e) **585591**

Refractive Index n_d	**1.583 13** 1.583 126	Abbe Number ν_d	**59.38**	Dispersion $n_F - n_C$	**0.009 821**
Refractive Index n_e	1.585 468	Abbe Number ν_e	59.11	Dispersion $n_{F'} - n_{C'}$	0.009 905

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.554 63
n_{1970}	1.970 09	1.559 92
n_{1530}	1.529 58	1.565 57
n_{1129}	1.128 64	1.570 48
n_t	1.013 98	1.572 08
n_s	0.852 11	1.574 85
$n_{A'}$	0.768 19	1.576 73
n_r	0.706 52	1.578 44
n_C	0.656 27	1.580 14
$n_{C'}$	0.643 85	1.580 61
$n_{He\text{-}Ne}$	0.632 8	1.581 06
n_D	0.589 29	1.583 04
n_d	0.587 56	1.583 13
n_e	0.546 07	1.585 47
n_F	0.486 13	1.589 96
$n_{F'}$	0.479 99	1.590 52
$n_{He\text{-}Cd}$	0.441 57	1.594 59
n_g	0.435 835	1.595 30
n_h	0.404 656	1.599 72
n_i	0.365 015	1.607 24

Constants of Dispersion Formula	
A_1	1.395 706 15E+00
A_2	7.185 050 70E-02
A_3	1.271 292 67E+00
B_1	1.122 188 43E-02
B_2	-2.521 174 22E-02
B_3	1.344 978 60E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	2
Weathering Resistance(Surface) Group W(S)	1～2
Acid Resistance(Surface) Group SR	1.2
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	84.7	
Rigidity Modulus G (GPa)	34.0	
Poisson's Ratio σ	0.246	
Knoop Hardness Hk[Class]	580	6
Abrasion Aa	121	

Partial Dispersions	
$n_C - n_t$	0.008 056
$n_C - n_{A'}$	0.003 413
$n_d - n_C$	0.002 987
$n_e - n_C$	0.005 329
$n_g - n_d$	0.012 171
$n_g - n_F$	0.005 337
$n_h - n_g$	0.004 424
$n_i - n_g$	0.011 946
$n_{C'} - n_t$	0.008 531
$n_e - n_{C'}$	0.004 854
$n_{F'} - n_e$	0.005 051
$n_i - n_{F'}$	0.016 724

Relative Partial Dispersions	
$\theta_{C,t}$	0.820 3
$\theta_{C,A'}$	0.347 5
$\theta_{d,C}$	0.304 1
$\theta_{e,C}$	0.542 6
$\theta_{g,d}$	1.239 3
$\theta_{g,F}$	0.543 4
$\theta_{h,g}$	0.450 5
$\theta_{i,g}$	1.216 4
$\theta'_{C',t}$	0.861 3
$\theta'_{e,C'}$	0.490 1
$\theta'_{F',e}$	0.509 9
$\theta'_{i,F'}$	1.688 4

Anomalous dispersion	
$\Delta\theta_{C,t}$	-0.005 0
$\Delta\theta_{C,A'}$	-0.000 4
$\Delta\theta_{g,d}$	-0.002 1
$\Delta\theta_{g,F}$	-0.002 0
$\Delta\theta_{i,g}$	-0.011 4

Coloring			
λ_{80}	340	λ_5	290
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	335	$\lambda_{0.05}$	292

CCI		
B	G	R
0.00	0.16	0.14

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	0.03
300	0.15
310	0.36
320	0.58
330	0.75
340	0.86
350	0.932
360	0.964
370	0.979
380	0.986
390	0.991
400	0.993
420	0.995
440	0.995
460	0.996
480	0.997
500	0.998
550	0.999
600	0.998
650	0.998
700	0.998
800	0.998
900	0.997
1 000	0.997
1 200	0.997
1 400	0.987
1 600	0.994
1 800	0.985
2 000	0.973
2 200	0.917
2 400	0.86

Thermal Properties		
Strain Point StP (℃)		503
Annealing Point AP (℃)		534
Transformation Temperature Tg (℃)		553
Yield Point At (℃)		606
Softening Point SP (℃)		672
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	67
	(100 ℃ ~ 300 ℃)	82
Thermal Conductivity λ (W/(m·K))		0.974

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ～ -90	54
-90 ～ -80	55
-80 ～ -70	56
-70 ～ -60	57
-60 ～ -50	59
-50 ～ -40	60
-40 ～ -30	61
-30 ～ -20	62
-20 ～ -10	63
-10 ～ 0	64
0 ～ 10	66
10 ～ 20	67
20 ～ 30	68
30 ～ 40	69
40 ～ 50	70
50 ～ 60	71
60 ～ 70	72
70 ～ 80	73
80 ～ 90	74
90 ～ 100	74
100 ～ 110	75
110 ～ 120	76
120 ～ 130	77
130 ～ 140	78
140 ～ 150	79
150 ～ 160	79
160 ～ 170	80
170 ～ 180	81
180 ～ 190	82
190 ～ 200	82
200 ～ 210	83
210 ～ 220	84
220 ～ 230	84
230 ～ 240	85
240 ～ 250	85
250 ～ 260	86
260 ～ 270	87
270 ～ 280	87
280 ～ 290	88
290 ～ 300	88

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.20
Specific Gravity *d*	3.19
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	2.2	2.3	2.5	2.7	2.7	2.8	2.9	3.1	3.1	3.4	3.8	4.3
-60 ~ -40	2.2	2.2	2.4	2.5	2.5	2.7	2.8	3.1	3.1	3.4	3.6	4.3
-40 ~ -20	2.2	2.3	2.5	2.5	2.5	2.8	2.8	3.1	3.1	3.4	3.7	4.3
-20 ~ 0	2.2	2.3	2.5	2.6	2.6	2.7	2.8	3.2	3.2	3.5	3.8	4.4
0 ~ 20	2.2	2.5	2.7	2.7	2.8	2.9	3.0	3.3	3.3	3.6	3.9	4.5
20 ~ 40	2.3	2.6	2.8	2.9	2.9	3.0	3.1	3.4	3.4	3.7	4.0	4.7
40 ~ 60	2.5	2.6	2.9	2.9	3.0	3.1	3.2	3.5	3.5	3.8	4.3	4.9
60 ~ 80	2.5	2.8	3.0	3.1	3.1	3.2	3.4	3.6	3.7	4.0	4.3	5.0
80 ~ 100	2.6	2.8	3.1	3.2	3.2	3.4	3.5	3.8	3.8	4.1	4.5	5.2
100 ~ 120	2.7	2.9	3.2	3.3	3.3	3.4	3.6	3.9	3.9	4.3	4.6	5.3
120 ~ 140	2.8	3.0	3.3	3.3	3.4	3.5	3.6	3.9	4.0	4.3	4.7	5.4
140 ~ 160	2.9	3.0	3.3	3.4	3.4	3.5	3.7	4.0	4.0	4.4	4.7	5.5
160 ~ 180	2.8	3.0	3.3	3.4	3.4	3.5	3.8	4.1	4.1	4.5	4.8	5.6

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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.