S-BAM 4

Code(d) **606437**
Code(e) **609434**

Refractive Index n_d	**1.605 62** 1.605 620	Abbe Number ν_d	**43.70**	Dispersion $n_F - n_C$	**0.013 857**
Refractive Index n_e	1.608 909	Abbe Number ν_e	43.41	Dispersion $n_{F'} - n_{C'}$	0.014 026

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.573 51
n_{1970}	1.970 09	1.578 50
n_{1530}	1.529 58	1.584 02
n_{1129}	1.128 64	1.589 26
n_t	1.013 98	1.591 13
n_s	0.852 11	1.594 53
$n_{A'}$	0.768 19	1.596 95
n_r	0.706 52	1.599 21
n_C	0.656 27	1.601 51
$n_{C'}$	0.643 85	1.602 15
$n_{He\text{-}Ne}$	0.632 8	1.602 76
n_D	0.589 29	1.605 50
n_d	0.587 56	1.605 62
n_e	0.546 07	1.608 91
n_F	0.486 13	1.615 36
$n_{F'}$	0.479 99	1.616 18
$n_{He\text{-}Cd}$	0.441 57	1.622 22
n_g	0.435 835	1.623 29
n_h	0.404 656	1.630 10
n_i	0.365 015	1.642 28

Constants of Dispersion Formula	
A_1	1.410 593 17E+00
A_2	1.112 013 06E-01
A_3	1.341 489 39E+00
B_1	9.633 121 92E-03
B_2	4.987 782 10E-02
B_3	1.522 376 96E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
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	1.0

Mechanical Properties		
Young's Modulus E (GPa)	76.2	
Rigidity Modulus G (GPa)	30.6	
Poisson's Ratio σ	0.244	
Knoop Hardness Hk[Class]	530	5
Abrasion Aa	159	

Partial Dispersions	
$n_C - n_t$	0.010 380
$n_C - n_{A'}$	0.004 557
$n_d - n_C$	0.004 113
$n_e - n_C$	0.007 402
$n_g - n_d$	0.017 671
$n_g - n_F$	0.007 927
$n_h - n_g$	0.006 811
$n_i - n_g$	0.018 992
$n_{C'} - n_t$	0.011 028
$n_e - n_{C'}$	0.006 754
$n_{F'} - n_e$	0.007 272
$n_i - n_{F'}$	0.026 102

Relative Partial Dispersions	
$\theta_{C,t}$	0.749 1
$\theta_{C,A'}$	0.328 9
$\theta_{d,C}$	0.296 8
$\theta_{e,C}$	0.534 2
$\theta_{g,d}$	1.275 2
$\theta_{g,F}$	0.572 1
$\theta_{h,g}$	0.491 5
$\theta_{i,g}$	1.370 6
$\theta'_{C',t}$	0.786 3
$\theta'_{e,C'}$	0.481 5
$\theta'_{F',e}$	0.518 5
$\theta'_{i,F'}$	1.861 0

Anomalous dispersion	
$\Delta\theta_{C,t}$	-0.002 6
$\Delta\theta_{C,A'}$	0.000 1
$\Delta\theta_{g,d}$	0.001 2
$\Delta\theta_{g,F}$	0.001 3
$\Delta\theta_{i,g}$	0.011 5

Coloring			
λ_{80}	380	λ_5	345
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	375	$\lambda_{0.05}$	350

CCI		
B	G	R
0.00	0.69	0.65

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	0.06
360	0.41
370	0.72
380	0.87
390	0.938
400	0.965
420	0.986
440	0.991
460	0.991
480	0.993
500	0.995
550	0.998
600	0.997
650	0.996
700	0.997
800	0.999
900	0.998
1 000	0.998
1 200	0.998
1 400	0.995
1 600	0.994
1 800	0.980
2 000	0.962
2 200	0.919
2 400	0.89

Thermal Properties		
Strain Point StP (℃)		548
Annealing Point AP (℃)		577
Transformation Temperature Tg (℃)		603
Yield Point At (℃)		650
Softening Point SP (℃)		722
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	85
α_l (10^{-7} K^{-1})	(100 ℃ ~ 300 ℃)	101
Thermal Conductivity λ (W/(m·K))		0.931

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ～ -90	71
-90 ～ -80	73
-80 ～ -70	74
-70 ～ -60	75
-60 ～ -50	76
-50 ～ -40	77
-40 ～ -30	78
-30 ～ -20	79
-20 ～ -10	81
-10 ～ 0	82
0 ～ 10	83
10 ～ 20	84
20 ～ 30	85
30 ～ 40	86
40 ～ 50	87
50 ～ 60	88
60 ～ 70	89
70 ～ 80	90
80 ～ 90	91
90 ～ 100	92
100 ～ 110	93
110 ～ 120	94
120 ～ 130	95
130 ～ 140	96
140 ～ 150	96
150 ～ 160	97
160 ～ 170	98
170 ～ 180	99
180 ～ 190	100
190 ～ 200	101
200 ～ 210	102
210 ～ 220	102
220 ～ 230	103
230 ～ 240	104
240 ～ 250	105
250 ～ 260	105
260 ～ 270	106
270 ～ 280	107
280 ～ 290	108
290 ～ 300	108

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.41
Specific Gravity *d*	2.91
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	0.1	0.3	0.6	0.7	0.7	0.9	1.0	1.5	1.5	2.0	2.5	3.7
-60 ~ -40	0.0	0.1	0.5	0.6	0.6	0.8	1.0	1.3	1.4	2.0	2.5	3.6
-40 ~ -20	-0.1	0.1	0.5	0.6	0.6	0.8	1.0	1.3	1.4	1.9	2.5	3.7
-20 ~ 0	0.0	0.1	0.4	0.6	0.7	0.9	1.0	1.4	1.5	2.0	2.6	3.9
0 ~ 20	0.1	0.2	0.6	0.7	0.7	0.9	1.1	1.5	1.6	2.1	2.8	4.0
20 ~ 40	0.1	0.3	0.6	0.7	0.8	1.0	1.2	1.6	1.7	2.2	2.8	4.3
40 ~ 60	0.2	0.3	0.7	0.8	0.8	1.1	1.3	1.8	1.9	2.5	3.1	4.4
60 ~ 80	0.3	0.5	0.8	1.0	1.0	1.2	1.4	1.9	2.0	2.6	3.2	4.6
80 ~ 100	0.4	0.5	0.9	1.1	1.1	1.3	1.5	2.0	2.1	2.7	3.4	4.8
100 ~ 120	0.4	0.6	1.0	1.1	1.2	1.4	1.6	2.1	2.2	2.8	3.5	5.0
120 ~ 140	0.5	0.6	1.1	1.2	1.2	1.5	1.7	2.2	2.3	2.9	3.6	5.2
140 ~ 160	0.4	0.6	1.1	1.2	1.3	1.5	1.7	2.3	2.3	3.0	3.8	5.4
160 ~ 180	0.4	0.6	1.1	1.3	1.3	1.6	1.8	2.4	2.5	3.1	3.9	5.5

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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.