S-BAH11

Code(d) **667483**
Code(e) **670480**

Refractive Index n_d	**1.666 72** 1.666 718	Abbe Number ν_d	**48.32**	Dispersion $n_F - n_C$	**0.013 797**
Refractive Index n_e	1.670 000	Abbe Number ν_e	48.04	Dispersion $n_{F'} - n_{C'}$	0.013 948

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.633 28
n_{1970}	1.970 09	1.638 66
n_{1530}	1.529 58	1.644 56
n_{1129}	1.128 64	1.650 08
n_t	1.013 98	1.652 01
n_s	0.852 11	1.655 51
$n_{A'}$	0.768 19	1.657 98
n_r	0.706 52	1.660 27
n_C	0.656 27	1.662 59
$n_{C'}$	0.643 85	1.663 24
$n_{He\text{-}Ne}$	0.632 8	1.663 85
n_D	0.589 29	1.666 60
n_d	0.587 56	1.666 72
n_e	0.546 07	1.670 00
n_F	0.486 13	1.676 39
$n_{F'}$	0.479 99	1.677 19
$n_{He\text{-}Cd}$	0.441 57	1.683 09
n_g	0.435 835	1.684 12
n_h	0.404 656	1.690 67
n_i	0.365 015	1.702 13

Constants of Dispersion Formula	
A_1	1.571 388 60E+00
A_2	1.478 693 13E-01
A_3	1.280 928 46E+00
B_1	9.108 079 36E-03
B_2	4.024 016 84E-02
B_3	1.303 993 67E+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	52.2
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	92.9	
Rigidity Modulus G (GPa)	36.5	
Poisson's Ratio σ	0.274	
Knoop Hardness Hk[Class]	590	6
Abrasion Aa	153	

Partial Dispersions	
$n_C - n_t$	0.010 576
$n_C - n_{A'}$	0.004 611
$n_d - n_C$	0.004 129
$n_e - n_C$	0.007 411
$n_g - n_d$	0.017 407
$n_g - n_F$	0.007 739
$n_h - n_g$	0.006 549
$n_i - n_g$	0.018 002
$n_{C'} - n_t$	0.011 228
$n_e - n_{C'}$	0.006 759
$n_{F'} - n_e$	0.007 189
$n_i - n_{F'}$	0.024 938

Relative Partial Dispersions	
$\theta_{C,t}$	0.766 5
$\theta_{C,A'}$	0.334 2
$\theta_{d,C}$	0.299 3
$\theta_{e,C}$	0.537 1
$\theta_{g,d}$	1.261 7
$\theta_{g,F}$	0.560 9
$\theta_{h,g}$	0.474 7
$\theta_{i,g}$	1.304 8
$\theta'_{C',t}$	0.805 0
$\theta'_{e,C'}$	0.484 6
$\theta'_{F',e}$	0.515 4
$\theta'_{i,F'}$	1.787 9

Anomalous dispersion	
$\Delta\theta_{C,t}$	-0.006 9
$\Delta\theta_{C,A'}$	-0.000 2
$\Delta\theta_{g,d}$	-0.002 7
$\Delta\theta_{g,F}$	-0.002 4
$\Delta\theta_{i,g}$	-0.015 6

Coloring			
λ_{80}	380	λ_5	340
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	375	$\lambda_{0.05}$	340

CCI		
B	G	R
0.00	0.98	0.94

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	0.04
350	0.27
360	0.56
370	0.75
380	0.86
390	0.922
400	0.952
420	0.975
440	0.982
460	0.987
480	0.991
500	0.994
550	0.997
600	0.995
650	0.995
700	0.996
800	0.997
900	0.997
1 000	0.997
1 200	0.998
1 400	0.994
1 600	0.995
1 800	0.988
2 000	0.976
2 200	0.936
2 400	0.84

Thermal Properties		
Strain Point StP (°C)		593
Annealing Point AP (°C)		617
Transformation Temperature Tg (°C)		626
Yield Point At (°C)		682
Softening Point SP (°C)		738
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	70
α_l (10^{-7} K^{-1})	(100 °C ~ 300 °C)	84
Thermal Conductivity λ (W/(m·K))		0.858

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	57
-90 ~ -80	58
-80 ~ -70	59
-70 ~ -60	61
-60 ~ -50	62
-50 ~ -40	63
-40 ~ -30	64
-30 ~ -20	65
-20 ~ -10	66
-10 ~ 0	68
0 ~ 10	69
10 ~ 20	70
20 ~ 30	71
30 ~ 40	72
40 ~ 50	73
50 ~ 60	74
60 ~ 70	75
70 ~ 80	76
80 ~ 90	76
90 ~ 100	77
100 ~ 110	78
110 ~ 120	79
120 ~ 130	80
130 ~ 140	80
140 ~ 150	81
150 ~ 160	82
160 ~ 170	83
170 ~ 180	83
180 ~ 190	84
190 ~ 200	85
200 ~ 210	85
210 ~ 220	86
220 ~ 230	86
230 ~ 240	87
240 ~ 250	87
250 ~ 260	88
260 ~ 270	88
270 ~ 280	89
280 ~ 290	89
290 ~ 300	90

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.06
Specific Gravity *d*	3.59
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (°C)	$\Delta n_{rel} / \Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	2.5	2.6	3.0	3.1	3.1	3.3	3.6	3.9	4.0	4.4	5.0	5.9
-60 ~ -40	2.3	2.5	2.9	3.0	3.0	3.2	3.4	3.8	3.9	4.4	4.9	5.8
-40 ~ -20	2.3	2.5	2.8	2.9	3.1	3.3	3.5	3.9	3.9	4.4	4.9	6.0
-20 ~ 0	2.3	2.5	2.9	3.0	3.1	3.3	3.5	4.0	4.0	4.6	5.1	6.1
0 ~ 20	2.4	2.6	3.1	3.2	3.2	3.5	3.7	4.1	4.2	4.7	5.2	6.2
20 ~ 40	2.5	2.7	3.1	3.2	3.3	3.5	3.8	4.3	4.3	4.9	5.4	6.5
40 ~ 60	2.7	2.8	3.3	3.5	3.5	3.7	3.9	4.4	4.5	5.0	5.6	6.7
60 ~ 80	2.8	3.0	3.4	3.5	3.6	3.8	4.1	4.5	4.7	5.3	5.9	7.0
80 ~ 100	2.9	3.1	3.6	3.7	3.8	4.0	4.2	4.7	4.8	5.4	6.0	7.3
100 ~ 120	3.0	3.2	3.7	3.8	3.9	4.1	4.4	4.9	5.0	5.6	6.2	7.5
120 ~ 140	3.1	3.3	3.8	4.0	4.0	4.3	4.5	5.0	5.1	5.7	6.4	7.7
140 ~ 160	3.1	3.4	3.9	4.0	4.1	4.3	4.7	5.2	5.3	6.0	6.6	7.9
160 ~ 180	3.3	3.5	4.0	4.2	4.2	4.5	4.8	5.3	5.4	6.1	6.7	8.1

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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.