S-LAH59

Code(d) **816466**
Code(e) **820464**

Refractive Index n_d	**1.816 00** 1.816 000	Abbe Number ν_d	**46.62**	Dispersion $n_F - n_C$	**0.017 503**
Refractive Index n_e	1.820 167	Abbe Number ν_e	46.37	Dispersion $n_{F'} - n_{C'}$	0.017 688

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.773 45
n_{1970}	1.970 09	1.780 33
n_{1530}	1.529 58	1.787 84
n_{1129}	1.128 64	1.794 83
n_t	1.013 98	1.797 29
n_s	0.852 11	1.801 74
$n_{A'}$	0.768 19	1.804 88
n_r	0.706 52	1.807 80
n_C	0.656 27	1.810 75
$n_{C'}$	0.643 85	1.811 58
$n_{He\text{-}Ne}$	0.632 8	1.812 36
n_D	0.589 29	1.815 85
n_d	0.587 56	1.816 00
n_e	0.546 07	1.820 17
n_F	0.486 13	1.828 25
$n_{F'}$	0.479 99	1.829 27
$n_{He\text{-}Cd}$	0.441 57	1.836 70
n_g	0.435 835	1.838 00
n_h	0.404 656	1.846 19
n_i	0.365 015	1.860 34

Constants of Dispersion Formula	
A_1	1.513 729 67E+00
A_2	7.024 623 43E-01
A_3	1.336 009 82E+00
B_1	7.052 469 01E-03
B_2	2.494 886 89E-02
B_3	1.000 859 08E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	2
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	3.0
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	125.0	
Rigidity Modulus G (GPa)	48.2	
Poisson's Ratio σ	0.298	
Knoop Hardness Hk[Class]	740	7
Abrasion Aa	50	

Partial Dispersions	
$n_C - n_t$	0.013 459
$n_C - n_{A'}$	0.005 870
$n_d - n_C$	0.005 251
$n_e - n_C$	0.009 418
$n_g - n_d$	0.021 997
$n_g - n_F$	0.009 745
$n_h - n_g$	0.008 188
$n_i - n_g$	0.022 341
$n_{C'} - n_t$	0.014 289
$n_e - n_{C'}$	0.008 588
$n_{F'} - n_e$	0.009 100
$n_i - n_{F'}$	0.031 071

Relative Partial Dispersions	
$\theta_{C,t}$	0.769 0
$\theta_{C,A'}$	0.335 4
$\theta_{d,C}$	0.300 0
$\theta_{e,C}$	0.538 1
$\theta_{g,d}$	1.256 8
$\theta_{g,F}$	0.556 8
$\theta_{h,g}$	0.467 8
$\theta_{i,g}$	1.276 4
$\theta'_{C,t}$	0.807 8
$\theta'_{e,C'}$	0.485 5
$\theta'_{F,e}$	0.514 5
$\theta'_{i,F'}$	1.756 6

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.003 6
$\Delta\theta_{C,A'}$	0.003 0
$\Delta\theta_{g,d}$	-0.011 1
$\Delta\theta_{g,F}$	-0.009 2
$\Delta\theta_{i,g}$	-0.058 2

Coloring			
λ_{80}	390	λ_5	290
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	359	$\lambda_{0.05}$	298

CCI		
B	G	R
0.00	0.94	0.93

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	0.02
300	0.06
310	0.09
320	0.28
330	0.43
340	0.58
350	0.71
360	0.81
370	0.88
380	0.921
390	0.943
400	0.958
420	0.973
440	0.979
460	0.984
480	0.989
500	0.994
550	0.997
600	0.996
650	0.996
700	0.996
800	0.996
900	0.995
1 000	0.995
1 200	0.995
1 400	0.995
1 600	0.994
1 800	0.989
2 000	0.973
2 200	0.938
2 400	0.76

Thermal Properties		
Strain Point StP (°C)		644
Annealing Point AP (°C)		690
Transformation Temperature Tg (°C)		715
Yield Point At (°C)		750
Softening Point SP (°C)		773
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	64
	(100 °C ~ 300 °C)	77
Thermal Conductivity λ (W/(m·K))		0.816

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	51
-90 ~ -80	53
-80 ~ -70	54
-70 ~ -60	55
-60 ~ -50	56
-50 ~ -40	57
-40 ~ -30	58
-30 ~ -20	59
-20 ~ -10	60
-10 ~ 0	61
0 ~ 10	62
10 ~ 20	63
20 ~ 30	64
30 ~ 40	65
40 ~ 50	66
50 ~ 60	67
60 ~ 70	68
70 ~ 80	69
80 ~ 90	70
90 ~ 100	71
100 ~ 110	71
110 ~ 120	72
120 ~ 130	73
130 ~ 140	74
140 ~ 150	74
150 ~ 160	75
160 ~ 170	76
170 ~ 180	76
180 ~ 190	77
190 ~ 200	77
200 ~ 210	78
210 ~ 220	78
220 ~ 230	79
230 ~ 240	79
240 ~ 250	80
250 ~ 260	80
260 ~ 270	81
270 ~ 280	81
280 ~ 290	82
290 ~ 300	82

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.37
Specific Gravity d	5.07
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	3.2	3.4	3.8	4.0	4.0	4.2	4.4	4.9	5.0	5.4	6.0	6.9
-60 ~ -40	3.0	3.3	3.7	3.8	3.9	4.1	4.3	4.8	4.9	5.4	5.9	6.9
-40 ~ -20	3.0	3.2	3.6	3.8	3.9	4.1	4.3	4.8	4.9	5.4	6.0	7.0
-20 ~ 0	2.9	3.3	3.7	3.9	3.9	4.2	4.4	4.9	4.9	5.6	6.1	7.1
0 ~ 20	3.1	3.3	3.8	4.0	4.0	4.3	4.5	5.0	5.1	5.7	6.3	7.4
20 ~ 40	3.1	3.4	4.0	4.1	4.2	4.4	4.7	5.2	5.3	5.9	6.5	7.7
40 ~ 60	3.3	3.6	4.1	4.3	4.3	4.6	4.9	5.4	5.5	6.1	6.8	8.0
60 ~ 80	3.4	3.7	4.2	4.4	4.4	4.7	5.0	5.6	5.7	6.4	7.0	8.2
80 ~ 100	3.6	3.9	4.4	4.6	4.6	4.9	5.2	5.8	5.9	6.5	7.2	8.5
100 ~ 120	3.7	4.0	4.6	4.8	4.8	5.1	5.4	6.0	6.1	6.8	7.4	8.7
120 ~ 140	3.8	4.1	4.7	4.9	5.0	5.3	5.6	6.2	6.3	7.0	7.7	9.0
140 ~ 160	3.9	4.2	4.9	5.0	5.1	5.4	5.7	6.4	6.4	7.2	7.9	9.4
160 ~ 180	4.0	4.3	4.9	5.2	5.2	5.5	5.9	6.6	6.7	7.4	8.2	9.6

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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.