S-LAH51

Code(d) **786442**
Code(e) **790439**

Refractive Index n_d	**1.785 90** 1.785 896	Abbe Number ν_d	**44.20**	Dispersion $n_F - n_C$	**0.017 780**
Refractive Index n_e	1.790 123	Abbe Number ν_e	43.95	Dispersion $n_{F'} - n_{C'}$	0.017 979

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.742 65
n_{1970}	1.970 09	1.749 72
n_{1530}	1.529 58	1.757 40
n_{1129}	1.128 64	1.764 52
n_t	1.013 98	1.767 00
n_s	0.852 11	1.771 50
$n_{A'}$	0.768 19	1.774 66
n_r	0.706 52	1.777 61
n_C	0.656 27	1.780 58
$n_{C'}$	0.643 85	1.781 42
$n_{He\text{-}Ne}$	0.632 8	1.782 21
n_D	0.589 29	1.785 74
n_d	0.587 56	1.785 90
n_e	0.546 07	1.790 12
n_F	0.486 13	1.798 36
$n_{F'}$	0.479 99	1.799 40
$n_{He\text{-}Cd}$	0.441 57	1.807 04
n_g	0.435 835	1.808 38
n_h	0.404 656	1.816 87
n_i	0.365 015	1.831 75

Constants of Dispersion Formula	
A_1	1.825 869 91E+00
A_2	2.830 233 49E-01
A_3	1.359 643 19E+00
B_1	9.352 971 52E-03
B_2	3.738 030 57E-02
B_3	1.006 557 98E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	1～2
Acid Resistance(Surface) Group SR	4.0
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	112.9	
Rigidity Modulus G (GPa)	43.5	
Poisson's Ratio σ	0.297	
Knoop Hardness Hk[Class]	650	7
Abrasion Aa	80	

Partial Dispersions	
$n_C - n_t$	0.013 580
$n_C - n_{A'}$	0.005 923
$n_d - n_C$	0.005 312
$n_e - n_C$	0.009 539
$n_g - n_d$	0.022 480
$n_g - n_F$	0.010 012
$n_h - n_g$	0.008 492
$n_i - n_g$	0.023 375
$n_{C'} - n_t$	0.014 419
$n_e - n_{C'}$	0.008 700
$n_{F'} - n_e$	0.009 279
$n_i - n_{F'}$	0.032 349

Relative Partial Dispersions	
$\theta_{C,t}$	0.763 8
$\theta_{C,A'}$	0.333 1
$\theta_{d,C}$	0.298 8
$\theta_{e,C}$	0.536 5
$\theta_{g,d}$	1.264 3
$\theta_{g,F}$	0.563 1
$\theta_{h,g}$	0.477 6
$\theta_{i,g}$	1.314 7
$\theta'_{C',t}$	0.802 0
$\theta'_{e,C'}$	0.483 9
$\theta'_{F',e}$	0.516 1
$\theta'_{i,F'}$	1.799 3

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.009 7
$\Delta\theta_{C,A'}$	0.003 7
$\Delta\theta_{g,d}$	-0.008 6
$\Delta\theta_{g,F}$	-0.006 9
$\Delta\theta_{i,g}$	-0.040 2

Coloring			
λ_{80}	390	λ_5	335
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	366	$\lambda_{0.05}$	333

CCI		
B	G	R
0.00	0.83	0.82

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	0.01
340	0.17
350	0.51
360	0.73
370	0.84
380	0.910
390	0.942
400	0.961
420	0.977
440	0.984
460	0.989
480	0.993
500	0.995
550	0.998
600	0.997
650	0.997
700	0.998
800	0.998
900	0.997
1 000	0.996
1 200	0.996
1 400	0.991
1 600	0.989
1 800	0.981
2 000	0.957
2 200	0.89
2 400	0.68

Thermal Properties		
Strain Point StP (°C)		568
Annealing Point AP (°C)		598
Transformation Temperature Tg (°C)		614
Yield Point At (°C)		649
Softening Point SP (°C)		677
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	59
	(100 °C ~ 300 °C)	73
Thermal Conductivity λ (W/(m·K))		0.826

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ～ -90	47
-90 ～ -80	48
-80 ～ -70	49
-70 ～ -60	50
-60 ～ -50	51
-50 ～ -40	53
-40 ～ -30	54
-30 ～ -20	55
-20 ～ -10	56
-10 ～ 0	57
0 ～ 10	58
10 ～ 20	59
20 ～ 30	60
30 ～ 40	61
40 ～ 50	62
50 ～ 60	63
60 ～ 70	64
70 ～ 80	65
80 ～ 90	65
90 ～ 100	66
100 ～ 110	67
110 ～ 120	68
120 ～ 130	69
130 ～ 140	69
140 ～ 150	70
150 ～ 160	71
160 ～ 170	72
170 ～ 180	72
180 ～ 190	73
190 ～ 200	73
200 ～ 210	74
210 ～ 220	75
220 ～ 230	75
230 ～ 240	76
240 ～ 250	76
250 ～ 260	77
260 ～ 270	77
270 ～ 280	78
280 ～ 290	78
290 ～ 300	78

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.88
Specific Gravity *d*	4.40
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	3.7	3.9	4.4	4.5	4.7	4.9	5.1	5.6	5.7	6.4	6.9	8.2
-60 ~ -40	3.7	4.0	4.4	4.7	4.7	4.9	5.2	5.7	5.7	6.4	7.0	8.2
-40 ~ -20	3.8	4.1	4.6	4.7	4.8	5.0	5.3	5.9	5.9	6.6	7.2	8.5
-20 ~ 0	4.0	4.2	4.8	4.9	5.0	5.3	5.5	6.0	6.1	6.7	7.3	8.7
0 ~ 20	4.1	4.4	4.9	5.1	5.1	5.4	5.7	6.2	6.3	6.9	7.6	8.9
20 ~ 40	4.3	4.5	5.0	5.2	5.3	5.6	5.9	6.4	6.5	7.1	7.8	9.1
40 ~ 60	4.4	4.7	5.3	5.5	5.5	5.8	6.0	6.6	6.7	7.3	8.0	9.3
60 ~ 80	4.6	4.8	5.4	5.5	5.6	5.9	6.1	6.7	6.8	7.5	8.2	9.5
80 ~ 100	4.7	4.9	5.5	5.6	5.7	6.0	6.3	6.8	6.9	7.6	8.3	9.6
100 ~ 120	4.6	5.0	5.5	5.7	5.8	6.1	6.3	6.9	7.0	7.7	8.4	9.8
120 ~ 140	4.7	5.0	5.6	5.7	5.8	6.1	6.4	7.0	7.0	7.7	8.5	9.8
140 ~ 160	4.6	4.9	5.5	5.7	5.7	6.0	6.3	6.9	7.0	7.7	8.4	9.9
160 ~ 180	4.5	4.8	5.4	5.6	5.6	5.9	6.2	6.8	6.9	7.7	8.5	9.9

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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.