L-LAH53

Code(d) **806409**
Code(e) **811407**

Refractive Index n_d	**1.806 25** 1.806 250	Abbe Number ν_d	**40.91**	Dispersion $n_F - n_C$	**0.019 709**
Refractive Index n_e	1.810 931	Abbe Number ν_e	40.66	Dispersion $n_{F'} - n_{C'}$	0.019 946

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.760 94
n_{1970}	1.970 09	1.767 97
n_{1530}	1.529 58	1.775 69
n_{1129}	1.128 64	1.783 03
n_t	1.013 98	1.785 66
n_s	0.852 11	1.790 48
$n_{A'}$	0.768 19	1.793 91
n_r	0.706 52	1.797 13
n_C	0.656 27	1.800 39
$n_{C'}$	0.643 85	1.801 32
$n_{He\text{-}Ne}$	0.632 8	1.802 18
n_D	0.589 29	1.806 08
n_d	0.587 56	1.806 25
n_e	0.546 07	1.810 93
n_F	0.486 13	1.820 10
$n_{F'}$	0.479 99	1.821 26
$n_{He\text{-}Cd}$	0.441 57	1.829 81
n_g	0.435 835	1.831 32
n_h	0.404 656	1.840 90
n_i	0.365 015	1.857 83

Constants of Dispersion Formula	
A_1	1.874 099 91E+00
A_2	2.979 214 02E-01
A_3	1.350 642 85E+00
B_1	9.933 183 44E-03
B_2	4.055 018 25E-02
B_3	1.005 022 00E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	51.2
Phosphate Resistance PR	2.0

Mechanical Properties		
Young's Modulus E (GPa)	115.1	
Rigidity Modulus G (GPa)	44.3	
Poisson's Ratio σ	0.298	
Knoop Hardness Hk[Class]	660	7
Abrasion Aa	83	

Partial Dispersions	
$n_C - n_t$	0.014 736
$n_C - n_{A'}$	0.006 484
$n_d - n_C$	0.005 856
$n_e - n_C$	0.010 537
$n_g - n_d$	0.025 070
$n_g - n_F$	0.011 217
$n_h - n_g$	0.009 578
$n_i - n_g$	0.026 514
$n_{C'} - n_t$	0.015 658
$n_e - n_{C'}$	0.009 615
$n_{F'} - n_e$	0.010 331
$n_i - n_{F'}$	0.036 572

Relative Partial Dispersions	
$\theta_{C,t}$	0.747 7
$\theta_{C,A'}$	0.329 0
$\theta_{d,C}$	0.297 1
$\theta_{e,C}$	0.534 6
$\theta_{g,d}$	1.272 0
$\theta_{g,F}$	0.569 1
$\theta_{h,g}$	0.486 0
$\theta_{i,g}$	1.345 3
$\theta'_{C,t}$	0.785 0
$\theta'_{e,C'}$	0.482 1
$\theta'_{F,e}$	0.517 9
$\theta'_{i,F'}$	1.833 6

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.009 1
$\Delta\theta_{C,A'}$	0.003 6
$\Delta\theta_{g,d}$	-0.007 7
$\Delta\theta_{g,F}$	-0.006 2
$\Delta\theta_{i,g}$	-0.037 2

Coloring			
λ_{80}	400	λ_5	335
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	367	$\lambda_{0.05}$	338

CCI		
B	G	R
0.00	0.88	0.94

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	0.16
350	0.47
360	0.70
370	0.83
380	0.89
390	0.929
400	0.950
420	0.970
440	0.979
460	0.985
480	0.989
500	0.993
550	0.997
600	0.997
650	0.998
700	0.998
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.997
1 600	0.996
1 800	0.988
2 000	0.969
2 200	0.919
2 400	0.73

Thermal Properties		
Strain Point StP (℃)		534
Annealing Point AP (℃)		558
Transformation Temperature Tg (℃)		573
Yield Point At (℃)		610
Softening Point SP (℃)		646
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	59
	(100 ℃ ~ 300 ℃)	75
Thermal Conductivity λ (W/(m·K))		0.862

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	45
-90 ~ -80	46
-80 ~ -70	47
-70 ~ -60	49
-60 ~ -50	50
-50 ~ -40	51
-40 ~ -30	53
-30 ~ -20	54
-20 ~ -10	55
-10 ~ 0	56
0 ~ 10	57
10 ~ 20	58
20 ~ 30	59
30 ~ 40	61
40 ~ 50	62
50 ~ 60	63
60 ~ 70	64
70 ~ 80	65
80 ~ 90	66
90 ~ 100	67
100 ~ 110	67
110 ~ 120	68
120 ~ 130	69
130 ~ 140	70
140 ~ 150	71
150 ~ 160	72
160 ~ 170	73
170 ~ 180	73
180 ~ 190	74
190 ~ 200	75
200 ~ 210	75
210 ~ 220	76
220 ~ 230	77
230 ~ 240	77
240 ~ 250	78
250 ~ 260	78
260 ~ 270	79
270 ~ 280	80
280 ~ 290	80
290 ~ 300	80

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.88
Specific Gravity *d*	4.49
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	5.2	5.5	6.0	6.2	6.2	6.5	6.7	7.4	7.4	8.1	8.9	10.3
-60 ~ -40	5.1	5.5	6.0	6.1	6.2	6.4	6.7	7.4	7.4	8.1	8.9	10.4
-40 ~ -20	5.1	5.4	5.9	6.1	6.2	6.5	6.8	7.4	7.5	8.2	9.0	10.6
-20 ~ 0	5.2	5.4	6.1	6.3	6.3	6.6	6.9	7.5	7.6	8.5	9.3	10.9
0 ~ 20	5.2	5.6	6.2	6.4	6.4	6.8	7.1	7.7	7.8	8.7	9.5	11.2
20 ~ 40	5.4	5.7	6.4	6.6	6.6	6.9	7.3	7.9	8.0	8.9	9.7	11.6
40 ~ 60	5.5	5.9	6.5	6.7	6.7	7.1	7.4	8.1	8.2	9.1	10.0	11.9
60 ~ 80	5.6	5.9	6.6	6.8	6.9	7.2	7.6	8.3	8.5	9.4	10.3	12.2
80 ~ 100	5.7	6.1	6.7	6.9	7.0	7.4	7.7	8.5	8.6	9.5	10.5	12.5
100 ~ 120	5.8	6.1	6.8	7.1	7.1	7.5	7.9	8.7	8.8	9.7	10.7	12.7
120 ~ 140	5.8	6.2	6.9	7.1	7.2	7.6	8.0	8.8	8.9	9.9	10.9	13.0
140 ~ 160	5.8	6.2	6.9	7.2	7.2	7.6	8.0	8.9	9.0	10.0	11.1	13.3
160 ~ 180	5.8	6.2	6.9	7.2	7.2	7.6	8.1	8.9	9.1	10.2	11.3	13.5

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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.