S-LAL54Q

Code(d) **651562**
Code(e) **654560**

Refractive Index n_d	**1.651 00** 1.651 000	Abbe Number ν_d	**56.24**	Dispersion $n_F - n_C$	**0.011 576**
Refractive Index n_e	1.653 761	Abbe Number ν_e	56.02	Dispersion $n_{F'} - n_{C'}$	0.011 670

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.615 32
n_{1970}	1.970 09	1.622 34
n_{1530}	1.529 58	1.629 66
n_{1129}	1.128 64	1.635 84
n_t	1.013 98	1.637 81
n_s	0.852 11	1.641 17
$n_{A'}$	0.768 19	1.643 41
n_r	0.706 52	1.645 45
n_C	0.656 27	1.647 47
$n_{C'}$	0.643 85	1.648 03
$n_{He\text{-}Ne}$	0.632 8	1.648 56
n_D	0.589 29	1.650 90
n_d	0.587 56	1.651 00
n_e	0.546 07	1.653 76
n_F	0.486 13	1.659 05
$n_{F'}$	0.479 99	1.659 70
$n_{He\text{-}Cd}$	0.441 57	1.664 49
n_g	0.435 835	1.665 32
n_h	0.404 656	1.670 53
n_i	0.365 015	1.679 39

Constants of Dispersion Formula	
A_1	9.200 850 87E-01
A_2	7.586 461 15E-01
A_3	1.070 730 96E+00
B_1	1.608 296 67E-02
B_2	2.920 593 06E-03
B_3	8.512 112 00E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	4.0
Phosphate Resistance PR	3.0

Mechanical Properties		
Young's Modulus E (GPa)	101.9	
Rigidity Modulus G (GPa)	39.6	
Poisson's Ratio σ	0.287	
Knoop Hardness Hk[Class]	670	7
Abrasion Aa	61	

Partial Dispersions	
$n_C - n_t$	0.009 660
$n_C - n_{A'}$	0.004 056
$n_d - n_C$	0.003 530
$n_e - n_C$	0.006 291
$n_g - n_d$	0.014 320
$n_g - n_F$	0.006 274
$n_h - n_g$	0.005 206
$n_i - n_g$	0.014 075
$n_{C'} - n_t$	0.010 223
$n_e - n_{C'}$	0.005 728
$n_{F'} - n_e$	0.005 942
$n_i - n_{F'}$	0.019 692

Relative Partial Dispersions	
$\theta_{C,t}$	0.834 5
$\theta_{C,A'}$	0.350 4
$\theta_{d,C}$	0.304 9
$\theta_{e,C}$	0.543 5
$\theta_{g,d}$	1.237 0
$\theta_{g,F}$	0.542 0
$\theta_{h,g}$	0.449 7
$\theta_{i,g}$	1.215 9
$\theta'_{C,t}$	0.876 0
$\theta'_{e,C'}$	0.490 8
$\theta'_{F,e}$	0.509 2
$\theta'_{i,F'}$	1.687 4

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.023 9
$\Delta\theta_{C,A'}$	0.006 4
$\Delta\theta_{g,d}$	-0.010 9
$\Delta\theta_{g,F}$	-0.008 5
$\Delta\theta_{i,g}$	-0.038 2

Coloring			
λ_{80}	385	λ_5	
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	367	$\lambda_{0.05}$	311

CCI		
B	G	R
0.00	0.62	0.63

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	0.04
320	0.11
330	0.24
340	0.41
350	0.58
360	0.73
370	0.83
380	0.90
390	0.938
400	0.962
420	0.984
440	0.991
460	0.995
480	0.997
500	0.997
550	0.998
600	0.997
650	0.998
700	0.997
800	0.997
900	0.995
1 000	0.993
1 200	0.994
1 400	0.976
1 600	0.986
1 800	0.973
2 000	0.942
2 200	0.81
2 400	0.58

Thermal Properties		
Strain Point StP (℃)		646
Annealing Point AP (℃)		679
Transformation Temperature Tg (℃)		688
Yield Point At (℃)		725
Softening Point SP (℃)		748
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	46
	(100 ℃ ~ 300 ℃)	57
Thermal Conductivity λ (W/(m·K))		0.921

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	34
-90 ~ -80	35
-80 ~ -70	36
-70 ~ -60	37
-60 ~ -50	38
-50 ~ -40	39
-40 ~ -30	40
-30 ~ -20	41
-20 ~ -10	42
-10 ~ 0	43
0 ~ 10	44
10 ~ 20	45
20 ~ 30	46
30 ~ 40	47
40 ~ 50	48
50 ~ 60	48
60 ~ 70	49
70 ~ 80	50
80 ~ 90	51
90 ~ 100	51
100 ~ 110	52
110 ~ 120	53
120 ~ 130	53
130 ~ 140	54
140 ~ 150	55
150 ~ 160	55
160 ~ 170	56
170 ~ 180	56
180 ~ 190	57
190 ~ 200	57
200 ~ 210	58
210 ~ 220	58
220 ~ 230	59
230 ~ 240	59
240 ~ 250	59
250 ~ 260	60
260 ~ 270	60
270 ~ 280	60
280 ~ 290	61
290 ~ 300	61

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	4.9	5.1	5.4	5.5	5.5	5.6	5.8	6.1	6.2	6.5	6.8	7.4
-60 ~ -40	4.8	5.0	5.2	5.3	5.5	5.6	5.7	6.0	6.1	6.4	6.7	7.3
-40 ~ -20	4.8	5.0	5.3	5.4	5.4	5.6	5.8	6.1	6.1	6.4	6.7	7.3
-20 ~ 0	4.9	5.1	5.4	5.5	5.5	5.7	5.8	6.1	6.1	6.5	6.9	7.4
0 ~ 20	5.0	5.2	5.5	5.6	5.6	5.9	6.0	6.3	6.3	6.7	7.0	7.6
20 ~ 40	5.2	5.3	5.6	5.7	5.8	5.9	6.1	6.5	6.5	6.8	7.2	7.7
40 ~ 60	5.3	5.4	5.8	6.0	6.0	6.1	6.3	6.6	6.6	7.0	7.3	7.9
60 ~ 80	5.4	5.6	5.9	6.0	6.1	6.2	6.4	6.7	6.7	7.1	7.5	8.1
80 ~ 100	5.6	5.8	6.1	6.2	6.2	6.4	6.5	6.9	6.9	7.2	7.6	8.3
100 ~ 120	5.7	5.9	6.2	6.3	6.4	6.5	6.7	7.0	7.0	7.4	7.7	8.3
120 ~ 140	5.8	6.0	6.3	6.4	6.4	6.6	6.8	7.1	7.1	7.5	7.8	8.5
140 ~ 160	5.8	6.0	6.4	6.5	6.5	6.7	6.8	7.2	7.2	7.7	8.0	8.6
160 ~ 180	6.0	6.2	6.5	6.6	6.6	6.8	7.0	7.3	7.3	7.7	8.1	8.7

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.17
Specific Gravity d	3.36
Remarks	

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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.