S-LAL 7Q

Code(d) **652585**
Code(e) **654584**

Refractive Index n_d	**1.651 60** 1.651 600	Abbe Number ν_d	**58.54**	Dispersion $n_F - n_C$	**0.011 130**
Refractive Index n_e	1.654 255	Abbe Number ν_e	58.34	Dispersion $n_{F'} - n_{C'}$	0.011 215

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.615 23
n_{1970}	1.970 09	1.622 65
n_{1530}	1.529 58	1.630 34
n_{1129}	1.128 64	1.636 71
n_t	1.013 98	1.638 70
n_s	0.852 11	1.642 04
$n_{A'}$	0.768 19	1.644 25
n_r	0.706 52	1.646 24
n_C	0.656 27	1.648 19
$n_{C'}$	0.643 85	1.648 74
$n_{He\text{-}Ne}$	0.632 8	1.649 24
n_D	0.589 29	1.651 50
n_d	0.587 56	1.651 60
n_e	0.546 07	1.654 26
n_F	0.486 13	1.659 32
$n_{F'}$	0.479 99	1.659 95
$n_{He\text{-}Cd}$	0.441 57	1.664 53
n_g	0.435 835	1.665 32
n_h	0.404 656	1.670 29
n_i	0.365 015	1.678 73

Constants of Dispersion Formula	
A_1	9.052 771 43E-01
A_2	7.779 556 84E-01
A_3	1.181 372 86E+00
B_1	1.556 065 07E-02
B_2	2.847 186 26E-03
B_3	8.807 379 00E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	52.0
Phosphate Resistance PR	4.0

Mechanical Properties		
Young's Modulus E (GPa)	110.8	
Rigidity Modulus G (GPa)	43.3	
Poisson's Ratio σ	0.280	
Knoop Hardness Hk[Class]	680	7
Abrasion Aa	75	

Partial Dispersions	
$n_C - n_t$	0.009 488
$n_C - n_{A'}$	0.003 943
$n_d - n_C$	0.003 408
$n_e - n_C$	0.006 063
$n_g - n_d$	0.013 721
$n_g - n_F$	0.005 999
$n_h - n_g$	0.004 966
$n_i - n_g$	0.013 410
$n_{C'} - n_t$	0.010 033
$n_e - n_{C'}$	0.005 518
$n_{F'} - n_e$	0.005 697
$n_i - n_{F'}$	0.018 779

Relative Partial Dispersions	
$\theta_{C,t}$	0.852 5
$\theta_{C,A'}$	0.354 3
$\theta_{d,C}$	0.306 2
$\theta_{e,C}$	0.544 7
$\theta_{g,d}$	1.232 8
$\theta_{g,F}$	0.539 0
$\theta_{h,g}$	0.446 2
$\theta_{i,g}$	1.204 9
$\theta'_{C',t}$	0.894 6
$\theta'_{e,C'}$	0.492 0
$\theta'_{F',e}$	0.508 0
$\theta'_{i,F'}$	1.674 5

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.031 2
$\Delta\theta_{C,A'}$	0.007 5
$\Delta\theta_{g,d}$	-0.010 3
$\Delta\theta_{g,F}$	-0.007 8
$\Delta\theta_{i,g}$	-0.029 9

Coloring			
λ_{80}	365	λ_5	
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	351	$\lambda_{0.05}$	294

CCI		
B	G	R
0.00	0.32	0.29

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	0.01
290	0.03
300	0.08
310	0.19
320	0.34
330	0.51
340	0.67
350	0.79
360	0.88
370	0.930
380	0.960
390	0.974
400	0.983
420	0.990
440	0.993
460	0.995
480	0.997
500	0.998
550	0.998
600	0.997
650	0.997
700	0.998
800	0.998
900	0.998
1 000	0.998
1 200	0.998
1 400	0.984
1 600	0.989
1 800	0.977
2 000	0.948
2 200	0.83
2 400	0.59

Thermal Properties		
Strain Point StP (°C)		580
Annealing Point AP (°C)		601
Transformation Temperature Tg (°C)		619
Yield Point At (°C)		656
Softening Point SP (°C)		683
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	58
	(100 °C ~ 300 °C)	73
Thermal Conductivity λ (W/(m·K))		0.989

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	45
-90 ~ -80	47
-80 ~ -70	48
-70 ~ -60	49
-60 ~ -50	50
-50 ~ -40	51
-40 ~ -30	52
-30 ~ -20	53
-20 ~ -10	55
-10 ~ 0	56
0 ~ 10	57
10 ~ 20	58
20 ~ 30	59
30 ~ 40	60
40 ~ 50	61
50 ~ 60	62
60 ~ 70	63
70 ~ 80	63
80 ~ 90	64
90 ~ 100	65
100 ~ 110	66
110 ~ 120	67
120 ~ 130	68
130 ~ 140	68
140 ~ 150	69
150 ~ 160	70
160 ~ 170	71
170 ~ 180	71
180 ~ 190	72
190 ~ 200	73
200 ~ 210	73
210 ~ 220	74
220 ~ 230	75
230 ~ 240	75
240 ~ 250	76
250 ~ 260	76
260 ~ 270	77
270 ~ 280	78
280 ~ 290	78
290 ~ 300	79

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.98
Specific Gravity *d*	3.24
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	2.9	3.1	3.3	3.4	3.4	3.5	3.6	3.9	4.0	4.2	4.5	5.0
-60 ~ -40	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.8	3.8	4.1	4.4	4.9
-40 ~ -20	2.9	3.0	3.2	3.2	3.3	3.4	3.5	3.8	3.9	4.1	4.4	4.9
-20 ~ 0	2.9	3.1	3.3	3.4	3.4	3.5	3.6	3.8	3.9	4.3	4.5	5.1
0 ~ 20	3.0	3.1	3.3	3.4	3.4	3.7	3.8	4.0	4.1	4.4	4.6	5.2
20 ~ 40	3.1	3.2	3.5	3.5	3.6	3.7	3.8	4.2	4.2	4.5	4.8	5.4
40 ~ 60	3.2	3.3	3.7	3.8	3.8	3.9	4.0	4.3	4.3	4.7	5.0	5.6
60 ~ 80	3.3	3.5	3.8	3.8	3.9	4.0	4.1	4.4	4.4	4.9	5.2	5.8
80 ~ 100	3.5	3.6	3.9	4.0	4.0	4.2	4.3	4.6	4.6	5.0	5.3	6.0
100 ~ 120	3.6	3.7	4.0	4.1	4.1	4.3	4.4	4.7	4.7	5.1	5.4	6.1
120 ~ 140	3.6	3.8	4.1	4.2	4.2	4.4	4.5	4.8	4.9	5.2	5.6	6.3
140 ~ 160	3.7	3.9	4.2	4.3	4.3	4.5	4.6	5.0	5.0	5.3	5.8	6.5
160 ~ 180	3.8	4.0	4.3	4.4	4.4	4.6	4.8	5.1	5.1	5.5	5.9	6.6

OHARA Copyright© OHARA INC. All Rights Reserved.

※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.