S-LAL 8

Code(d) **713539**
Code(e) **716536**

Refractive Index n_d	**1.713 00** 1.712 995	Abbe Number ν_d	**53.87**	Dispersion $n_F - n_C$	**0.013 236**
Refractive Index n_e	1.716 150	Abbe Number ν_e	53.64	Dispersion $n_{F'} - n_{C'}$	0.013 352

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.674 18
n_{1970}	1.970 09	1.681 55
n_{1530}	1.529 58	1.689 30
n_{1129}	1.128 64	1.695 97
n_t	1.013 98	1.698 13
n_s	0.852 11	1.701 86
$n_{A'}$	0.768 19	1.704 38
n_r	0.706 52	1.706 69
n_C	0.656 27	1.708 97
$n_{C'}$	0.643 85	1.709 61
$n_{He\text{-}Ne}$	0.632 8	1.710 21
n_D	0.589 29	1.712 88
n_d	0.587 56	1.713 00
n_e	0.546 07	1.716 15
n_F	0.486 13	1.722 21
$n_{F'}$	0.479 99	1.722 97
$n_{He\text{-}Cd}$	0.441 57	1.728 48
n_g	0.435 835	1.729 43
n_h	0.404 656	1.735 45
n_i	0.365 015	1.745 75

Constants of Dispersion Formula	
A_1	1.306 632 91E+00
A_2	5.713 772 53E-01
A_3	1.243 036 05E+00
B_1	6.118 624 48E-03
B_2	2.127 214 70E-02
B_3	9.062 856 86E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	52.0
Phosphate Resistance PR	3.0

Mechanical Properties		
Young's Modulus E (GPa)	114.0	
Rigidity Modulus G (GPa)	44.2	
Poisson's Ratio σ	0.289	
Knoop Hardness Hk[Class]	670	7
Abrasion Aa	81	

Partial Dispersions	
$n_C - n_t$	0.010 846
$n_C - n_{A'}$	0.004 591
$n_d - n_C$	0.004 021
$n_e - n_C$	0.007 176
$n_g - n_d$	0.016 440
$n_g - n_F$	0.007 225
$n_h - n_g$	0.006 016
$n_i - n_g$	0.016 311
$n_{C'} - n_t$	0.011 486
$n_e - n_{C'}$	0.006 536
$n_{F'} - n_e$	0.006 816
$n_i - n_{F'}$	0.022 780

Relative Partial Dispersions	
$\theta_{C,t}$	0.819 4
$\theta_{C,A'}$	0.346 9
$\theta_{d,C}$	0.303 8
$\theta_{e,C}$	0.542 2
$\theta_{g,d}$	1.242 1
$\theta_{g,F}$	0.545 9
$\theta_{h,g}$	0.454 5
$\theta_{i,g}$	1.232 3
$\theta'_{C',t}$	0.860 2
$\theta'_{e,C'}$	0.489 5
$\theta'_{F',e}$	0.510 5
$\theta'_{i,F'}$	1.706 1

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.020 0
$\Delta\theta_{C,A'}$	0.005 7
$\Delta\theta_{g,d}$	-0.010 7
$\Delta\theta_{g,F}$	-0.008 4
$\Delta\theta_{i,g}$	-0.041 6

Coloring			
λ_{80}	375	λ_5	295
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	356	$\lambda_{0.05}$	295

CCI		
B	G	R
0.00	0.42	0.39

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	0.03
300	0.07
310	0.15
320	0.28
330	0.44
340	0.60
350	0.74
360	0.84
370	0.905
380	0.944
390	0.965
400	0.977
420	0.988
440	0.991
460	0.994
480	0.996
500	0.997
550	0.998
600	0.996
650	0.997
700	0.997
800	0.998
900	0.997
1 000	0.997
1 200	0.997
1 400	0.991
1 600	0.991
1 800	0.981
2 000	0.955
2 200	0.87
2 400	0.62

Thermal Properties		
Strain Point StP (°C)		590
Annealing Point AP (°C)		617
Transformation Temperature Tg (°C)		627
Yield Point At (°C)		665
Softening Point SP (°C)		698
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	62
α_l (10^{-7} K^{-1})	(100 °C ~ 300 °C)	77
Thermal Conductivity λ (W/(m·K))		0.894

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	48
-90 ~ -80	50
-80 ~ -70	51
-70 ~ -60	52
-60 ~ -50	54
-50 ~ -40	55
-40 ~ -30	56
-30 ~ -20	57
-20 ~ -10	58
-10 ~ 0	59
0 ~ 10	61
10 ~ 20	62
20 ~ 30	63
30 ~ 40	64
40 ~ 50	65
50 ~ 60	66
60 ~ 70	67
70 ~ 80	68
80 ~ 90	69
90 ~ 100	69
100 ~ 110	70
110 ~ 120	71
120 ~ 130	72
130 ~ 140	73
140 ~ 150	74
150 ~ 160	74
160 ~ 170	75
170 ~ 180	76
180 ~ 190	76
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)	1.75
Specific Gravity *d*	3.79
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	2.5	2.7	3.0	3.1	3.1	3.2	3.4	3.7	3.8	4.1	4.4	5.2
-60 ~ -40	2.5	2.6	2.9	3.1	3.1	3.2	3.4	3.6	3.7	4.0	4.5	5.1
-40 ~ -20	2.4	2.6	2.9	3.0	3.0	3.2	3.3	3.7	3.8	4.1	4.4	5.1
-20 ~ 0	2.5	2.7	3.0	3.1	3.2	3.3	3.5	3.8	3.8	4.2	4.5	5.3
0 ~ 20	2.7	2.8	3.1	3.2	3.2	3.4	3.5	3.9	3.9	4.4	4.7	5.4
20 ~ 40	2.8	3.0	3.3	3.4	3.4	3.5	3.7	4.0	4.1	4.4	4.8	5.6
40 ~ 60	2.9	3.1	3.4	3.5	3.5	3.7	3.8	4.1	4.2	4.6	5.1	5.8
60 ~ 80	3.0	3.1	3.5	3.6	3.7	3.8	4.0	4.3	4.4	4.8	5.2	5.9
80 ~ 100	3.1	3.3	3.6	3.7	3.7	3.9	4.1	4.5	4.5	4.9	5.3	6.1
100 ~ 120	3.2	3.4	3.7	3.8	3.8	4.0	4.2	4.5	4.6	5.1	5.5	6.3
120 ~ 140	3.3	3.4	3.8	3.9	3.9	4.1	4.2	4.7	4.7	5.2	5.6	6.4
140 ~ 160	3.3	3.5	3.9	4.0	4.0	4.2	4.4	4.7	4.8	5.2	5.6	6.4
160 ~ 180	3.4	3.5	3.9	4.0	4.0	4.2	4.4	4.8	4.8	5.2	5.7	6.5

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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.