S-LAH92

Code(d) **892371**
Code(e) **898369**

Refractive Index n_d	**1.891 90** 1.891 900	Abbe Number ν_d	**37.13**	Dispersion $n_F - n_C$	**0.024 019**
Refractive Index n_e	1.897 597	Abbe Number ν_e	36.88	Dispersion $n_{F'} - n_{C'}$	0.024 337

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.842 59
n_{1970}	1.970 09	1.849 27
n_{1530}	1.529 58	1.856 86
n_{1129}	1.128 64	1.864 60
n_t	1.013 98	1.867 52
n_s	0.852 11	1.873 05
$n_{A'}$	0.768 19	1.877 09
n_r	0.706 52	1.880 91
n_C	0.656 27	1.884 82
$n_{C'}$	0.643 85	1.885 93
$n_{He\text{-}Ne}$	0.632 8	1.886 98
n_D	0.589 29	1.891 69
n_d	0.587 56	1.891 90
n_e	0.546 07	1.897 60
n_F	0.486 13	1.908 84
$n_{F'}$	0.479 99	1.910 27
$n_{He\text{-}Cd}$	0.441 57	1.920 85
n_g	0.435 835	1.922 73
n_h	0.404 656	1.934 69
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	2.104 403 11E+00
A_2	3.583 461 61E-01
A_3	1.630 100 64E+00
B_1	1.085 318 11E-02
B_2	4.434 059 20E-02
B_3	1.232 498 00E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	4.0
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	123.0	
Rigidity Modulus G (GPa)	47.1	
Poisson's Ratio σ	0.306	
Knoop Hardness Hk[Class]	700	7
Abrasion Aa	63	

Partial Dispersions	
$n_C - n_t$	0.017 302
$n_C - n_{A'}$	0.007 739
$n_d - n_C$	0.007 076
$n_e - n_C$	0.012 773
$n_g - n_d$	0.030 827
$n_g - n_F$	0.013 884
$n_h - n_g$	0.011 965
$n_i - n_g$	
$n_{C'} - n_t$	0.018 412
$n_e - n_{C'}$	0.011 663
$n_{F'} - n_e$	0.012 674
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.720 3
$\theta_{C,A'}$	0.322 2
$\theta_{d,C}$	0.294 6
$\theta_{e,C}$	0.531 8
$\theta_{g,d}$	1.283 4
$\theta_{g,F}$	0.578 0
$\theta_{h,g}$	0.498 1
$\theta_{i,g}$	
$\theta'_{C,t}$	0.756 5
$\theta'_{e,C'}$	0.479 2
$\theta'_{F',e}$	0.520 8
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	-0.000 6
$\Delta\theta_{C,A'}$	0.001 3
$\Delta\theta_{g,d}$	-0.004 2
$\Delta\theta_{g,F}$	-0.003 4
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}		λ_5	350
λ_{70}	400		

Internal transmission			
$\lambda_{0.80}$	390	$\lambda_{0.05}$	349

CCI		
B	G	R
0.00	2.55	2.68

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	0.08
360	0.28
370	0.52
380	0.69
390	0.80
400	0.87
420	0.936
440	0.962
460	0.976
480	0.984
500	0.990
550	0.997
600	0.998
650	0.999
700	0.999
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.998
1 600	0.997
1 800	0.992
2 000	0.977
2 200	0.946
2 400	0.82

Thermal Properties		
Strain Point StP (°C)		646
Annealing Point AP (°C)		678
Transformation Temperature Tg (°C)		692
Yield Point At (°C)		735
Softening Point SP (°C)		761
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	72
	(100 °C ~ 300 °C)	85
Thermal Conductivity λ (W/(m·K))		0.873

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	58
-90 ~ -80	59
-80 ~ -70	60
-70 ~ -60	62
-60 ~ -50	63
-50 ~ -40	64
-40 ~ -30	65
-30 ~ -20	67
-20 ~ -10	68
-10 ~ 0	69
0 ~ 10	70
10 ~ 20	71
20 ~ 30	72
30 ~ 40	73
40 ~ 50	74
50 ~ 60	75
60 ~ 70	76
70 ~ 80	77
80 ~ 90	78
90 ~ 100	78
100 ~ 110	79
110 ~ 120	80
120 ~ 130	81
130 ~ 140	82
140 ~ 150	82
150 ~ 160	83
160 ~ 170	84
170 ~ 180	84
180 ~ 190	85
190 ~ 200	85
200 ~ 210	86
210 ~ 220	86
220 ~ 230	87
230 ~ 240	87
240 ~ 250	88
250 ~ 260	88
260 ~ 270	89
270 ~ 280	89
280 ~ 290	89
290 ~ 300	90

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.12
Specific Gravity *d*	4.87
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	2.1	2.3	2.9	3.2	3.2	3.6	3.9	4.6	4.8	5.7	6.8	-
-60 ~ -40	2.0	2.4	2.9	3.1	3.2	3.5	4.0	4.7	4.8	5.7	6.9	-
-40 ~ -20	2.1	2.4	3.0	3.2	3.4	3.7	4.1	4.8	4.9	5.9	7.1	-
-20 ~ 0	2.2	2.5	3.2	3.5	3.5	3.9	4.2	5.0	5.1	6.2	7.3	-
0 ~ 20	2.4	2.7	3.4	3.6	3.7	4.0	4.4	5.2	5.3	6.4	7.6	-
20 ~ 40	2.6	2.9	3.5	3.8	3.8	4.2	4.7	5.5	5.6	6.6	7.8	-
40 ~ 60	2.7	3.0	3.7	3.9	4.1	4.5	4.8	5.7	5.8	6.8	8.0	-
60 ~ 80	2.8	3.3	3.9	4.1	4.2	4.6	5.0	5.8	5.9	7.0	8.2	-
80 ~ 100	3.0	3.3	4.0	4.2	4.4	4.8	5.2	6.0	6.1	7.2	8.4	-
100 ~ 120	3.1	3.4	4.1	4.3	4.4	4.8	5.2	6.1	6.3	7.4	8.6	-
120 ~ 140	3.1	3.4	4.1	4.4	4.5	4.9	5.3	6.2	6.3	7.5	8.8	-
140 ~ 160	3.1	3.4	4.1	4.4	4.5	4.9	5.3	6.3	6.4	7.6	8.8	-
160 ~ 180	3.1	3.5	4.2	4.4	4.5	4.9	5.3	6.3	6.4	7.6	8.8	-

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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.