

# S-LAL12

Code(d) **678553**

Code(e) **681551**

Refractive Index $n_d$	1.67790 1.677900	Abbe Number $\nu_d$	55.34	Dispersion $n_F-n_C$	0.012250
Refractive Index $n_e$	1.680820	Abbe Number $\nu_e$	55.08	Dispersion $n_F-n_{C'}$	0.012361

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.64414
$n_{1970}$	1.97009	1.65021
$n_{1530}$	1.52958	1.65669
$n_{1129}$	1.12864	1.66242
$n_t$	1.01398	1.66433
$n_s$	0.85211	1.66768
$n_{A'}$	0.76819	1.66998
$n_r$	0.70652	1.67208
$n_C$	0.65627	1.67419
$n_{C'}$	0.64385	1.67478
$n_{\text{He-Ne}}$	0.6328	1.67533
$n_D$	0.58929	1.67779
$n_d$	0.58756	1.67790
$n_e$	0.54607	1.68082
$n_F$	0.48613	1.68644
$n_{F'}$	0.47999	1.68714
$n_{\text{He-Cd}}$	0.44157	1.69225
$n_g$	0.435835	1.69314
$n_h$	0.404656	1.69872
$n_i$	0.365015	1.70826

Constants of Dispersion Formula	
$A_1$	9.92053895E-01
$A_2$	7.71377731E-01
$A_3$	1.18296264E+00
$B_1$	1.67095063E-02
$B_2$	2.36750156E-03
$B_3$	1.05901080E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	5
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	53.0
Phosphate Resistance PR	4.2

Mechanical Properties	
Young's Modulus E (GPa)	91.0
Rigidity Modulus G (GPa)	35.4
Poisson's Ratio $\sigma$	0.284
Knoop Hardness Hk(Class)	560   6
Abrasion Aa	166

Partial Dispersions	
$n_C-n_t$	0.009855
$n_C-n_{A'}$	0.004212
$n_d-n_C$	0.003712
$n_e-n_C$	0.006632
$n_g-n_d$	0.015241
$n_g-n_F$	0.006703
$n_h-n_g$	0.005580
$n_i-n_g$	0.015119
$n_C-n_t$	0.010445
$n_e-n_{C'}$	0.006042
$n_{F'}-n_e$	0.006319
$n_i-n_{F'}$	0.021121

Relative Partial Dispersions	
$\theta_{C,t}$	0.8045
$\theta_{C,A'}$	0.3438
$\theta_{d,C}$	0.3030
$\theta_{e,C}$	0.5414
$\theta_{g,d}$	1.2442
$\theta_{g,F}$	0.5472
$\theta_{h,g}$	0.4555
$\theta_{i,g}$	1.2342
$\theta'_{C,t}$	0.8450
$\theta'_{e,C'}$	0.4888
$\theta'_{F',e}$	0.5112
$\theta'_{i,F'}$	1.7087

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0018
$\Delta\theta_{C,A'}$	0.0008
$\Delta\theta_{g,d}$	-0.0056
$\Delta\theta_{g,F}$	-0.0047
$\Delta\theta_{i,g}$	-0.0274

Thermal Properties	
Strain Point StP (°C)	604
Annealing Point AP (°C)	630
Transformation Temperature Tg (°C)	652
Yield Point At (°C)	679
Softening Point SP (°C)	716
Expansion Coefficients (-30~+70°C)	72
$\alpha$ ( $10^{-7} \text{K}^{-1}$ ) (+100~+300°C)	86
Thermal Conductivity $\lambda$ W/(m·K)	0.717

Coloring			
$\lambda_{80}$	360	$\lambda_5$	285
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	337	$\lambda_{0.05}$	279

CCI		
B	G	R
0.00	0.26	0.24

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	0.06
290	0.15
300	0.29
310	0.45
320	0.61
330	0.73
340	0.83
350	0.89
360	0.938
370	0.962
380	0.976
390	0.984
400	0.988
420	0.992
440	0.994
460	0.995
480	0.997
500	0.998
550	0.999
600	0.998
650	0.998
700	0.998
800	0.999
900	0.997
1000	0.996
1200	0.996
1400	0.991
1600	0.991
1800	0.981
2000	0.963
2200	0.901
2400	0.73

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	$\Delta n / \Delta T$ relative ( $10^{-6} \text{K}^{-1}$ )						
	t	C'	He-Ne	D	e	F'	g
-40~-20	0.4	0.6	0.7	0.8	0.9	1.2	1.5
-20~ 0	0.5	0.7	0.7	0.8	1.0	1.3	1.7
0~20	0.5	0.8	0.8	0.9	1.1	1.4	1.8
20~40	0.5	0.8	0.9	1.0	1.1	1.5	1.9
40~60	0.5	0.9	0.9	1.1	1.2	1.6	2.0
60~80	0.6	1.0	1.0	1.1	1.3	1.7	2.1

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>5</sup> Pa)	1.61
Specific Gravity d	4.01
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.