

# S-LAH99

Code(d) **001291**

Code(e) **009289**

Refractive Index $n_d$	<b>2.00100</b> 2.001000	Abbe Number $\nu_d$	<b>29.14</b>	Dispersion $n_F-n_C$	<b>0.034352</b>
Refractive Index $n_e$	2.009118	Abbe Number $\nu_e$	28.92	Dispersion $n_F-n_{C'}$	0.034895

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.93863
$n_{1970}$	1.97009	1.94585
$n_{1530}$	1.52958	1.95440
$n_{1129}$	1.12864	1.96380
$n_t$	1.01398	1.96756
$n_s$	0.85211	1.97488
$n_{A'}$	0.76819	1.98035
$n_r$	0.70652	1.98561
$n_C$	0.65627	1.99105
$n_{C'}$	0.64385	1.99260
$n_{\text{He-Ne}}$	0.6328	1.99406
$n_D$	0.58929	2.00070
$n_d$	0.58756	2.00100
$n_e$	0.54607	2.00912
$n_F$	0.48613	2.02540
$n_{F'}$	0.47999	2.02749
$n_{\text{He-Cd}}$	0.44157	2.04319
$n_g$	0.435835	2.04600
$n_h$	0.404656	2.06424
$n_i$	0.365015	

Constants of Dispersion Formula	
$A_1$	2.39140662E+00
$A_2$	4.39219228E-01
$A_3$	2.38358467E+00
$B_1$	1.31467500E-02
$B_2$	5.53226042E-02
$B_3$	1.61259900E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	2.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E (GPa)	131.3
Rigidity Modulus G (GPa)	50.2
Poisson's Ratio $\sigma$	0.307
Knoop Hardness Hk(Class)	720   7
Abrasion Aa	55

Partial Dispersions	
$n_C-n_t$	0.023490
$n_C-n_{A'}$	0.010695
$n_d-n_C$	0.009952
$n_e-n_C$	0.018070
$n_g-n_d$	0.045001
$n_g-n_F$	0.020601
$n_h-n_g$	0.018235
$n_i-n_g$	
$n_C-n_t$	0.025041
$n_e-n_{C'}$	0.016519
$n_{F'}-n_e$	0.018376
$n_i-n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.6838
$\theta_{C,A'}$	0.3113
$\theta_{d,C}$	0.2897
$\theta_{e,C}$	0.5260
$\theta_{g,d}$	1.3100
$\theta_{g,F}$	0.5997
$\theta_{h,g}$	0.5308
$\theta_{i,g}$	
$\theta'_{C,t}$	0.7176
$\theta'_{e,C'}$	0.4734
$\theta'_{F',e}$	0.5266
$\theta'_{i,F'}$	

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0004
$\Delta\theta_{C,A'}$	0.0001
$\Delta\theta_{g,d}$	0.0058
$\Delta\theta_{g,F}$	0.0054
$\Delta\theta_{i,g}$	

Thermal Properties	
Strain Point StP (°C)	682
Annealing Point AP (°C)	718
Transformation Temperature Tg (°C)	725
Yield Point At (°C)	761
Softening Point SP (°C)	792
Expansion Coefficients (-30~+70°C)	75
$\alpha$ ( $10^{-7} \text{K}^{-1}$ ) (+100~+300°C)	88
Thermal Conductivity $\lambda$ W/(m·K)	0.944

Coloring			
$\lambda_{80}$		$\lambda_5$	360
$\lambda_{70}$	425		

Internal transmission			
$\lambda_{0.80}$	407	$\lambda_{0.05}$	360

CCI		
B	G	R
0.00	5.00	5.23

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	
340	
350	
360	0.05
370	0.25
380	0.49
390	0.66
400	0.76
420	0.87
440	0.924
460	0.951
480	0.968
500	0.980
550	0.995
600	0.998
650	0.998
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.999
1600	0.998
1800	0.995
2000	0.983
2200	0.964
2400	0.88

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	2.1	3.4	3.5	3.9	4.5	5.8	7.4
-20~ 0	2.1	3.5	3.6	4.1	4.7	6.1	7.8
0~20	2.2	3.6	3.7	4.2	4.8	6.4	8.1
20~40	2.2	3.7	3.8	4.3	4.9	6.6	8.4
40~60	2.3	3.8	3.9	4.5	5.1	6.8	8.7
60~80	2.4	4.1	4.2	4.7	5.4	7.2	9.2

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>5</sup> Pa)	0.76
Specific Gravity d	5.02
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.