

# S-LAH95

Code(d) **904313**

Code(e) **910311**

Refractive Index $n_d$	<b>1.90366</b> 1.903660	Abbe Number $\nu_d$	<b>31.34</b>	Dispersion $n_F-n_C$	<b>0.028832</b>
Refractive Index $n_e$	1.910476	Abbe Number $\nu_e$	31.10	Dispersion $n_F-n_C'$	0.029272

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.84825
$n_{1970}$	1.97009	1.85530
$n_{1530}$	1.52958	1.86342
$n_{1129}$	1.12864	1.87194
$n_t$	1.01398	1.87523
$n_s$	0.85211	1.88155
$n_{A'}$	0.76819	1.88622
$n_r$	0.70652	1.89068
$n_C$	0.65627	1.89528
$n_{C'}$	0.64385	1.89659
$n_{\text{He-Ne}}$	0.6328	1.89782
$n_D$	0.58929	1.90341
$n_d$	0.58756	1.90366
$n_e$	0.54607	1.91048
$n_F$	0.48613	1.92411
$n_{F'}$	0.47999	1.92586
$n_{\text{He-Cd}}$	0.44157	1.93896
$n_g$	0.435835	1.94130
$n_h$	0.404656	1.95648
$n_i$	0.365015	

Constants of Dispersion Formula	
$A_1$	2.15636617E+00
$A_2$	3.29558178E-01
$A_3$	1.72178935E+00
$B_1$	1.22880510E-02
$B_2$	5.55507835E-02
$B_3$	1.24439340E+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	4.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E ( $10^9\text{N/m}^2$ )	1177
Rigidity Modulus G ( $10^9\text{N/m}^2$ )	452
Poisson's Ratio $\sigma$	0.302
Knoop Hardness Hk[Class]	630   6
Abrasion Aa	85
Photoelastic Constant $\beta$ nm/(cm· $10^5\text{Pa}$ )	1.43

Partial Dispersions	
$n_C-n_t$	0.020047
$n_C-n_{A'}$	0.009057
$n_d-n_C$	0.008383
$n_e-n_C$	0.015199
$n_g-n_d$	0.037641
$n_g-n_F$	0.017192
$n_h-n_g$	0.015178
$n_i-n_g$	
$n_C-n_t$	0.021356
$n_e-n_{C'}$	0.013890
$n_F-n_e$	0.015382
$n_i-n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.6953
$\theta_{C,A'}$	0.3141
$\theta_{d,C}$	0.2908
$\theta_{e,C}$	0.5272
$\theta_{g,d}$	1.3055
$\theta_{g,F}$	0.5963
$\theta_{h,g}$	0.5264
$\theta_{i,g}$	
$\theta'_{C,t}$	0.7296
$\theta'_{e,C'}$	0.4745
$\theta'_{F,e}$	0.5255
$\theta'_{i,F'}$	

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0016
$\Delta\theta_{C,A'}$	0.0003
$\Delta\theta_{g,d}$	0.0059
$\Delta\theta_{g,F}$	0.0055
$\Delta\theta_{i,g}$	

Thermal Properties	
Strain Point StP (°C)	615
Annealing Point AP (°C)	638
Transformation Temperature Tg (°C)	649
Yield Point At (°C)	684
Softening Point SP (°C)	713
Expansion Coefficients (-30~+70°C)	73
$\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C)	87
Thermal Conductivity $\lambda$ W/(m·K)	0.861

Coloring			
$\lambda_{80}$		$\lambda_5$	360
$\lambda_{70}$	410		

Internal transmission			
$\lambda_{0.80}$	400	$\lambda_{0.05}$	360

CCI		
B	G	R
0.00	4.11	4.35

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	
340	
350	
360	0.06
370	0.31
380	0.56
390	0.71
400	0.80
420	0.89
440	0.934
460	0.956
480	0.970
500	0.980
550	0.992
600	0.995
650	0.996
700	0.997
800	0.998
900	0.998
1000	0.998
1200	0.999
1400	0.997
1600	0.995
1800	0.988
2000	0.972
2200	0.933
2400	0.81

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	$\Delta n/\Delta T$ relative ( $10^{-6}/^\circ\text{C}$ )						
	t	C'	He-Ne	D	e	F'	g
-40~-20	2.9	4.0	4.0	4.4	4.9	6.1	7.3
-20~ 0	2.9	4.1	4.2	4.6	5.1	6.3	7.7
0~20	3.0	4.2	4.3	4.7	5.2	6.5	8.0
20~40	3.0	4.3	4.4	4.8	5.3	6.7	8.2
40~60	3.1	4.4	4.5	5.0	5.5	7.0	8.6
60~80	3.3	4.7	4.8	5.2	5.8	7.3	9.0

Other Properties	
Bubble Quality Group B	
Specific Gravity d	4.64
Remarks	

OHARA 17-04

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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.