

# L-LAH90

Code(d) **832401**

Code(e) **837398**

Refractive Index $n_d$	<b>1.83220</b>	Abbe Number $\nu_d$	<b>40.10</b>	Dispersion $n_F-n_C$	<b>0.020755</b>
	1.832200				
Refractive Index $n_e$	1.837128	Abbe Number $\nu_e$	39.84	Dispersion $n_F-n_C'$	0.021011

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.78602
$n_{1970}$	1.97009	1.79293
$n_{1530}$	1.52958	1.80058
$n_{1129}$	1.12864	1.80800
$n_t$	1.01398	1.81069
$n_s$	0.85211	1.81568
$n_{A'}$	0.76819	1.81926
$n_r$	0.70652	1.82262
$n_C$	0.65627	1.82605
$n_{C'}$	0.64385	1.82701
$n_{\text{He-Ne}}$	0.6328	1.82792
$n_D$	0.58929	1.83202
$n_d$	0.58756	1.83220
$n_e$	0.54607	1.83713
$n_F$	0.48613	1.84680
$n_{F'}$	0.47999	1.84803
$n_{\text{He-Cd}}$	0.44157	1.85707
$n_g$	0.435835	1.85866
$n_h$	0.404656	1.86881
$n_i$	0.365015	1.88683

Constants of Dispersion Formula	
$A_1$	1.97595301E+00
$A_2$	2.83924985E-01
$A_3$	1.35176368E+00
$B_1$	1.04276395E-02
$B_2$	4.27708222E-02
$B_3$	1.01453710E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	5.2
Phosphate Resistance PR	1.2

Mechanical Properties	
Young's Modulus E (GPa)	114.8
Rigidity Modulus G (GPa)	44.0
Poisson's Ratio $\sigma$	0.304
Knoop Hardness Hk(Class)	660 * 7
Abrasion Aa	80

Partial Dispersions	
$n_C-n_t$	0.015354
$n_C-n_{A'}$	0.006789
$n_d-n_C$	0.006153
$n_e-n_C$	0.011081
$n_g-n_d$	0.026462
$n_g-n_F$	0.011860
$n_h-n_g$	0.010152
$n_i-n_g$	0.028165
$n_C-n_t$	0.016322
$n_e-n_{C'}$	0.010113
$n_{F'}-n_e$	0.010898
$n_i-n_{F'}$	0.038801

Relative Partial Dispersions	
$\theta_{C,t}$	0.7398
$\theta_{C,A'}$	0.3271
$\theta_{d,C}$	0.2965
$\theta_{e,C}$	0.5339
$\theta_{g,d}$	1.2750
$\theta_{g,F}$	0.5714
$\theta_{h,g}$	0.4891
$\theta_{i,g}$	1.3570
$\theta'_{C,t}$	0.7768
$\theta'_{e,C}$	0.4813
$\theta'_{F',e}$	0.5187
$\theta'_{i,F'}$	1.8467

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta \theta_{C,t}$	0.0050
$\Delta \theta_{C,A'}$	0.0026
$\Delta \theta_{g,d}$	-0.0064
$\Delta \theta_{g,F}$	-0.0052
$\Delta \theta_{i,g}$	-0.0322

Thermal Properties	
Strain Point StP (°C)	578
Annealing Point AP (°C)	597
Transformation Temperature Tg (°C)	607
Yield Point At (°C)	644
Softening Point SP (°C)	677
Expansion Coefficients (-30~+70°C)	63
$\alpha$ ( $10^{-7} \text{K}^{-1}$ ) (+100~+300°C)	74
Thermal Conductivity $\lambda$ W/(m·K)	0.839

Coloring			
$\lambda_{80}$	410	$\lambda_5$	340
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	376	$\lambda_{0.05}$	340

CCI		
B	G	R
0.00	1.32	1.36

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	
340	0.05
350	0.26
360	0.55
370	0.73
380	0.84
390	0.903
400	0.936
420	0.966
440	0.978
460	0.985
480	0.990
500	0.994
550	0.998
600	0.998
650	0.998
700	0.999
800	0.999
900	0.998
1000	0.997
1200	0.997
1400	0.996
1600	0.994
1800	0.988
2000	0.969
2200	0.925
2400	0.75

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	5.4	6.4	6.4	6.7	7.1	7.9	8.7
-20~ 0	5.4	6.4	6.5	6.7	7.1	7.9	8.8
0~20	5.5	6.5	6.5	6.8	7.2	8.0	8.9
20~40	5.5	6.5	6.5	6.8	7.2	8.1	9.0
40~60	5.6	6.6	6.7	7.0	7.4	8.3	9.3
60~80	5.8	6.8	6.9	7.2	7.6	8.6	9.6

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>9</sup> Pa)	1.93
Specific Gravity d	4.65
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.