

L-LAL13

Code(d) **694532**

Code(e) **697529**

Refractive Index n_d	1.69350 1.693500	Abbe Number ν_d	53.18	Dispersion n_F-n_C	0.013040
Refractive Index n_e	1.696607	Abbe Number ν_e	52.93	Dispersion n_F-n_C'	0.013160

Refractive Indices		
$\lambda(\mu\text{m})$		
n_{2325}	2.32542	1.65737
n_{1970}	1.97009	1.66392
n_{1530}	1.52958	1.67089
n_{1129}	1.12864	1.67702
n_t	1.01398	1.67906
n_s	0.85211	1.68263
$n_{A'}$	0.76819	1.68507
n_r	0.70652	1.68731
n_C	0.65627	1.68955
$n_{C'}$	0.64385	1.69018
$n_{\text{He-Ne}}$	0.6328	1.69076
n_D	0.58929	1.69338
n_d	0.58756	1.69350
n_e	0.54607	1.69661
n_F	0.48613	1.70259
$n_{F'}$	0.47999	1.70334
$n_{\text{He-Cd}}$	0.44157	1.70879
n_g	0.435835	1.70974
n_h	0.404656	1.71570
n_i	0.365015	1.72592

Constants of Dispersion Formula	
A_1	1.17776146E+00
A_2	6.34591345E-01
A_3	1.20435649E+00
B_1	5.57618243E-03
B_2	2.06821469E-02
B_3	9.96322776E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	53.2
Phosphate Resistance PR	4.0

Mechanical Properties	
Young's Modulus E (10^9N/m^2)	1078
Rigidity Modulus G (10^9N/m^2)	419
Poisson's Ratio σ	0.285
Knoop Hardness Hk[Class]	620 6
Abrasion Aa	108
Photoelastic Constant β nm/(cm · 10^5Pa)	1.91

Partial Dispersions	
n_C-n_t	0.010490
$n_C-n_{A'}$	0.004481
n_d-n_C	0.003949
n_e-n_C	0.007056
n_g-n_d	0.016239
n_g-n_F	0.007148
n_h-n_g	0.005962
n_i-n_g	0.016179
n_C-n_t	0.011117
$n_e-n_{C'}$	0.006429
n_F-n_e	0.006731
$n_i-n_{F'}$	0.022580

Relative Partial Dispersions	
$\theta_{C,t}$	0.8044
$\theta_{C,A'}$	0.3436
$\theta_{d,C}$	0.3028
$\theta_{e,C}$	0.5411
$\theta_{g,d}$	1.2453
$\theta_{g,F}$	0.5482
$\theta_{h,g}$	0.4572
$\theta_{i,g}$	1.2407
$\theta'_{C,t}$	0.8448
$\theta'_{e,C'}$	0.4885
$\theta'_{F,e}$	0.5115
$\theta'_{i,F'}$	1.7158

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0082
$\Delta\theta_{C,A'}$	0.0033
$\Delta\theta_{g,d}$	-0.0090
$\Delta\theta_{g,F}$	-0.0072
$\Delta\theta_{i,g}$	-0.0390

Thermal Properties	
Strain Point StP (°C)	503
Annealing Point AP (°C)	522
Transformation Temperature Tg (°C)	534
Yield Point At (°C)	575
Softening Point SP (°C)	615
Expansion Coefficients (-30~+70°C)	76
α ($10^{-7}/^\circ\text{C}$) (+100~+300°C)	92
Thermal Conductivity λ W/(m·K)	0.887

Coloring			
λ_{80}	360	λ_5	285
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	346	$\lambda_{0.05}$	288

CCI		
B	G	R
0.00	0.35	0.32

Internal Transmittance	
$\lambda(\text{nm})$	τ 10mm
280	0.01
290	0.06
300	0.15
310	0.28
320	0.45
330	0.61
340	0.74
350	0.84
360	0.913
370	0.949
380	0.969
390	0.979
400	0.984
420	0.989
440	0.991
460	0.993
480	0.995
500	0.997
550	0.998
600	0.997
650	0.997
700	0.998
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.996
1600	0.995
1800	0.988
2000	0.969
2200	0.918
2400	0.72

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	2.5	3.0	3.0	3.1	3.3	3.8	4.2
-20~ 0	2.5	3.0	3.0	3.2	3.4	3.8	4.3
0~20	2.5	3.0	3.1	3.2	3.4	3.9	4.3
20~40	2.5	3.1	3.1	3.3	3.5	4.0	4.4
40~60	2.5	3.1	3.1	3.3	3.5	4.0	4.5
60~80	2.5	3.1	3.2	3.3	3.6	4.1	4.6

Other Properties	
Bubble Quality Group B	
Specific Gravity d	3.69
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.