

L-LAL15

Code(d) **693529**

Code(e) **696527**

Refractive Index n_d	1.69304 1.693040	Abbe Number ν_d	52.93	Dispersion n_F-n_C	0.013093
Refractive Index n_e	1.696160	Abbe Number ν_e	52.70	Dispersion n_F-n_C'	0.013210

Refractive Indices		
$\lambda(\mu\text{m})$		
n_{2325}	2.32542	1.65455
n_{1970}	1.97009	1.66189
n_{1530}	1.52958	1.66960
n_{1129}	1.12864	1.67621
n_t	1.01398	1.67835
n_s	0.85211	1.68203
$n_{A'}$	0.76819	1.68453
n_r	0.70652	1.68680
n_C	0.65627	1.68906
$n_{C'}$	0.64385	1.68970
$n_{\text{He-Ne}}$	0.6328	1.69029
n_D	0.58929	1.69292
n_d	0.58756	1.69304
n_e	0.54607	1.69616
n_F	0.48613	1.70216
$n_{F'}$	0.47999	1.70291
$n_{\text{He-Cd}}$	0.44157	1.70837
n_g	0.435835	1.70932
n_h	0.404656	1.71528
n_i	0.365015	1.72550

Constants of Dispersion Formula	
A_1	1.07959634E+00
A_2	7.31872134E-01
A_3	1.17111107E+00
B_1	4.70047543E-03
B_2	1.98615758E-02
B_3	8.70359900E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	53.0
Phosphate Resistance PR	4.0

Mechanical Properties	
Young's Modulus E (10^9N/m^2)	1103
Rigidity Modulus G (10^9N/m^2)	427
Poisson's Ratio σ	0.291
Knoop Hardness Hk[Class]	650 7
Abrasion Aa	82
Photoelastic Constant β nm/(cm · 10^5Pa)	2.44

Partial Dispersions	
n_C-n_t	0.010719
$n_C-n_{A'}$	0.004537
n_d-n_C	0.003975
n_e-n_C	0.007095
n_g-n_d	0.016276
n_g-n_F	0.007158
n_h-n_g	0.005966
n_i-n_g	0.016189
n_C-n_t	0.011351
$n_e-n_{C'}$	0.006463
n_F-n_e	0.006747
$n_i-n_{F'}$	0.022598

Relative Partial Dispersions	
$\theta_{C,t}$	0.8187
$\theta_{C,A'}$	0.3465
$\theta_{d,C}$	0.3036
$\theta_{e,C}$	0.5419
$\theta_{g,d}$	1.2431
$\theta_{g,F}$	0.5467
$\theta_{h,g}$	0.4557
$\theta_{i,g}$	1.2365
$\theta'_{C,t}$	0.8593
$\theta'_{e,C'}$	0.4893
$\theta'_{F,e}$	0.5107
$\theta'_{i,F'}$	1.7107

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0237
$\Delta\theta_{C,A'}$	0.0065
$\Delta\theta_{g,d}$	-0.0117
$\Delta\theta_{g,F}$	-0.0091
$\Delta\theta_{i,g}$	-0.0453

Thermal Properties	
Strain Point StP (°C)	494
Annealing Point AP (°C)	515
Transformation Temperature Tg (°C)	525
Yield Point At (°C)	562
Softening Point SP (°C)	596
Expansion Coefficients (-30~+70°C)	54
α ($10^{-7}/^\circ\text{C}$) (+100~+300°C)	72
Thermal Conductivity λ W/(m·K)	0.923

Coloring			
λ_{80}	345	λ_5	
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	320	$\lambda_{0.05}$	

CCI		
B	G	R
0.00	0.14	0.14

Internal Transmittance	
$\lambda(\text{nm})$	τ 10mm
280	0.39
290	0.53
300	0.64
310	0.73
320	0.80
330	0.87
340	0.916
350	0.948
360	0.968
370	0.980
380	0.987
390	0.991
400	0.993
420	0.995
440	0.997
460	0.997
480	0.998
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.990
1600	0.991
1800	0.979
2000	0.949
2200	0.85
2400	0.59

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	6.6	7.1	7.2	7.3	7.5	8.0	8.5
-20~ 0	6.7	7.3	7.3	7.5	7.7	8.2	8.7
0~20	6.8	7.4	7.4	7.6	7.8	8.3	8.8
20~40	6.8	7.4	7.5	7.7	7.9	8.4	9.0
40~60	6.9	7.6	7.6	7.8	8.0	8.6	9.1
60~80	7.0	7.7	7.7	7.9	8.2	8.7	9.3

Other Properties	
Bubble Quality Group B	
Specific Gravity d	3.66
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.