S-LAH99

Code(d) **001291**
Code(e) **009289**

Refractive Index	n_d	**2.00100** 2.001000	Abbe Number	ν_d	**29.14**	Dispersion	n_F-n_C	**0.034352**
Refractive Index	n_e	2.009118	Abbe Number	ν_e	28.92	Dispersion	$n_{F'}$-$n_{C'}$	0.034895

Refractive Indices		
λ(μm)		
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
$n_{He\text{-}Ne}$	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
$n_{He\text{-}Cd}$	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 σ	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 Δθfrom "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 (℃)		682
Annealing Point AP (℃)		718
Transformation Temperature Tg (℃)		725
Yield Point At (℃)		761
Softening Point SP (℃)		792
Expansion Coefficients α (10^{-7} K^{-1})	(-30~+70℃)	75
	(+100~+300℃)	88
Thermal Conductivity λ W/(m·K)		0.944

Coloring			
λ_{80}		λ_5	360
λ_{70}	425		

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

CCI		
B	G	R
0.00	5.00	5.23

Internal Transmittance	
λ(nm)	τ 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 (℃)	Δn/ΔT relative ($10^{-6}K^{-1}$)						
	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 β nm/(cm·10^5Pa)	0.76
Specific Gravity d	5.02
Remarks	

OHARA 23-05

※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.