S-LAH93

Code(d) **905350**
Code(e) **911348**

Refractive Index	n_d	**1.90525**	Abbe Number	ν_d	**35.04**	Dispersion	n_F-n_C	**0.025838**
		1.905250						
Refractive Index	n_e	1.911372	Abbe Number	ν_e	34.79	Dispersion	$n_{F'}$-$n_{C'}$	0.026200

Refractive Indices		
λ(μm)		
n_{2325}	2.32542	1.85401
n_{1970}	1.97009	1.86068
n_{1530}	1.52958	1.86834
n_{1129}	1.12864	1.87630
n_t	1.01398	1.87935
n_s	0.85211	1.88517
$n_{A'}$	0.76819	1.88944
n_r	0.70652	1.89350
n_C	0.65627	1.89768
$n_{C'}$	0.64385	1.89886
$n_{He\text{-}Ne}$	0.6328	1.89998
n_D	0.58929	1.90502
n_d	0.58756	1.90525
n_e	0.54607	1.91137
n_F	0.48613	1.92351
$n_{F'}$	0.47999	1.92506
$n_{He\text{-}Cd}$	0.44157	1.93658
n_g	0.435835	1.93862
n_h	0.404656	1.95176
n_i	0.365015	

Constants of Dispersion Formula	
A_1	2.17884378E+00
A_2	3.25508683E-01
A_3	1.70608646E+00
B_1	1.15760879E-02
B_2	4.95982503E-02
B_3	1.28913580E+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 (GPa)	124.7	
Rigidity Modulus G (GPa)	47.8	
Poisson's Ratio σ	0.304	
Knoop Hardness Hk[Class]	690 *	7
Abrasion Aa	60	

Partial Dispersions	
n_C-n_t	0.018330
n_C-$n_{A'}$	0.008240
n_d-n_C	0.007573
n_e-n_C	0.013695
n_g-n_d	0.033374
n_g-n_F	0.015109
n_h-n_g	0.013137
n_i-n_g	
$n_{C'}$-n_t	0.019516
n_e-$n_{C'}$	0.012509
$n_{F'}$-n_e	0.013691
n_i-$n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.7094
$\theta_{C,A'}$	0.3189
$\theta_{d,C}$	0.2931
$\theta_{e,C}$	0.5300
$\theta_{g,d}$	1.2917
$\theta_{g,F}$	0.5848
$\theta_{h,g}$	0.5084
$\theta_{i,g}$	
$\theta'_{C',t}$	0.7449
$\theta'_{e,C'}$	0.4774
$\theta'_{F',e}$	0.5226
$\theta'_{i,F'}$	

Deviation of Relative Dispersions Δθfrom "Normal"	
$\Delta\theta_{C,t}$	-0.0017
$\Delta\theta_{C,A'}$	0.0006
$\Delta\theta_{g,d}$	-0.0002
$\Delta\theta_{g,F}$	0.0000
$\Delta\theta_{i,g}$	

Thermal Properties		
Strain Point StP (℃)		645
Annealing Point AP (℃)		672
Transformation Temperature Tg (℃)		677
Yield Point At (℃)		716
Softening Point SP (℃)		761
Expansion Coefficients α (10^{-7} K^{-1})	(-30~+70℃)	70
	(+100~+300℃)	86
Thermal Conductivity λ W/(m·K)		0.892

Coloring			
λ_{80}		λ_5	355
λ_{70}	410		

Internal transmission			
$\lambda_{0.80}$	397	$\lambda_{0.05}$	353

CCI		
B	G	R
0.00	3.75	3.96

Internal Transmittance	
λ(nm)	τ 10mm
280	
290	
300	
310	
320	
330	
340	
350	
360	0.22
370	0.48
380	0.65
390	0.75
400	0.82
420	0.901
440	0.938
460	0.959
480	0.974
500	0.984
550	0.996
600	0.998
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.999
1600	0.998
1800	0.993
2000	0.979
2200	0.952
2400	0.84

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	3.9	5.0	5.0	5.4	5.8	6.8	7.9
-20~ 0	3.9	5.0	5.1	5.4	5.9	6.9	8.2
0~20	3.9	5.1	5.2	5.5	6.0	7.1	8.4
20~40	3.9	5.1	5.2	5.5	6.0	7.2	8.5
40~60	4.0	5.2	5.3	5.7	6.2	7.4	8.8
60~80	4.2	5.5	5.6	6.0	6.5	7.7	9.2

Other Properties	
Photoelastic Constant β nm/(cm·10^5Pa)	1.10
Specific Gravity d	4.83
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.