L-TIM28

Code(d) **689310**
Code(e) **695308**

Refractive Index	n_d	**1.68948** 1.689480	Abbe Number	ν_d	**31.02**	Dispersion	n_F-n_C	**0.022225**
Refractive Index	n_e	1.694731	Abbe Number	ν_e	30.78	Dispersion	$n_{F'}$-$n_{C'}$	0.022569

Refractive Indices		
λ(μm)		
n_{2325}	2.32542	1.64632
n_{1970}	1.97009	1.65189
n_{1530}	1.52958	1.65832
n_{1129}	1.12864	1.66500
n_t	1.01398	1.66756
n_s	0.85211	1.67245
$n_{A'}$	0.76819	1.67605
n_r	0.70652	1.67949
n_C	0.65627	1.68303
$n_{C'}$	0.64385	1.68403
$n_{He\text{-}Ne}$	0.6328	1.68498
n_D	0.58929	1.68929
n_d	0.58756	1.68948
n_e	0.54607	1.69473
n_F	0.48613	1.70525
$n_{F'}$	0.47999	1.70660
$n_{He\text{-}Cd}$	0.44157	1.71674
n_g	0.435835	1.71856
n_h	0.404656	1.73034
n_i	0.365015	

Constants of Dispersion Formula	
A_1	1.52780829E+00
A_2	2.32776367E-01
A_3	1.71638781E+00
B_1	1.14135883E-02
B_2	5.59068566E-02
B_3	1.71511800E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	1～2
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	84.5	
Rigidity Modulus G (GPa)	33.7	
Poisson's Ratio σ	0.254	
Knoop Hardness Hk[Class]	530	5
Abrasion Aa	217	

Partial Dispersions	
n_C-n_t	0.015462
n_C-$n_{A'}$	0.006973
n_d-n_C	0.006454
n_e-n_C	0.011705
n_g-n_d	0.029076
n_g-n_F	0.013305
n_h-n_g	0.011789
n_i-n_g	
n_C-n_t	0.016470
n_e-$n_{C'}$	0.010697
n_F-n_e	0.011872
n_i-$n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.6957
$\theta_{C,A'}$	0.3137
$\theta_{d,C}$	0.2904
$\theta_{e,C}$	0.5267
$\theta_{g,d}$	1.3083
$\theta_{g,F}$	0.5987
$\theta_{h,g}$	0.5304
$\theta_{i,g}$	
$\theta'_{C',t}$	0.7298
$\theta'_{e,C'}$	0.4740
$\theta'_{F',e}$	0.5260
$\theta'_{i,F'}$	

Deviation of Relative Dispersions Δθfrom "Normal"	
$\Delta\theta_{C,t}$	0.0035
$\Delta\theta_{C,A'}$	0.0003
$\Delta\theta_{g,d}$	0.0080
$\Delta\theta_{g,F}$	0.0074
$\Delta\theta_{i,g}$	

Thermal Properties		
Strain Point StP (℃)		453
Annealing Point AP (℃)		484
Transformation Temperature Tg (℃)		504
Yield Point At (℃)		539
Softening Point SP (℃)		582
Expansion Coefficients α (10^{-7} K^{-1})	(-30~+70℃)	101
	(+100~+300℃)	130
Thermal Conductivity λ W/(m·K)		1.02

Coloring			
λ_{80}	400	λ_5	355
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	379	$\lambda_{0.05}$	352

CCI		
B	G	R
0.00	1.29	1.27

Internal Transmittance	
λ(nm)	τ 10mm
280	
290	
300	
310	
320	
330	
340	
350	0.01
360	0.21
370	0.60
380	0.82
390	0.903
400	0.940
420	0.969
440	0.979
460	0.984
480	0.988
500	0.991
550	0.997
600	0.996
650	0.995
700	0.997
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.998
1600	0.995
1800	0.980
2000	0.962
2200	0.927
2400	0.89

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	-1.1	-0.2	-0.2	0.1	0.5	1.4	2.4
-20~ 0	-1.1	-0.3	-0.2	0.1	0.5	1.4	2.5
0~20	-1.2	-0.3	-0.2	0.1	0.5	1.5	2.7
20~40	-1.3	-0.4	-0.3	0.0	0.5	1.5	2.7
40~60	-1.4	-0.4	-0.3	0.0	0.5	1.6	2.9
60~80	-1.4	-0.4	-0.3	0.1	0.5	1.7	3.0

Other Properties	
Photoelastic Constant β nm/(cm·10^5Pa)	2.62
Specific Gravity d	2.88
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.