

# S-TIM28

Code(d) **689311**

Code(e) **694308**

Refractive Index $n_d$	<b>1.68893</b> 1.688931	Abbe Number $\nu_d$	<b>31.07</b>	Dispersion $n_F-n_C$	<b>0.022170</b>
Refractive Index $n_e$	1.694167	Abbe Number $\nu_e$	30.83	Dispersion $n_F-n_C'$	0.022516

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.64463
$n_{1970}$	1.97009	1.65062
$n_{1530}$	1.52958	1.65745
$n_{1129}$	1.12864	1.66438
$n_t$	1.01398	1.66699
$n_s$	0.85211	1.67192
$n_{A'}$	0.76819	1.67553
$n_r$	0.70652	1.67896
$n_C$	0.65627	1.68250
$n_{C'}$	0.64385	1.68350
$n_{\text{He-Ne}}$	0.6328	1.68445
$n_D$	0.58929	1.68874
$n_d$	0.58756	1.68893
$n_e$	0.54607	1.69417
$n_F$	0.48613	1.70467
$n_{F'}$	0.47999	1.70602
$n_{\text{He-Cd}}$	0.44157	1.71615
$n_g$	0.435835	1.71797
$n_h$	0.404656	1.72981
$n_i$	0.365015	

Constants of Dispersion Formula	
$A_1$	1.54270810E+00
$A_2$	2.17113891E-01
$A_3$	1.81904459E+00
$B_1$	1.13925005E-02
$B_2$	5.79224572E-02
$B_3$	1.67697189E+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	1.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E ( $10^9\text{N/m}^2$ )	855
Rigidity Modulus G ( $10^9\text{N/m}^2$ )	344
Poisson's Ratio $\sigma$	0.242
Knoop Hardness Hk[Class]	550   6
Abrasion Aa	152
Photoelastic Constant $\beta$ nm/(cm · $10^5\text{Pa}$ )	2.77

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	1.3	1.9	2.0	2.2	2.6	3.4	4.5
-20~ 0	1.3	2.0	2.1	2.3	2.7	3.6	4.7
0~20	1.3	2.1	2.2	2.5	2.9	3.8	5.0
20~40	1.4	2.2	2.3	2.6	3.0	4.0	5.2
40~60	1.4	2.3	2.4	2.7	3.1	4.2	5.5
60~80	1.4	2.4	2.5	2.8	3.3	4.4	5.7

Partial Dispersions	
$n_C-n_t$	0.015507
$n_C-n_{A'}$	0.006966
$n_d-n_C$	0.006436
$n_e-n_C$	0.011672
$n_g-n_d$	0.029044
$n_g-n_F$	0.013310
$n_h-n_g$	0.011834
$n_i-n_g$	
$n_C-n_t$	0.016512
$n_e-n_{C'}$	0.010667
$n_F-n_e$	0.011849
$n_i-n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.6995
$\theta_{C,A'}$	0.3142
$\theta_{d,C}$	0.2903
$\theta_{e,C}$	0.5265
$\theta_{g,d}$	1.3101
$\theta_{g,F}$	0.6004
$\theta_{h,g}$	0.5338
$\theta_{i,g}$	
$\theta'_{C,t}$	0.7333
$\theta'_{e,C'}$	0.4738
$\theta'_{F,e}$	0.5262
$\theta'_{i,F'}$	

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0071
$\Delta\theta_{C,A'}$	0.0007
$\Delta\theta_{g,d}$	0.0099
$\Delta\theta_{g,F}$	0.0092
$\Delta\theta_{i,g}$	

Thermal Properties	
Strain Point StP (°C)	560
Annealing Point AP (°C)	588
Transformation Temperature Tg (°C)	611
Yield Point At (°C)	637
Softening Point SP (°C)	701
Expansion Coefficients (-30~+70°C)	82
$\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C)	98
Thermal Conductivity $\lambda$ W/(m·K)	1.01

Coloring			
$\lambda_{80}$	405	$\lambda_5$	360
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	391	$\lambda_{0.05}$	362

CCI		
B	G	R
0.00	2.30	2.36

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	
340	
350	
360	0.01
370	0.23
380	0.58
390	0.79
400	0.88
420	0.951
440	0.970
460	0.978
480	0.983
500	0.987
550	0.994
600	0.995
650	0.994
700	0.995
800	0.998
900	0.998
1000	0.998
1200	0.998
1400	0.996
1600	0.996
1800	0.989
2000	0.983
2200	0.961
2400	0.948

Other Properties	
Bubble Quality Group B	
Specific Gravity d	2.98
Remarks	

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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.