S-TIH18

Code(d) **722292**
Code(e) **727290**

Refractive Index n_d	**1.721 51** 1.721 507	Abbe Number ν_d	**29.23**	Dispersion $n_F - n_C$	**0.024 683**
Refractive Index n_e	1.727 331	Abbe Number ν_e	29.00	Dispersion $n_{F'} - n_{C'}$	0.025 081

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.673 84
n_{1970}	1.970 09	1.680 02
n_{1530}	1.529 58	1.687 15
n_{1129}	1.128 64	1.694 53
n_t	1.013 98	1.697 34
n_s	0.852 11	1.702 72
$n_{A'}$	0.768 19	1.706 68
n_r	0.706 52	1.710 47
n_C	0.656 27	1.714 37
$n_{C'}$	0.643 85	1.715 48
$n_{He\text{-}Ne}$	0.632 8	1.716 53
n_D	0.589 29	1.721 29
n_d	0.587 56	1.721 51
n_e	0.546 07	1.727 33
n_F	0.486 13	1.739 05
$n_{F'}$	0.479 99	1.740 57
$n_{He\text{-}Cd}$	0.441 57	1.751 95
n_g	0.435 835	1.753 99
n_h	0.404 656	1.767 35
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.599 216 08E+00
A_2	2.595 321 64E-01
A_3	2.124 545 43E+00
B_1	1.164 693 04E-02
B_2	5.848 248 83E-02
B_3	1.869 277 79E+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)	89.1	
Rigidity Modulus G (GPa)	35.7	
Poisson's Ratio σ	0.248	
Knoop Hardness Hk[Class]	560	6
Abrasion Aa	160	

Partial Dispersions	
$n_C - n_t$	0.017 028
$n_C - n_{A'}$	0.007 687
$n_d - n_C$	0.007 136
$n_e - n_C$	0.012 960
$n_g - n_d$	0.032 488
$n_g - n_F$	0.014 941
$n_h - n_g$	0.013 358
$n_i - n_g$	
$n_{C'} - n_t$	0.018 141
$n_e - n_{C'}$	0.011 847
$n_{F'} - n_e$	0.013 234
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.689 9
$\theta_{C,A'}$	0.311 4
$\theta_{d,C}$	0.289 1
$\theta_{e,C}$	0.525 1
$\theta_{g,d}$	1.316 2
$\theta_{g,F}$	0.605 3
$\theta_{h,g}$	0.541 2
$\theta_{i,g}$	
$\theta'_{C,t}$	0.723 3
$\theta'_{e,C'}$	0.472 3
$\theta'_{F,e}$	0.527 7
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.006 1
$\Delta\theta_{C,A'}$	0.000 1
$\Delta\theta_{g,d}$	0.012 2
$\Delta\theta_{g,F}$	0.011 1
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}	410	λ_5	360
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	393	$\lambda_{0.05}$	366

CCI		
B	G	R
0.00	2.43	2.44

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.18
380	0.54
390	0.77
400	0.87
420	0.951
440	0.971
460	0.979
480	0.984
500	0.988
550	0.995
600	0.995
650	0.993
700	0.995
800	0.998
900	0.999
1 000	0.999
1 200	0.999
1 400	0.996
1 600	0.995
1 800	0.986
2 000	0.978
2 200	0.948
2 400	0.928

Thermal Properties		
Strain Point StP (°C)		570
Annealing Point AP (°C)		596
Transformation Temperature Tg (°C)		622
Yield Point At (°C)		660
Softening Point SP (°C)		703
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	85
α_l (10^{-7} K^{-1})	(100 °C ~ 300 °C)	100
Thermal Conductivity λ (W/(m·K))		1.03

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ～ -90	68
-90 ～ -80	70
-80 ～ -70	72
-70 ～ -60	73
-60 ～ -50	75
-50 ～ -40	76
-40 ～ -30	77
-30 ～ -20	79
-20 ～ -10	80
-10 ～ 0	81
0 ～ 10	83
10 ～ 20	84
20 ～ 30	85
30 ～ 40	86
40 ～ 50	87
50 ～ 60	88
60 ～ 70	90
70 ～ 80	91
80 ～ 90	92
90 ～ 100	93
100 ～ 110	94
110 ～ 120	94
120 ～ 130	95
130 ～ 140	96
140 ～ 150	97
150 ～ 160	98
160 ～ 170	98
170 ～ 180	99
180 ～ 190	100
190 ～ 200	101
200 ～ 210	101
210 ～ 220	102
220 ～ 230	102
230 ～ 240	103
240 ～ 250	103
250 ～ 260	104
260 ～ 270	104
270 ～ 280	105
280 ～ 290	105
290 ～ 300	105

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.87
Specific Gravity *d*	3.07
Remarks	

Temperature Coefficients of Refractive Index

Range of Temperature (°C)	$\Delta n_{rel}/\Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	-0.2	0.1	0.6	0.8	0.9	1.3	1.6	2.3	2.4	3.6	4.9	-
-60 ~ -40	0.0	0.2	0.7	1.0	1.0	1.4	1.7	2.5	2.6	3.8	5.2	-
-40 ~ -20	0.1	0.4	0.9	1.1	1.2	1.5	1.9	2.8	2.9	4.1	5.5	-
-20 ~ 0	0.2	0.5	1.1	1.3	1.4	1.8	2.1	3.0	3.1	4.4	5.9	-
0 ~ 20	0.5	0.7	1.3	1.5	1.6	2.0	2.4	3.3	3.4	4.8	6.3	-
20 ~ 40	0.6	0.9	1.5	1.8	1.8	2.2	2.6	3.6	3.7	5.1	6.7	-
40 ~ 60	0.8	1.0	1.7	1.9	2.0	2.4	2.8	3.8	3.9	5.4	7.0	-
60 ~ 80	0.8	1.1	1.9	2.1	2.2	2.6	3.1	4.0	4.2	5.6	7.3	-
80 ~ 100	0.9	1.2	1.9	2.2	2.2	2.8	3.2	4.3	4.4	5.9	7.6	-
100 ~ 120	0.9	1.3	2.0	2.2	2.3	2.8	3.2	4.4	4.5	6.1	7.9	-
120 ~ 140	0.9	1.3	2.0	2.3	2.4	2.8	3.3	4.5	4.6	6.2	8.1	-
140 ~ 160	0.8	1.2	2.1	2.3	2.4	2.9	3.4	4.5	4.7	6.3	8.2	-
160 ~ 180	0.8	1.2	1.9	2.2	2.3	2.8	3.3	4.5	4.6	6.3	8.2	-

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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.