S-TIH 4

Code(d) **755275**
Code(e) **762273**

Refractive Index n_d	**1.755 20** 1.755 199	Abbe Number ν_d	**27.51**	Dispersion $n_F - n_C$	**0.027 450**
Refractive Index n_e	1.761 671	Abbe Number ν_e	27.29	Dispersion $n_{F'} - n_{C'}$	0.027 911

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.704 30
n_{1970}	1.970 09	1.710 54
n_{1530}	1.529 58	1.717 84
n_{1129}	1.128 64	1.725 61
n_t	1.013 98	1.728 64
n_s	0.852 11	1.734 48
$n_{A'}$	0.768 19	1.738 82
n_r	0.706 52	1.742 99
n_C	0.656 27	1.747 30
$n_{C'}$	0.643 85	1.748 53
$n_{He\text{-}Ne}$	0.632 8	1.749 68
n_D	0.589 29	1.754 96
n_d	0.587 56	1.755 20
n_e	0.546 07	1.761 67
n_F	0.486 13	1.774 75
$n_{F'}$	0.479 99	1.776 44
$n_{He\text{-}Cd}$	0.441 57	1.789 20
n_g	0.435 835	1.791 50
n_h	0.404 656	1.806 56
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.667 555 31E+00
A_2	2.944 118 65E-01
A_3	2.494 221 19E+00
B_1	1.220 521 37E-02
B_2	5.977 753 29E-02
B_3	2.148 696 18E+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)	91.9	
Rigidity Modulus G (GPa)	36.7	
Poisson's Ratio σ	0.254	
Knoop Hardness Hk[Class]	570	6
Abrasion Aa	168	

Partial Dispersions	
$n_C - n_t$	0.018 659
$n_C - n_{A'}$	0.008 473
$n_d - n_C$	0.007 904
$n_e - n_C$	0.014 376
$n_g - n_d$	0.036 298
$n_g - n_F$	0.016 752
$n_h - n_g$	0.015 059
$n_i - n_g$	
$n_{C'} - n_t$	0.019 889
$n_e - n_{C'}$	0.013 146
$n_{F'} - n_e$	0.014 765
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.679 7
$\theta_{C,A'}$	0.308 7
$\theta_{d,C}$	0.287 9
$\theta_{e,C}$	0.523 7
$\theta_{g,d}$	1.322 3
$\theta_{g,F}$	0.610 3
$\theta_{h,g}$	0.548 6
$\theta_{i,g}$	
$\theta'_{C,t}$	0.712 6
$\theta'_{e,C'}$	0.471 0
$\theta'_{F,e}$	0.529 0
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.004 0
$\Delta\theta_{C,A'}$	-0.000 5
$\Delta\theta_{g,d}$	0.014 7
$\Delta\theta_{g,F}$	0.013 3
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}	415	λ_5	365
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	398	$\lambda_{0.05}$	368

CCI		
B	G	R
0.00	3.28	3.30

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.12
380	0.45
390	0.70
400	0.82
420	0.929
440	0.962
460	0.973
480	0.980
500	0.986
550	0.995
600	0.994
650	0.993
700	0.995
800	0.999
900	0.999
1 000	0.999
1 200	0.997
1 400	0.995
1 600	0.994
1 800	0.987
2 000	0.981
2 200	0.961
2 400	0.942

Thermal Properties		
Strain Point StP (℃)		565
Annealing Point AP (℃)		591
Transformation Temperature Tg (℃)		614
Yield Point At (℃)		650
Softening Point SP (℃)		694
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	86
α_l (10^{-7} K^{-1})	(100 ℃ ~ 300 ℃)	105
Thermal Conductivity λ (W/(m·K))		1.01

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ～ -90	70
-90 ～ -80	72
-80 ～ -70	73
-70 ～ -60	75
-60 ～ -50	76
-50 ～ -40	77
-40 ～ -30	79
-30 ～ -20	80
-20 ～ -10	82
-10 ～ 0	83
0 ～ 10	84
10 ～ 20	86
20 ～ 30	87
30 ～ 40	88
40 ～ 50	89
50 ～ 60	91
60 ～ 70	92
70 ～ 80	93
80 ～ 90	94
90 ～ 100	95
100 ～ 110	96
110 ～ 120	97
120 ～ 130	99
130 ～ 140	100
140 ～ 150	101
150 ～ 160	102
160 ～ 170	103
170 ～ 180	103
180 ～ 190	104
190 ～ 200	105
200 ～ 210	106
210 ～ 220	107
220 ～ 230	108
230 ～ 240	109
240 ～ 250	109
250 ～ 260	110
260 ～ 270	111
270 ～ 280	112
280 ～ 290	112
290 ～ 300	113

Temperature Coefficients of Refractive Index												
Range of Temperature (℃)	$\Delta n_{rel}/\Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	-0.4	-0.2	0.4	0.6	0.7	1.0	1.3	2.2	2.3	3.5	5.0	-
-60 ~ -40	-0.5	-0.2	0.4	0.6	0.6	1.0	1.3	2.3	2.4	3.6	5.2	-
-40 ~ -20	-0.5	-0.2	0.4	0.7	0.7	1.1	1.5	2.4	2.5	3.9	5.4	-
-20 ~ 0	-0.4	-0.1	0.5	0.7	0.8	1.2	1.7	2.6	2.8	4.1	5.7	-
0 ~ 20	-0.3	-0.1	0.6	0.8	0.9	1.4	1.8	2.8	3.0	4.4	6.1	-
20 ~ 40	-0.2	0.1	0.8	1.0	1.1	1.5	2.0	3.1	3.3	4.7	6.6	-
40 ~ 60	-0.1	0.2	0.9	1.2	1.2	1.8	2.3	3.4	3.5	5.1	7.0	-
60 ~ 80	0.0	0.3	1.1	1.4	1.5	1.9	2.4	3.6	3.7	5.4	7.4	-
80 ~ 100	0.0	0.4	1.3	1.6	1.7	2.1	2.7	3.8	4.0	5.7	7.8	-
100 ~ 120	0.1	0.5	1.3	1.7	1.8	2.3	2.9	4.1	4.3	6.0	8.2	-
120 ~ 140	0.2	0.5	1.5	1.8	1.9	2.4	3.0	4.3	4.5	6.3	8.5	-
140 ~ 160	0.3	0.7	1.6	1.9	2.0	2.5	3.1	4.4	4.6	6.5	8.8	-
160 ~ 180	0.3	0.7	1.6	1.9	2.0	2.6	3.2	4.6	4.8	6.7	9.2	-

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.76
Specific Gravity *d*	3.15
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.