S-TIH 3

Code(d) **740283**
Code(e) **746281**

Refractive Index n_d	**1.740 00** 1.739 998	Abbe Number ν_d	**28.30**	Dispersion $n_F - n_C$	**0.026 152**
Refractive Index n_e	1.746 167	Abbe Number ν_e	28.07	Dispersion $n_{F'} - n_{C'}$	0.026 584

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.690 65
n_{1970}	1.970 09	1.696 85
n_{1530}	1.529 58	1.704 05
n_{1129}	1.128 64	1.711 62
n_t	1.013 98	1.714 55
n_s	0.852 11	1.720 18
$n_{A'}$	0.768 19	1.724 34
n_r	0.706 52	1.728 33
n_C	0.656 27	1.732 45
$n_{C'}$	0.643 85	1.733 63
$n_{He\text{-}Ne}$	0.632 8	1.734 74
n_D	0.589 29	1.739 77
n_d	0.587 56	1.740 00
n_e	0.546 07	1.746 17
n_F	0.486 13	1.758 61
$n_{F'}$	0.479 99	1.760 21
$n_{He\text{-}Cd}$	0.441 57	1.772 32
n_g	0.435 835	1.774 50
n_h	0.404 656	1.788 76
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.647 976 48E+00
A_2	2.672 619 17E-01
A_3	2.197 728 45E+00
B_1	1.219 176 93E-02
B_2	5.978 930 39E-02
B_3	1.921 583 40E+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 (GPa)	90.8	
Rigidity Modulus G (GPa)	36.2	
Poisson's Ratio σ	0.254	
Knoop Hardness Hk[Class]	570	6
Abrasion Aa	173	

Partial Dispersions	
$n_C - n_t$	0.017 900
$n_C - n_{A'}$	0.008 108
$n_d - n_C$	0.007 545
$n_e - n_C$	0.013 714
$n_g - n_d$	0.034 504
$n_g - n_F$	0.015 897
$n_h - n_g$	0.014 254
$n_i - n_g$	
$n_{C'} - n_t$	0.019 075
$n_e - n_{C'}$	0.012 539
$n_{F'} - n_e$	0.014 045
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.684 5
$\theta_{C,A'}$	0.310 0
$\theta_{d,C}$	0.288 5
$\theta_{e,C}$	0.524 4
$\theta_{g,d}$	1.319 4
$\theta_{g,F}$	0.607 9
$\theta_{h,g}$	0.545 0
$\theta_{i,g}$	
$\theta'_{C,t}$	0.717 5
$\theta'_{e,C'}$	0.471 7
$\theta'_{F,e}$	0.528 3
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.005 1
$\Delta\theta_{C,A'}$	-0.000 1
$\Delta\theta_{g,d}$	0.013 5
$\Delta\theta_{g,F}$	0.012 2
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}	420	λ_5	360
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	395	$\lambda_{0.05}$	367

CCI		
B	G	R
0.00	2.81	2.86

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.16
380	0.51
390	0.74
400	0.85
420	0.940
440	0.964
460	0.975
480	0.981
500	0.986
550	0.994
600	0.994
650	0.993
700	0.995
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.997
1 600	0.996
1 800	0.988
2 000	0.980
2 200	0.955
2 400	0.933

Thermal Properties		
Strain Point StP (°C)		566
Annealing Point AP (°C)		591
Transformation Temperature Tg (°C)		616
Yield Point At (°C)		654
Softening Point SP (°C)		723
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	85
	(100 °C ~ 300 °C)	103
Thermal Conductivity λ (W/(m·K))		1.03

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	70
-90 ~ -80	71
-80 ~ -70	72
-70 ~ -60	74
-60 ~ -50	75
-50 ~ -40	76
-40 ~ -30	78
-30 ~ -20	79
-20 ~ -10	80
-10 ~ 0	82
0 ~ 10	83
10 ~ 20	84
20 ~ 30	85
30 ~ 40	87
40 ~ 50	88
50 ~ 60	89
60 ~ 70	90
70 ~ 80	91
80 ~ 90	92
90 ~ 100	93
100 ~ 110	94
110 ~ 120	95
120 ~ 130	96
130 ~ 140	97
140 ~ 150	98
150 ~ 160	99
160 ~ 170	100
170 ~ 180	101
180 ~ 190	102
190 ~ 200	103
200 ~ 210	104
210 ~ 220	105
220 ~ 230	105
230 ~ 240	106
240 ~ 250	107
250 ~ 260	108
260 ~ 270	108
270 ~ 280	109
280 ~ 290	110
290 ~ 300	111

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.81
Specific Gravity *d*	3.11
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	-0.1	0.1	0.6	0.8	1.0	1.3	1.6	2.4	2.6	3.6	4.9	-
-60 ~ -40	-0.3	0.0	0.6	0.8	0.9	1.2	1.6	2.5	2.6	3.7	5.1	-
-40 ~ -20	-0.3	0.0	0.6	0.8	0.9	1.3	1.7	2.5	2.7	3.9	5.4	-
-20 ~ 0	-0.2	0.1	0.7	0.9	1.0	1.4	1.8	2.8	2.9	4.2	5.7	-
0 ~ 20	-0.1	0.1	0.8	1.0	1.1	1.5	1.9	3.0	3.1	4.5	6.1	-
20 ~ 40	0.0	0.3	1.0	1.2	1.3	1.7	2.2	3.2	3.4	4.8	6.5	-
40 ~ 60	0.1	0.4	1.1	1.4	1.4	1.9	2.3	3.5	3.7	5.1	6.9	-
60 ~ 80	0.1	0.5	1.3	1.6	1.7	2.1	2.6	3.7	3.9	5.4	7.3	-
80 ~ 100	0.2	0.6	1.4	1.7	1.9	2.4	2.9	4.0	4.2	5.8	7.7	-
100 ~ 120	0.3	0.7	1.6	1.9	1.9	2.4	3.1	4.3	4.5	6.1	8.1	-
120 ~ 140	0.4	0.8	1.8	2.0	2.1	2.7	3.3	4.5	4.7	6.4	8.5	-
140 ~ 160	0.6	1.0	1.9	2.2	2.3	2.8	3.4	4.7	4.9	6.7	8.9	-
160 ~ 180	0.6	1.0	1.9	2.3	2.4	2.9	3.5	4.9	5.1	6.9	9.2	-

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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.