S-TIH53

Code(d) **847238**
Code(e) **855236**

Refractive Index n_d	**1.846 66** 1.846 660	Abbe Number ν_d	**23.78**	Dispersion $n_F - n_C$	**0.035 608**
Refractive Index n_e	1.855 041	Abbe Number ν_e	23.59	Dispersion $n_{F'} - n_{C'}$	0.036 247

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.785 19
n_{1970}	1.970 09	1.791 99
n_{1530}	1.529 58	1.800 13
n_{1129}	1.128 64	1.809 25
n_t	1.013 98	1.812 94
n_s	0.852 11	1.820 21
$n_{A'}$	0.768 19	1.825 68
n_r	0.706 52	1.830 98
n_C	0.656 27	1.836 49
$n_{C'}$	0.643 85	1.838 07
$n_{He\text{-}Ne}$	0.632 8	1.839 56
n_D	0.589 29	1.846 35
n_d	0.587 56	1.846 66
n_e	0.546 07	1.855 04
n_F	0.486 13	1.872 10
$n_{F'}$	0.479 99	1.874 31
$n_{He\text{-}Cd}$	0.441 57	1.891 14
n_g	0.435 835	1.894 19
n_h	0.404 656	1.914 29
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.879 048 86E+00
A_2	3.697 197 75E-01
A_3	2.337 308 63E+00
B_1	1.441 217 70E-02
B_2	6.388 179 90E-02
B_3	1.826 681 80E+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)	96.0	
Rigidity Modulus G (GPa)	37.9	
Poisson's Ratio σ	0.266	
Knoop Hardness Hk[Class]	530	5
Abrasion Aa	188	

Partial Dispersions	
$n_C - n_t$	0.023 550
$n_C - n_{A'}$	0.010 806
$n_d - n_C$	0.010 172
$n_e - n_C$	0.018 553
$n_g - n_d$	0.047 529
$n_g - n_F$	0.022 093
$n_h - n_g$	0.020 105
$n_i - n_g$	
$n_{C'} - n_t$	0.025 128
$n_e - n_{C'}$	0.016 975
$n_{F'} - n_e$	0.019 272
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.661 4
$\theta_{C,A'}$	0.303 5
$\theta_{d,C}$	0.285 7
$\theta_{e,C}$	0.521 0
$\theta_{g,d}$	1.334 8
$\theta_{g,F}$	0.620 5
$\theta_{h,g}$	0.564 6
$\theta_{i,g}$	
$\theta'_{C',t}$	0.693 2
$\theta'_{e,C'}$	0.468 3
$\theta'_{F',e}$	0.531 7
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.003 2
$\Delta\theta_{C,A'}$	-0.001 2
$\Delta\theta_{g,d}$	0.019 5
$\Delta\theta_{g,F}$	0.017 5
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}		λ_5	370
λ_{70}	420		

Internal transmission			
$\lambda_{0.80}$	408	$\lambda_{0.05}$	370

CCI		
B	G	R
0.00	4.97	5.06

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.06
380	0.35
390	0.61
400	0.75
420	0.87
440	0.927
460	0.948
480	0.961
500	0.971
550	0.987
600	0.989
650	0.985
700	0.989
800	0.997
900	0.998
1 000	0.999
1 200	0.999
1 400	0.998
1 600	0.997
1 800	0.991
2 000	0.986
2 200	0.974
2 400	0.955

Thermal Properties		
Strain Point StP (℃)		576
Annealing Point AP (℃)		596
Transformation Temperature Tg (℃)		630
Yield Point At (℃)		663
Softening Point SP (℃)		692
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	88
	(100 ℃ ~ 300 ℃)	104
Thermal Conductivity λ (W/(m·K))		1.00

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	72
-90 ~ -80	74
-80 ~ -70	75
-70 ~ -60	77
-60 ~ -50	78
-50 ~ -40	80
-40 ~ -30	81
-30 ~ -20	82
-20 ~ -10	83
-10 ~ 0	85
0 ~ 10	86
10 ~ 20	87
20 ~ 30	88
30 ~ 40	90
40 ~ 50	91
50 ~ 60	92
60 ~ 70	93
70 ~ 80	94
80 ~ 90	95
90 ~ 100	96
100 ~ 110	97
110 ~ 120	98
120 ~ 130	99
130 ~ 140	99
140 ~ 150	100
150 ~ 160	101
160 ~ 170	102
170 ~ 180	103
180 ~ 190	103
190 ~ 200	104
200 ~ 210	105
210 ~ 220	105
220 ~ 230	106
230 ~ 240	107
240 ~ 250	107
250 ~ 260	108
260 ~ 270	108
270 ~ 280	109
280 ~ 290	109
290 ~ 300	110

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.81
Specific Gravity *d*	3.54
Remarks	

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	-1.4	-1.1	-0.6	-0.2	-0.2	0.2	0.6	1.6	1.8	3.2	5.0	-
-60 ~ -40	-1.6	-1.3	-0.7	-0.3	-0.3	0.1	0.6	1.6	1.8	3.4	5.3	-
-40 ~ -20	-1.7	-1.4	-0.6	-0.3	-0.3	0.2	0.7	1.9	2.1	3.7	5.9	-
-20 ~ 0	-1.6	-1.3	-0.6	-0.3	-0.2	0.3	0.9	2.1	2.3	4.1	6.5	-
0 ~ 20	-1.6	-1.2	-0.4	-0.1	0.0	0.5	1.2	2.5	2.7	4.6	7.1	-
20 ~ 40	-1.5	-1.1	-0.2	0.1	0.2	0.8	1.4	2.8	3.1	5.2	7.8	-
40 ~ 60	-1.4	-1.0	0.0	0.3	0.4	1.0	1.7	3.3	3.5	5.7	8.5	-
60 ~ 80	-1.3	-0.9	0.2	0.5	0.6	1.4	2.1	3.7	3.9	6.2	9.2	-
80 ~ 100	-1.1	-0.6	0.4	0.8	0.9	1.6	2.3	4.1	4.4	6.8	9.9	-
100 ~ 120	-1.0	-0.5	0.7	1.1	1.2	1.9	2.7	4.5	4.7	7.3	10.7	-
120 ~ 140	-0.8	-0.3	0.9	1.3	1.5	2.2	3.0	4.9	5.2	7.9	11.4	-
140 ~ 160	-0.7	-0.2	1.1	1.6	1.7	2.5	3.3	5.3	5.6	8.6	12.1	-
160 ~ 180	-0.6	0.0	1.3	1.9	2.0	2.8	3.7	5.8	6.1	9.1	12.8	-

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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.