

S-TIH11

Code(d) 785257
Code(e) 792255

Refractive Index n_d	1.784 72 1.784 723	Abbe Number v_d	25.68	Dispersion $n_F - n_C$	0.030 554
Refractive Index n_e	1.791 920	Abbe Number v_e	25.47	Dispersion $n_{F'} - n_{C'}$	0.031 088

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.729 98
n_{1970}	1.970 09	1.736 39
n_{1530}	1.529 58	1.743 97
n_{1129}	1.128 64	1.752 22
n_t	1.013 98	1.755 49
n_s	0.852 11	1.761 86
$n_{A'}$	0.768 19	1.766 62
n_r	0.706 52	1.771 21
n_C	0.656 27	1.775 96
$n_{C'}$	0.643 85	1.777 33
$n_{\text{He-Ne}}$	0.632 8	1.778 61
n_D	0.589 29	1.784 46
n_d	0.587 56	1.784 72
n_e	0.546 07	1.791 92
n_F	0.486 13	1.806 52
$n_{F'}$	0.479 99	1.808 41
$n_{\text{He-Cd}}$	0.441 57	1.822 75
n_g	0.435 835	1.825 34
n_h	0.404 656	1.842 39
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.726 774 71E+00
A_2	3.245 686 28E-01
A_3	2.658 168 09E+00
B_1	1.293 699 58E-02
B_2	6.182 552 45E-02
B_3	2.219 046 37E+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)	91.2
Rigidity Modulus G (GPa)	36.3
Poisson's Ratio σ	0.255
Knoop Hardness Hk[Class]	560 6
Abrasion Aa	180

Partial Dispersions	
$n_C - n_t$	0.020 476
$n_C - n_{A'}$	0.009 346
$n_d - n_C$	0.008 758
$n_e - n_C$	0.015 955
$n_g - n_d$	0.040 621
$n_g - n_F$	0.018 825
$n_h - n_g$	0.017 044
$n_i - n_g$	
$n_C - n_t$	0.021 836
$n_e - n_{C'}$	0.014 595
$n_{F'} - n_e$	0.016 493
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.670 2
$\theta_{C,A'}$	0.305 9
$\theta_{d,C}$	0.286 6
$\theta_{e,C}$	0.522 2
$\theta_{g,d}$	1.329 5
$\theta_{g,F}$	0.616 1
$\theta_{h,g}$	0.557 8
$\theta_{i,g}$	
$\theta'_{C,t}$	0.702 4
$\theta'_{e,C'}$	0.469 5
$\theta'_{F',e}$	0.530 5
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.003 0
$\Delta\theta_{C,A'}$	-0.001 1
$\Delta\theta_{g,d}$	0.018 1
$\Delta\theta_{g,F}$	0.016 2
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}	430	λ_5	365
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	400	$\lambda_{0.05}$	369
CCI			
B	G	R	
0.00	3.80	3.85	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.08
380	0.40
390	0.66
400	0.80
420	0.915
440	0.948
460	0.964
480	0.973
500	0.980
550	0.992
600	0.992
650	0.990
700	0.992
800	0.998
900	0.998
1 000	0.999
1 200	0.999
1 400	0.997
1 600	0.996
1 800	0.989
2 000	0.982
2 200	0.964
2 400	0.942

Thermal Properties	
Strain Point StP (°C)	569
Annealing Point AP (°C)	588
Transformation Temperature Tg (°C)	608
Yield Point At (°C)	639
Softening Point SP (°C)	686
Expansion Coefficients (-30 °C ~ 70 °C)	88
α_l (10^{-7}K^{-1}) (100 °C ~ 300 °C)	107
Thermal Conductivity λ (W/(m·K))	1.02

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7}K^{-1})
-100 ~ -90	72
-90 ~ -80	74
-80 ~ -70	75
-70 ~ -60	77
-60 ~ -50	78
-50 ~ -40	79
-40 ~ -30	81
-30 ~ -20	82
-20 ~ -10	83
-10 ~ 0	85
0 ~ 10	86
10 ~ 20	87
20 ~ 30	89
30 ~ 40	90
40 ~ 50	91
50 ~ 60	92
60 ~ 70	93
70 ~ 80	95
80 ~ 90	96
90 ~ 100	97
100 ~ 110	98
110 ~ 120	99
120 ~ 130	100
130 ~ 140	101
140 ~ 150	102
150 ~ 160	103
160 ~ 170	104
170 ~ 180	105
180 ~ 190	106
190 ~ 200	107
200 ~ 210	108
210 ~ 220	109
220 ~ 230	110
230 ~ 240	110
240 ~ 250	111
250 ~ 260	112
260 ~ 270	113
270 ~ 280	114
280 ~ 290	114
290 ~ 300	115

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	-1.5	-1.2	-0.7	-0.5	-0.4	0.0	0.4	1.3	1.4	2.8	4.5	-
-60 ~ -40	-1.4	-1.2	-0.6	-0.3	-0.3	0.1	0.5	1.5	1.6	3.1	4.9	-
-40 ~ -20	-1.4	-1.1	-0.5	-0.2	-0.2	0.2	0.6	1.7	1.9	3.4	5.3	-
-20 ~ 0	-1.2	-1.0	-0.3	0.0	0.1	0.5	0.9	2.0	2.2	3.7	5.8	-
0 ~ 20	-1.1	-0.8	0.0	0.2	0.3	0.7	1.2	2.3	2.5	4.2	6.3	-
20 ~ 40	-1.0	-0.6	0.1	0.3	0.5	1.0	1.5	2.6	2.8	4.5	6.7	-
40 ~ 60	-0.8	-0.5	0.4	0.6	0.7	1.2	1.7	2.9	3.1	4.9	7.1	-
60 ~ 80	-0.7	-0.3	0.5	0.8	0.8	1.4	1.9	3.2	3.3	5.3	7.7	-
80 ~ 100	-0.6	-0.2	0.6	0.9	1.0	1.6	2.1	3.4	3.6	5.6	8.0	-
100 ~ 120	-0.6	-0.2	0.8	1.1	1.2	1.7	2.3	3.7	3.8	5.9	8.4	-
120 ~ 140	-0.6	-0.1	0.8	1.1	1.2	1.8	2.4	3.8	4.0	6.1	8.7	-
140 ~ 160	-0.5	-0.1	0.8	1.2	1.3	1.8	2.5	3.9	4.1	6.3	9.0	-
160 ~ 180	-0.6	-0.2	0.8	1.1	1.2	1.8	2.5	4.0	4.3	6.5	9.3	-

Other Properties	
Photoelastic Constant β nm/(cm ³ ·105Pa)	2.81
Specific Gravity d	3.24
Remarks	