

S-TIH 1

Code(d) 717295
Code(e) 723293

Refractive Index n_d	1.717 36 1.717 362	Abbe Number ν_d	29.52	Dispersion $n_F - n_C$	0.024 303
Refractive Index n_e	1.723 098	Abbe Number ν_e	29.28	Dispersion $n_{F'} - n_{C'}$	0.024 694

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.670 18
n_{1970}	1.970 09	1.676 36
n_{1530}	1.529 58	1.683 44
n_{1129}	1.128 64	1.690 75
n_t	1.013 98	1.693 53
n_s	0.852 11	1.698 85
$n_{A'}$	0.768 19	1.702 75
n_F	0.706 52	1.706 49
n_C	0.656 27	1.710 33
$n_{C'}$	0.643 85	1.711 43
n_{He-Ne}	0.632 8	1.712 46
n_D	0.589 29	1.717 15
n_d	0.587 56	1.717 36
n_e	0.546 07	1.723 10
n_F	0.486 13	1.734 63
$n_{F'}$	0.479 99	1.736 12
n_{He-Cd}	0.441 57	1.747 32
n_g	0.435 835	1.749 33
n_h	0.404 656	1.762 47
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.603 267 59E+00
A_2	2.429 809 35E-01
A_3	1.813 135 92E+00
B_1	1.180 191 39E-02
B_2	5.913 636 58E-02
B_3	1.612 187 47E+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)	88.4
Rigidity Modulus G (GPa)	35.5
Poisson's Ratio σ	0.247
Knoop Hardness Hk[Class]	570 6
Abrasion Aa	157

Partial Dispersions	
$n_C - n_t$	0.016 798
$n_C - n_{A'}$	0.007 579
$n_d - n_C$	0.007 030
$n_e - n_C$	0.012 766
$n_g - n_d$	0.031 970
$n_g - n_F$	0.014 697
$n_h - n_g$	0.013 136
$n_i - n_g$	
$n_{C'} - n_t$	0.017 894
$n_e - n_{C'}$	0.011 670
$n_{F'} - n_e$	0.013 024
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.691 2
$\theta_{C,A'}$	0.311 9
$\theta_{d,C}$	0.289 3
$\theta_{e,C}$	0.525 3
$\theta_{g,d}$	1.315 5
$\theta_{g,F}$	0.604 7
$\theta_{h,g}$	0.540 5
$\theta_{i,g}$	
$\theta'_{C,t}$	0.724 6
$\theta'_{e,C'}$	0.472 6
$\theta'_{F',e}$	0.527 4
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.006 0
$\Delta\theta_{C,A'}$	0.000 3
$\Delta\theta_{g,d}$	0.012 1
$\Delta\theta_{g,F}$	0.011 0
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}	405	λ_5	360
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	392	$\lambda_{0.05}$	366
CCI			
B	G	R	
0.00	2.31	2.29	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.19
380	0.56
390	0.78
400	0.88
420	0.952
440	0.971
460	0.978
480	0.982
500	0.987
550	0.994
600	0.994
650	0.991
700	0.993
800	0.998
900	0.999
1 000	0.998
1 200	0.998
1 400	0.996
1 600	0.995
1 800	0.988
2 000	0.981
2 200	0.957
2 400	0.941

Thermal Properties	
Strain Point StP (°C)	569
Annealing Point AP (°C)	597
Transformation Temperature Tg (°C)	620
Yield Point At (°C)	659
Softening Point SP (°C)	703
Expansion Coefficients (-30 °C ~ 70 °C)	81
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	99
Thermal Conductivity λ (W/(m·K))	1.02

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	66
-90 ~ -80	68
-80 ~ -70	69
-70 ~ -60	71
-60 ~ -50	72
-50 ~ -40	73
-40 ~ -30	75
-30 ~ -20	76
-20 ~ -10	77
-10 ~ 0	78
0 ~ 10	80
10 ~ 20	81
20 ~ 30	82
30 ~ 40	83
40 ~ 50	84
50 ~ 60	85
60 ~ 70	87
70 ~ 80	88
80 ~ 90	89
90 ~ 100	90
100 ~ 110	91
110 ~ 120	92
120 ~ 130	93
130 ~ 140	94
140 ~ 150	95
150 ~ 160	96
160 ~ 170	96
170 ~ 180	97
180 ~ 190	98
190 ~ 200	99
200 ~ 210	100
210 ~ 220	101
220 ~ 230	101
230 ~ 240	102
240 ~ 250	103
250 ~ 260	104
260 ~ 270	104
270 ~ 280	105
280 ~ 290	106
290 ~ 300	106

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	2.85
Specific Gravity d	3.06
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	0.8	1.2	1.6	2.4	2.5	3.6	5.0	-
-60 ~ -40	-0.1	0.1	0.7	1.0	1.0	1.3	1.7	2.5	2.6	3.9	5.2	-
-40 ~ -20	0.1	0.3	0.9	1.1	1.1	1.5	1.8	2.8	2.9	4.0	5.5	-
-20 ~ 0	0.2	0.4	1.1	1.3	1.4	1.7	2.1	2.9	3.1	4.4	5.9	-
0 ~ 20	0.4	0.7	1.3	1.5	1.5	1.9	2.3	3.2	3.3	4.6	6.2	-
20 ~ 40	0.6	0.9	1.5	1.7	1.8	2.1	2.5	3.5	3.6	5.0	6.5	-
40 ~ 60	0.7	1.0	1.6	1.9	1.9	2.3	2.7	3.7	3.8	5.2	6.8	-
60 ~ 80	0.8	1.1	1.8	2.1	2.1	2.5	3.0	3.9	4.0	5.4	7.0	-
80 ~ 100	0.9	1.2	1.9	2.1	2.2	2.6	3.1	4.1	4.2	5.6	7.3	-
100 ~ 120	1.0	1.3	1.9	2.2	2.3	2.7	3.1	4.2	4.4	5.8	7.5	-
120 ~ 140	1.0	1.3	2.0	2.2	2.3	2.8	3.2	4.3	4.4	5.9	7.6	-
140 ~ 160	0.9	1.2	2.0	2.3	2.4	2.8	3.2	4.3	4.4	5.9	7.7	-
160 ~ 180	0.9	1.2	1.9	2.2	2.3	2.7	3.2	4.2	4.4	5.9	7.7	-

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