

S-TIH53WN

Code(d) 847239

Code(e) 855237

Refractive Index n_d	1.846 66 1.846 660	Abbe Number ν_d	23.86	Dispersion $n_F - n_C$	0.035 480
Refractive Index n_e	1.855 009	Abbe Number ν_e	23.67	Dispersion $n_{F'} - n_{C'}$	0.036 118

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.785 33
n_{1970}	1.970 09	1.792 14
n_{1530}	1.529 58	1.800 28
n_{1129}	1.128 64	1.809 39
n_t	1.013 98	1.813 07
n_s	0.852 11	1.820 31
$n_{A'}$	0.768 19	1.825 76
n_F	0.706 52	1.831 04
n_C	0.656 27	1.836 53
$n_{C'}$	0.643 85	1.838 10
n_{He-Ne}	0.632 8	1.839 58
n_D	0.589 29	1.846 35
n_d	0.587 56	1.846 66
n_e	0.546 07	1.855 01
n_F	0.486 13	1.872 01
$n_{F'}$	0.479 99	1.874 22
n_{He-Cd}	0.441 57	1.890 99
n_g	0.435 835	1.894 03
n_h	0.404 656	1.914 09
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	1.873 080 69E+00
A_2	3.764 602 62E-01
A_3	2.374 417 73E+00
B_1	1.413 646 36E-02
B_2	6.363 748 77E-02
B_3	1.848 987 00E+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]	550 6
Abrasion Aa	188

Partial Dispersions	
$n_C - n_t$	0.023 459
$n_C - n_{A'}$	0.010 763
$n_d - n_C$	0.010 133
$n_e - n_C$	0.018 482
$n_g - n_d$	0.047 374
$n_g - n_F$	0.022 027
$n_h - n_g$	0.020 053
$n_i - n_g$	
$n_{C'} - n_t$	0.025 031
$n_e - n_{C'}$	0.016 910
$n_{F'} - n_e$	0.019 208
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.661 2
$\theta_{C,A'}$	0.303 4
$\theta_{d,C}$	0.285 6
$\theta_{e,C}$	0.520 9
$\theta_{g,d}$	1.335 2
$\theta_{g,F}$	0.620 8
$\theta_{h,g}$	0.565 2
$\theta_{i,g}$	
$\theta'_{C,t}$	0.693 0
$\theta'_{e,C'}$	0.468 2
$\theta'_{F,e}$	0.531 8
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.002 6
$\Delta\theta_{C,A'}$	-0.001 4
$\Delta\theta_{g,d}$	0.020 1
$\Delta\theta_{g,F}$	0.017 9
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}		λ_5	368
λ_{70}	404		
Internal transmission			
$\lambda_{0.80}$	398	$\lambda_{0.05}$	368
CCI			
B	G	R	
0.00	3.49	3.70	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.11
380	0.45
390	0.71
400	0.83
420	0.918
440	0.954
460	0.971
480	0.980
500	0.986
550	0.995
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1 000	0.999
1 200	0.999
1 400	0.999
1 600	0.999
1 800	0.994
2 000	0.985
2 200	0.961
2 400	0.925

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

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (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 ³ ·105Pa)	2.81
Specific Gravity d	3.54
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	-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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