

S-TIL 1

Code(d) 548458

Code(e) 551455

Refractive Index n_d	1.548 14 1.548 141	Abbe Number ν_d	45.79	Dispersion $n_F - n_C$	0.011 972
Refractive Index n_e	1.550 984	Abbe Number ν_e	45.49	Dispersion $n_{F'} - n_{C'}$	0.012 112

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.517 97
n_{1970}	1.970 09	1.523 07
n_{1530}	1.529 58	1.528 61
n_{1129}	1.128 64	1.533 65
n_t	1.013 98	1.535 37
n_s	0.852 11	1.538 44
$n_{A'}$	0.768 19	1.540 58
n_F	0.706 52	1.542 57
n_C	0.656 27	1.544 57
$n_{C'}$	0.643 85	1.545 14
n_{He-Ne}	0.632 8	1.545 66
n_D	0.589 29	1.548 04
n_d	0.587 56	1.548 14
n_e	0.546 07	1.550 98
n_F	0.486 13	1.556 54
$n_{F'}$	0.479 99	1.557 25
n_{He-Cd}	0.441 57	1.562 44
n_g	0.435 835	1.563 35
n_h	0.404 656	1.569 18
n_i	0.365 015	1.579 59

Constants of Dispersion Formula	
A_1	1.250 889 44E+00
A_2	9.979 733 27E-02
A_3	1.205 835 04E+00
B_1	8.839 212 79E-03
B_2	4.826 850 52E-02
B_3	1.374 149 53E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	3
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)	70.5
Rigidity Modulus G (GPa)	28.8
Poisson's Ratio σ	0.222
Knoop Hardness Hk[Class]	490 5
Abrasion Aa	132

Partial Dispersions	
$n_C - n_t$	0.009 202
$n_C - n_{A'}$	0.003 988
$n_d - n_C$	0.003 569
$n_e - n_C$	0.006 412
$n_g - n_d$	0.015 210
$n_g - n_F$	0.006 807
$n_h - n_g$	0.005 833
$n_i - n_g$	0.016 236
$n_{C'} - n_t$	0.009 765
$n_e - n_{C'}$	0.005 849
$n_{F'} - n_e$	0.006 263
$n_i - n_{F'}$	0.022 340

Relative Partial Dispersions	
$\theta_{C,t}$	0.768 6
$\theta_{C,A'}$	0.333 1
$\theta_{d,C}$	0.298 1
$\theta_{e,C}$	0.535 6
$\theta_{g,d}$	1.270 5
$\theta_{g,F}$	0.568 6
$\theta_{h,g}$	0.487 2
$\theta_{i,g}$	1.356 2
$\theta'_{C,t}$	0.806 2
$\theta'_{e,C'}$	0.482 9
$\theta'_{F',e}$	0.517 1
$\theta'_{i,F'}$	1.844 5

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.007 1
$\Delta\theta_{C,A'}$	0.001 7
$\Delta\theta_{g,d}$	0.000 9
$\Delta\theta_{g,F}$	0.001 2
$\Delta\theta_{i,g}$	0.014 6

Coloring			
λ_{80}	370	λ_5	340
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	366	$\lambda_{0.05}$	341
CCI			
B	G	R	
0.00	0.32	0.33	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	0.01
350	0.29
360	0.69
370	0.87
380	0.944
390	0.972
400	0.984
420	0.992
440	0.994
460	0.995
480	0.996
500	0.997
550	0.998
600	0.998
650	0.998
700	0.998
800	0.998
900	0.998
1 000	0.997
1 200	0.997
1 400	0.996
1 600	0.993
1 800	0.977
2 000	0.948
2 200	0.89
2 400	0.85

Thermal Properties	
Strain Point StP (°C)	452
Annealing Point AP (°C)	487
Transformation Temperature Tg (°C)	500
Yield Point At (°C)	566
Softening Point SP (°C)	654
Expansion Coefficients (-30 °C ~ 70 °C)	84
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	103
Thermal Conductivity λ (W/(m·K))	1.04

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	67
-90 ~ -80	69
-80 ~ -70	71
-70 ~ -60	73
-60 ~ -50	74
-50 ~ -40	76
-40 ~ -30	78
-30 ~ -20	79
-20 ~ -10	81
-10 ~ 0	82
0 ~ 10	84
10 ~ 20	85
20 ~ 30	86
30 ~ 40	88
40 ~ 50	89
50 ~ 60	90
60 ~ 70	91
70 ~ 80	92
80 ~ 90	94
90 ~ 100	95
100 ~ 110	96
110 ~ 120	97
120 ~ 130	98
130 ~ 140	98
140 ~ 150	99
150 ~ 160	100
160 ~ 170	101
170 ~ 180	102
180 ~ 190	102
190 ~ 200	103
200 ~ 210	103
210 ~ 220	104
220 ~ 230	104
230 ~ 240	105
240 ~ 250	105
250 ~ 260	106
260 ~ 270	106
270 ~ 280	106
280 ~ 290	107
290 ~ 300	107

Other Properties	
Photoelastic Constant β nm/(cm ³ ·105Pa)	2.68
Specific Gravity d	2.54
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	1.1	1.3	1.5	1.6	1.6	1.8	2.0	2.4	2.4	2.8	3.3	4.4
-60 ~ -40	0.9	1.0	1.4	1.5	1.5	1.6	1.8	2.2	2.2	2.7	3.2	4.2
-40 ~ -20	0.7	1.0	1.3	1.4	1.4	1.6	1.7	2.1	2.2	2.7	3.2	4.3
-20 ~ 0	0.7	1.0	1.3	1.4	1.4	1.6	1.8	2.1	2.2	2.7	3.3	4.4
0 ~ 20	0.7	0.9	1.2	1.3	1.4	1.7	1.8	2.3	2.3	2.8	3.4	4.6
20 ~ 40	0.8	0.9	1.3	1.4	1.4	1.6	1.9	2.3	2.4	2.9	3.5	4.7
40 ~ 60	0.9	1.0	1.4	1.5	1.6	1.8	2.0	2.4	2.5	3.0	3.6	4.9
60 ~ 80	0.9	1.0	1.4	1.6	1.6	1.9	2.1	2.6	2.6	3.2	3.8	5.2
80 ~ 100	0.9	1.1	1.5	1.6	1.7	1.9	2.1	2.7	2.7	3.4	4.0	5.4
100 ~ 120	1.0	1.2	1.5	1.7	1.7	2.0	2.3	2.8	2.8	3.5	4.2	5.6
120 ~ 140	1.0	1.3	1.7	1.8	1.9	2.1	2.4	2.9	2.9	3.6	4.3	5.8
140 ~ 160	1.1	1.3	1.7	1.9	1.9	2.1	2.4	2.9	3.0	3.7	4.4	5.9
160 ~ 180	1.1	1.3	1.7	1.9	1.9	2.2	2.4	3.0	3.0	3.7	4.5	6.2

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