

S-TIM 8

Code(d) 596392

Code(e) 599390

Refractive Index n_d	1.595 51 1.595 509	Abbe Number ν_d	39.24	Dispersion $n_F - n_C$	0.015 176
Refractive Index n_e	1.599 106	Abbe Number ν_e	38.97	Dispersion $n_{F'} - n_{C'}$	0.015 375

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.560 75
n_{1970}	1.970 09	1.566 15
n_{1530}	1.529 58	1.572 12
n_{1129}	1.128 64	1.577 78
n_t	1.013 98	1.579 80
n_s	0.852 11	1.583 47
$n_{A'}$	0.768 19	1.586 09
n_F	0.706 52	1.588 54
n_C	0.656 27	1.591 03
$n_{C'}$	0.643 85	1.591 73
n_{He-Ne}	0.632 8	1.592 40
n_D	0.589 29	1.595 38
n_d	0.587 56	1.595 51
n_e	0.546 07	1.599 11
n_F	0.486 13	1.606 21
$n_{F'}$	0.479 99	1.607 11
n_{He-Cd}	0.441 57	1.613 82
n_g	0.435 835	1.615 01
n_h	0.404 656	1.622 67
n_i	0.365 015	1.636 61

Constants of Dispersion Formula	
A_1	1.372 627 13E+00
A_2	1.126 362 76E-01
A_3	1.397 864 21E+00
B_1	1.032 200 68E-02
B_2	5.501 950 44E-02
B_3	1.477 356 09E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	2~3
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E (GPa)	75.0
Rigidity Modulus G (GPa)	30.5
Poisson's Ratio σ	0.231
Knoop Hardness Hk[Class]	530
Abrasion Aa	135

Partial Dispersions	
$n_C - n_t$	0.011 234
$n_C - n_{A'}$	0.004 942
$n_d - n_C$	0.004 479
$n_e - n_C$	0.008 076
$n_g - n_d$	0.019 504
$n_g - n_F$	0.008 807
$n_h - n_g$	0.007 657
$n_i - n_g$	0.021 600
$n_{C'} - n_t$	0.011 938
$n_e - n_{C'}$	0.007 372
$n_{F'} - n_e$	0.008 003
$n_i - n_{F'}$	0.029 504

Relative Partial Dispersions	
$\theta_{C,t}$	0.740 2
$\theta_{C,A'}$	0.325 6
$\theta_{d,C}$	0.295 1
$\theta_{e,C}$	0.532 2
$\theta_{g,d}$	1.285 2
$\theta_{g,F}$	0.580 3
$\theta_{h,g}$	0.504 5
$\theta_{i,g}$	1.423 3
$\theta'_{C,t}$	0.776 5
$\theta'_{e,C'}$	0.479 5
$\theta'_{F,e}$	0.520 5
$\theta'_{i,F'}$	1.919 0

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.009 4
$\Delta\theta_{C,A'}$	0.002 2
$\Delta\theta_{g,d}$	0.002 0
$\Delta\theta_{g,F}$	0.002 3
$\Delta\theta_{i,g}$	0.026 9

Coloring			
λ_{80}	380	λ_5	350
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	378	$\lambda_{0.05}$	351
CCI			
B	G	R	
0.00	0.82	0.82	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	0.02
360	0.27
370	0.64
380	0.84
390	0.928
400	0.962
420	0.982
440	0.988
460	0.990
480	0.992
500	0.994
550	0.997
600	0.997
650	0.996
700	0.997
800	0.998
900	0.997
1 000	0.996
1 200	0.996
1 400	0.994
1 600	0.993
1 800	0.983
2 000	0.968
2 200	0.935
2 400	0.915

Thermal Properties	
Strain Point StP (°C)	529
Annealing Point AP (°C)	560
Transformation Temperature Tg (°C)	582
Yield Point At (°C)	627
Softening Point SP (°C)	695
Expansion Coefficients (-30 °C ~ 70 °C)	86
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	105
Thermal Conductivity λ (W/(m·K))	1.03

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	68
-90 ~ -80	70
-80 ~ -70	72
-70 ~ -60	74
-60 ~ -50	75
-50 ~ -40	77
-40 ~ -30	79
-30 ~ -20	80
-20 ~ -10	82
-10 ~ 0	84
0 ~ 10	85
10 ~ 20	86
20 ~ 30	88
30 ~ 40	89
40 ~ 50	91
50 ~ 60	92
60 ~ 70	93
70 ~ 80	94
80 ~ 90	95
90 ~ 100	97
100 ~ 110	98
110 ~ 120	99
120 ~ 130	100
130 ~ 140	101
140 ~ 150	101
150 ~ 160	102
160 ~ 170	103
170 ~ 180	104
180 ~ 190	105
190 ~ 200	105
200 ~ 210	106
210 ~ 220	107
220 ~ 230	107
230 ~ 240	108
240 ~ 250	108
250 ~ 260	108
260 ~ 270	109
270 ~ 280	109
280 ~ 290	110
290 ~ 300	110

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	2.79
Specific Gravity d	2.63
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	0.8	1.0	1.3	1.4	1.4	1.6	1.8	2.2	2.3	2.8	3.3	4.6
-60 ~ -40	0.7	0.8	1.1	1.3	1.3	1.5	1.7	2.0	2.1	2.6	3.3	4.6
-40 ~ -20	0.5	0.7	1.0	1.1	1.2	1.4	1.6	2.0	2.1	2.7	3.3	4.8
-20 ~ 0	0.5	0.6	1.0	1.1	1.1	1.4	1.6	2.1	2.2	2.8	3.4	5.1
0 ~ 20	0.4	0.7	1.0	1.1	1.2	1.4	1.6	2.1	2.2	2.8	3.6	5.3
20 ~ 40	0.5	0.6	1.0	1.2	1.2	1.5	1.7	2.2	2.3	3.0	3.7	5.6
40 ~ 60	0.4	0.6	1.0	1.2	1.2	1.5	1.7	2.3	2.4	3.2	4.0	5.8
60 ~ 80	0.5	0.7	1.1	1.3	1.3	1.6	1.8	2.4	2.5	3.3	4.1	6.1
80 ~ 100	0.4	0.6	1.2	1.3	1.4	1.6	1.9	2.5	2.6	3.4	4.3	6.4
100 ~ 120	0.4	0.7	1.2	1.3	1.4	1.7	2.0	2.6	2.7	3.6	4.5	6.7
120 ~ 140	0.4	0.6	1.2	1.3	1.4	1.7	2.0	2.7	2.8	3.7	4.7	6.9
140 ~ 160	0.3	0.6	1.1	1.3	1.4	1.7	2.0	2.7	2.8	3.7	4.8	7.2
160 ~ 180	0.2	0.5	1.1	1.3	1.4	1.7	2.1	2.8	2.9	3.9	5.0	7.4

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