

S-LAL18N

Code(d) 729546

Code(e) 732544

Refractive Index n_d	1.729 16 1.729 157	Abbe Number ν_d	54.59	Dispersion $n_F - n_C$	0.013 356
Refractive Index n_e	1.732 341	Abbe Number ν_e	54.37	Dispersion $n_{F'} - n_{C'}$	0.013 470

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.689 32
n_{1970}	1.970 09	1.697 00
n_{1530}	1.529 58	1.705 03
n_{1129}	1.128 64	1.711 87
n_t	1.013 98	1.714 08
n_s	0.852 11	1.717 88
$n_{A'}$	0.768 19	1.720 44
n_F	0.706 52	1.722 78
n_C	0.656 27	1.725 09
$n_{C'}$	0.643 85	1.725 74
n_{He-Ne}	0.632 8	1.726 34
n_D	0.589 29	1.729 04
n_d	0.587 56	1.729 16
n_e	0.546 07	1.732 34
n_F	0.486 13	1.738 45
$n_{F'}$	0.479 99	1.739 21
n_{He-Cd}	0.441 57	1.744 75
n_g	0.435 835	1.745 72
n_h	0.404 656	1.751 76
n_i	0.365 015	1.762 08

Constants of Dispersion Formula	
A_1	1.431 317 27E+00
A_2	5.012 968 55E-01
A_3	1.154 648 35E+00
B_1	6.827 832 22E-03
B_2	2.158 403 29E-02
B_3	8.098 327 00E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	51.2
Phosphate Resistance PR	2.0

Mechanical Properties	
Young's Modulus E (GPa)	120.4
Rigidity Modulus G (GPa)	46.7
Poisson's Ratio σ	0.289
Knoop Hardness Hk[Class]	720 7
Abrasion Aa	69

Partial Dispersions	
$n_C - n_t$	0.011 009
$n_C - n_{A'}$	0.004 650
$n_d - n_C$	0.004 064
$n_e - n_C$	0.007 248
$n_g - n_d$	0.016 561
$n_g - n_F$	0.007 269
$n_h - n_g$	0.006 042
$n_i - n_g$	0.016 363
$n_{C'} - n_t$	0.011 656
$n_e - n_{C'}$	0.006 601
$n_{F'} - n_e$	0.006 869
$n_i - n_{F'}$	0.022 871

Relative Partial Dispersions	
$\theta_{C,t}$	0.824 3
$\theta_{C,A'}$	0.348 2
$\theta_{d,C}$	0.304 3
$\theta_{e,C}$	0.542 7
$\theta_{g,d}$	1.240 0
$\theta_{g,F}$	0.544 2
$\theta_{h,g}$	0.452 4
$\theta_{i,g}$	1.225 1
$\theta'_{C,t}$	0.865 3
$\theta'_{e,C'}$	0.490 1
$\theta'_{F',e}$	0.509 9
$\theta'_{i,F'}$	1.697 9

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.021 5
$\Delta\theta_{C,A'}$	0.006 2
$\Delta\theta_{g,d}$	-0.011 3
$\Delta\theta_{g,F}$	-0.008 9
$\Delta\theta_{i,g}$	-0.042 8

Coloring			
λ_{80}	365	λ_5	280
λ_{70}			
Internal transmission			
$\lambda_{0.80}$	343	$\lambda_{0.05}$	281
CCI			
B	G	R	
0.00	0.30	0.31	

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	0.04
290	0.21
300	0.30
310	0.32
320	0.55
330	0.68
340	0.78
350	0.86
360	0.912
370	0.946
380	0.967
390	0.978
400	0.984
420	0.991
440	0.994
460	0.996
480	0.997
500	0.998
550	0.999
600	0.998
650	0.999
700	0.999
800	0.998
900	0.998
1 000	0.997
1 200	0.996
1 400	0.991
1 600	0.991
1 800	0.982
2 000	0.956
2 200	0.87
2 400	0.60

Thermal Properties	
Strain Point StP (°C)	632
Annealing Point AP (°C)	655
Transformation Temperature Tg (°C)	679
Yield Point At (°C)	703
Softening Point SP (°C)	731
Expansion Coefficients (-30 °C ~ 70 °C)	58
α_i (10 ⁻⁷ K ⁻¹) (100 °C ~ 300 °C)	72
Thermal Conductivity λ (W/(mK))	0.871

Linear coefficient of thermal expansion	
Temperature range (°C)	α_i (10 ⁻⁷ K ⁻¹)
-100 ~ -90	44
-90 ~ -80	46
-80 ~ -70	47
-70 ~ -60	48
-60 ~ -50	50
-50 ~ -40	51
-40 ~ -30	52
-30 ~ -20	53
-20 ~ -10	54
-10 ~ 0	56
0 ~ 10	57
10 ~ 20	58
20 ~ 30	59
30 ~ 40	60
40 ~ 50	61
50 ~ 60	62
60 ~ 70	63
70 ~ 80	64
80 ~ 90	65
90 ~ 100	65
100 ~ 110	66
110 ~ 120	67
120 ~ 130	68
130 ~ 140	69
140 ~ 150	69
150 ~ 160	70
160 ~ 170	71
170 ~ 180	71
180 ~ 190	72
190 ~ 200	72
200 ~ 210	73
210 ~ 220	74
220 ~ 230	74
230 ~ 240	74
240 ~ 250	75
250 ~ 260	75
260 ~ 270	76
270 ~ 280	76
280 ~ 290	76
290 ~ 300	77

Other Properties	
Photoelastic Constant β nm/(cm ³ 105Pa)	1.58
Specific Gravity d	4.18
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	2.5	2.6	2.9	2.9	3.0	3.2	3.3	3.6	3.6	3.9	4.3	4.9
-60 ~ -40	2.4	2.5	2.8	2.9	2.9	3.1	3.2	3.5	3.5	3.9	4.3	4.9
-40 ~ -20	2.4	2.5	2.8	2.9	2.9	3.0	3.3	3.5	3.6	3.9	4.2	5.0
-20 ~ 0	2.5	2.6	2.9	3.0	3.0	3.1	3.3	3.6	3.6	4.1	4.4	5.1
0 ~ 20	2.5	2.7	3.0	3.1	3.1	3.2	3.4	3.7	3.7	4.2	4.5	5.2
20 ~ 40	2.7	2.8	3.1	3.2	3.2	3.4	3.5	3.9	3.9	4.2	4.7	5.4
40 ~ 60	2.8	2.9	3.2	3.3	3.4	3.5	3.7	4.0	4.0	4.5	4.9	5.6
60 ~ 80	2.9	3.1	3.4	3.5	3.6	3.7	3.9	4.2	4.2	4.6	5.0	5.7
80 ~ 100	3.0	3.2	3.5	3.6	3.7	3.9	4.1	4.4	4.4	4.8	5.2	6.0
100 ~ 120	3.1	3.3	3.6	3.7	3.7	3.9	4.2	4.5	4.5	5.0	5.4	6.1
120 ~ 140	3.2	3.4	3.8	3.8	3.9	4.1	4.2	4.6	4.7	5.1	5.5	6.3
140 ~ 160	3.4	3.6	3.9	4.0	4.0	4.2	4.4	4.7	4.8	5.2	5.6	6.4
160 ~ 180	3.4	3.6	3.9	4.0	4.1	4.3	4.4	4.8	4.8	5.3	5.7	6.5

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