

S-FPL53

Code(d) **439950**

Code(e) **440946**

Refractive Index n_d	1.43875 1.438750	Abbe Number v_d	95.0 94.93	Dispersion n_F-n_C	0.00462 0.004622
Refractive Index n_e	1.439854	Abbe Number v_e	94.49	Dispersion $n_F'-n_C'$	0.004655

Refractive Indices		
$\lambda(\mu\text{m})$		
n_{2325}	2.32542	1.42512
n_{1970}	1.97009	1.42762
n_{1530}	1.52958	1.43032
n_{1129}	1.12864	1.43269
n_t	1.01398	1.43346
n_s	0.85211	1.43480
$n_{A'}$	0.76819	1.43570
n_r	0.70652	1.43652
n_C	0.65627	1.43733
$n_{C'}$	0.64385	1.43756
$n_{\text{He-Ne}}$	0.6328	1.43777
n_D	0.58929	1.43871
n_d	0.58756	1.43875
n_e	0.54607	1.43985
n_F	0.48613	1.44195
$n_{F'}$	0.47999	1.44221
$n_{\text{He-Cd}}$	0.44157	1.44410
n_g	0.435835	1.44442
n_h	0.404656	1.44645
n_i	0.365015	1.44986

Partial Dispersions	
n_C-n_t	0.003870
$n_C-n_{A'}$	0.001631
n_d-n_C	0.001417
n_e-n_C	0.002521
n_g-n_d	0.005673
n_g-n_F	0.002468
n_h-n_g	0.002028
n_i-n_g	0.005437
n_C-n_t	0.004097
$n_e-n_{C'}$	0.002294
$n_{F'-n_e}$	0.002361
$n_i-n_{F'}$	0.007645

Relative Partial Dispersions	
$\theta_{C,t}$	0.8373
$\theta_{C,A'}$	0.3529
$\theta_{d,C}$	0.3066
$\theta_{e,C}$	0.5454
$\theta_{g,d}$	1.2274
$\theta_{g,F}$	0.5340
$\theta_{h,g}$	0.4388
$\theta_{i,g}$	1.1763
$\theta'_{C,t}$	0.8801
$\theta'_{e,C'}$	0.4928
$\theta'_{F',e}$	0.5072
$\theta'_{i,F}$	1.6423

Thermal Properties	
Strain Point StP (°C)	
Annealing Point AP (°C)	
Transformation Temperature Tg (°C)	426
Yield Point At (°C)	456
Softening Point SP (°C)	
Expansion Coefficients (-30~+70°C)	145
α ($10^{-7}/^\circ\text{C}$) (+100~+300°C)	169
Thermal Conductivity k (W/m-K)	0.857

Coloring			
λ_{80}	33	λ_5	29
λ_{70}			

Internal Transmittance	
$\lambda(\text{nm})$	$\tau_{10\text{mm}}$
280	0.04
290	0.12
300	0.28
310	0.51
320	0.71
330	0.85
340	0.928
350	0.967
360	0.985
370	0.992
380	0.996
390	0.997
400	0.996
420	0.995
440	0.995
460	0.996
480	0.997
500	0.998
550	0.999
600	0.998
650	0.997
700	0.998
800	0.998
900	0.997
1000	0.997
1200	0.998
1400	0.998
1600	0.998
1800	0.998
2000	0.998
2200	0.997
2400	0.998

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.1548
$\Delta\theta_{C,A'}$	-0.0381
$\Delta\theta_{g,d}$	0.0598
$\Delta\theta_{g,F}$	0.0461
$\Delta\theta_{i,g}$	0.2462

Mechanical Properties	
Young's Modulus E (10^8N/m^2)	691
Rigidity Modulus G (10^8N/m^2)	265
Poisson's Ratio σ	0.303
Knoop Hardness Hk[Class]	320 3
Abrasion Aa	451
Photoelastic Constant β (nm/cm/ 10^5Pa)	0.57

Constants of Dispersion Formula	
A_1	9.83532327E-01
A_2	6.95688140E-02
A_3	1.11409238E+00
B_1	4.92234955E-03
B_2	1.93581091E-02
B_3	2.64275294E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	3 ~
Acid Resistance(Surface) Group SR	52.3
Phosphate Resistance PR	4.3

Other Properties	
Bubble Quality Group B	B
Specific Gravity d	3.62
Remarks	

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	dn/dt relative ($10^{-6}/^\circ\text{C}$)						
	t	C'	He-Ne	D	e	F'	g
-40~-20	-5.9	-5.8	-5.8	-5.7	-5.7	-5.6	-5.5
-20~0	-6.2	-6.1	-6.1	-6.1	-6.0	-5.9	-5.8
0~20	-6.5	-6.4	-6.4	-6.4	-6.3	-6.2	-6.1
20~40	-6.9	-6.8	-6.7	-6.7	-6.6	-6.5	-6.4
40~60	-7.2	-7.1	-7.1	-7.0	-7.0	-6.8	-6.7
60~80	-7.5	-7.4	-7.4	-7.3	-7.3	-7.2	-7.0