

# S-FPL51Y

Code(d) **497811**

Code(e) **498808**

Refractive Index $n_d$	<b>1.49700</b> 1.497003	Abbe Number $\nu_d$	<b>81.14</b>	Dispersion $n_F-n_C$	<b>0.006125</b>
Refractive Index $n_e$	1.498466	Abbe Number $\nu_e$	80.74	Dispersion $n_F-n_{C'}$	0.006174

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.47980
$n_{1970}$	1.97009	1.48286
$n_{1530}$	1.52958	1.48617
$n_{1129}$	1.12864	1.48913
$n_t$	1.01398	1.49011
$n_s$	0.85211	1.49182
$n_{A'}$	0.76819	1.49299
$n_r$	0.70652	1.49407
$n_C$	0.65627	1.49513
$n_{C'}$	0.64385	1.49543
$n_{\text{He-Ne}}$	0.6328	1.49571
$n_D$	0.58929	1.49695
$n_d$	0.58756	1.49700
$n_e$	0.54607	1.49847
$n_F$	0.48613	1.50126
$n_{F'}$	0.47999	1.50160
$n_{\text{He-Cd}}$	0.44157	1.50412
$n_g$	0.435835	1.50455
$n_h$	0.404656	1.50727
$n_i$	0.365015	1.51185
$n_{334}$	0.334148	1.51673
$n_{326}$	0.326106	1.51826

Constants of Dispersion Formula	
$A_1$	1.14031443E+00
$A_2$	7.71496272E-02
$A_3$	1.43721957E+00
$B_1$	5.95466872E-03
$B_2$	2.23953953E-02
$B_3$	2.74290057E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	2~3
Acid Resistance(Surface) Group SR	51.0
Phosphate Resistance PR	4.2

Mechanical Properties	
Young's Modulus E (GPa)	71.6
Rigidity Modulus G (GPa)	27.5
Poisson's Ratio $\sigma$	0.302
Knoop Hardness Hk[Class]	370 4
Abrasion Aa	504

Partial Dispersions	
$n_C-n_t$	0.005027
$n_C-n_{A'}$	0.002139
$n_d-n_C$	0.001870
$n_e-n_C$	0.003333
$n_g-n_d$	0.007551
$n_g-n_F$	0.003296
$n_h-n_g$	0.002716
$n_i-n_g$	0.007300
$n_C-n_t$	0.005325
$n_e-n_{C'}$	0.003035
$n_{F'}-n_e$	0.003139
$n_i-n_{F'}$	0.010249

Relative Partial Dispersions	
$\theta_{C,t}$	0.8207
$\theta_{C,A'}$	0.3492
$\theta_{d,C}$	0.3053
$\theta_{e,C}$	0.5442
$\theta_{g,d}$	1.2328
$\theta_{g,F}$	0.5381
$\theta_{h,g}$	0.4434
$\theta_{i,g}$	1.1918
$\theta'_{C,t}$	0.8625
$\theta'_{e,C'}$	0.4916
$\theta'_{F',e}$	0.5084
$\theta'_{i,F'}$	1.6600

※Refractive Indices of the wavelength nm can be calculated from 326 to 1129 nm by this constant. Use the appended list of the constants to calculate 1129-2325nm.

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.1067
$\Delta\theta_{C,A'}$	-0.0251
$\Delta\theta_{g,d}$	0.0366
$\Delta\theta_{g,F}$	0.0279
$\Delta\theta_{i,g}$	0.1462

Thermal Properties	
Strain Point StP (°C)	-
Annealing Point AP (°C)	-
Transformation Temperature Tg (°C)	444 *
Yield Point At (°C)	472 *
Softening Point SP (°C)	-
Expansion Coefficients (-30~+70°C)	137 *
$\alpha$ (10 <sup>-7</sup> K <sup>-1</sup> ) (+100~+300°C)	163 *
Thermal Conductivity $\lambda$ W/(m·K)	0.780

Coloring			
$\lambda_{80}$	310	$\lambda_5$	-
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	300	$\lambda_{0.05}$	249

CCI		
B	G	R
0.00	0.00	0.00

Internal Transmittance		
$\lambda(\text{nm})$	$\tau$ 10mm	$\tau$ 25mm
240	0.04	
250	0.07	
260	0.21	0.02
270	0.34	0.06
280	0.51	0.19
290	0.67	0.37
300	0.80	0.58
310	0.89	0.75
320	0.943	0.86
330	0.971	0.930
340	0.986	0.966
350	0.994	0.985
360	0.996	0.991
365	0.997	0.993
370	0.998	0.995
380	0.999	0.997
390	0.999	0.998
400	0.999	0.998
420	0.999	0.998
440	0.999	0.998
460	0.999	0.998
480	0.999	0.998
500	0.999	0.999
550	0.999	0.999
600	0.999	0.999
650	0.999	0.998
700	0.999	0.999
800	0.999	0.999
900	0.999	0.998
1000	0.998	0.996
1200	0.998	0.996
1400	0.999	0.998
1600	0.999	0.997
1800	0.998	0.995
2000	0.998	0.995
2200	0.996	0.991
2400	0.995	0.987

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>9</sup> Pa)	
Specific Gravity d	3.66
Remarks	

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※The name of the glass type is the model number assigned based on the main components of the composition: large, medium, small refractive index and serial number.

Temperature Coefficients of Refractive Index									
Range of Temperature (°C)	$\Delta n/\Delta T$ relative (10 <sup>-6</sup> K <sup>-1</sup> )								
	t	C'	He-Ne	D	e	F'	g	i	
-40~-20	-6.4	-6.3	-6.3	-6.3	-6.2	-6.0	-5.9	-5.5	
-20~ 0	-6.7	-6.6	-6.6	-6.5	-6.4	-6.3	-6.1	-5.7	
0~20	-6.9	-6.8	-6.8	-6.7	-6.7	-6.5	-6.4	-5.9	
20~40	-7.2	-7.0	-7.0	-7.0	-6.9	-6.7	-6.6	-6.1	
40~60	-7.4	-7.3	-7.3	-7.2	-7.1	-7.0	-6.8	-6.3	
60~80	-7.7	-7.5	-7.5	-7.4	-7.4	-7.2	-7.0	-6.6	