

# S-FPM 5

Code(d) **552708**

Code(e) **554703**

Refractive Index $n_d$	<b>1.55200</b> 1.552000	Abbe Number $\nu_d$	<b>70.70</b>	Dispersion $n_F-n_C$	<b>0.007808</b>
Refractive Index $n_e$	1.553863	Abbe Number $\nu_e$	70.33	Dispersion $n_F-n_{C'}$	0.007875

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.53066
$n_{1970}$	1.97009	1.53441
$n_{1530}$	1.52958	1.53845
$n_{1129}$	1.12864	1.54208
$n_t$	1.01398	1.54330
$n_s$	0.85211	1.54545
$n_{A'}$	0.76819	1.54692
$n_r$	0.70652	1.54828
$n_C$	0.65627	1.54963
$n_{C'}$	0.64385	1.55000
$n_{\text{He-Ne}}$	0.6328	1.55036
$n_D$	0.58929	1.55193
$n_d$	0.58756	1.55200
$n_e$	0.54607	1.55386
$n_F$	0.48613	1.55743
$n_{F'}$	0.47999	1.55788
$n_{\text{He-Cd}}$	0.44157	1.56111
$n_g$	0.435835	1.56167
$n_h$	0.404656	1.56517
$n_i$	0.365015	1.57111

Constants of Dispersion Formula	
$A_1$	8.39899764E-01
$A_2$	5.37721312E-01
$A_3$	9.53247759E-01
$B_1$	3.76448295E-03
$B_2$	1.48022622E-02
$B_3$	1.45675550E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	2
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	52.1
Phosphate Resistance PR	4.0

Mechanical Properties	
Young's Modulus E (GPa)	76.9
Rigidity Modulus G (GPa)	29.7
Poisson's Ratio $\sigma$	0.296
Knoop Hardness Hk(Class)	390   4
Abrasion Aa	413

Partial Dispersions	
$n_C-n_t$	0.006321
$n_C-n_{A'}$	0.002702
$n_d-n_C$	0.002375
$n_e-n_C$	0.004238
$n_g-n_d$	0.009666
$n_g-n_F$	0.004233
$n_h-n_g$	0.003502
$n_i-n_g$	0.009440
$n_C-n_t$	0.006699
$n_e-n_{C'}$	0.003860
$n_{F'}-n_e$	0.004015
$n_i-n_{F'}$	0.013228

Relative Partial Dispersions	
$\theta_{C,t}$	0.8096
$\theta_{C,A'}$	0.3461
$\theta_{d,C}$	0.3042
$\theta_{e,C}$	0.5428
$\theta_{g,d}$	1.2380
$\theta_{g,F}$	0.5421
$\theta_{h,g}$	0.4485
$\theta_{i,g}$	1.2090
$\theta'_{C,t}$	0.8507
$\theta'_{e,C'}$	0.4902
$\theta'_{F',e}$	0.5098
$\theta'_{i,F'}$	1.6797

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0688
$\Delta\theta_{C,A'}$	-0.0155
$\Delta\theta_{g,d}$	0.0201
$\Delta\theta_{g,F}$	0.0150
$\Delta\theta_{i,g}$	0.0760

Thermal Properties	
Strain Point StP (°C)	-
Annealing Point AP (°C)	-
Transformation Temperature Tg (°C)	474
Yield Point At (°C)	503
Softening Point SP (°C)	-
Expansion Coefficients (-30~+70°C)	109
$\alpha$ ( $10^{-7} \text{K}^{-1}$ ) (+100~+300°C)	129
Thermal Conductivity $\lambda$ W/(m·K)	0.765

Coloring			
$\lambda_{80}$	345	$\lambda_5$	
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	335	$\lambda_{0.05}$	282

CCI		
B	G	R
0.00	0.14	0.12

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	0.04
290	0.10
300	0.20
310	0.35
320	0.56
330	0.73
340	0.86
350	0.929
360	0.967
370	0.984
380	0.992
390	0.995
400	0.996
420	0.995
440	0.995
460	0.996
480	0.998
500	0.998
550	0.999
600	0.999
650	0.998
700	0.998
800	0.998
900	0.998
1000	0.998
1200	0.998
1400	0.999
1600	0.998
1800	0.998
2000	0.997
2200	0.994
2400	0.993

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	$\Delta n / \Delta T$ relative ( $10^{-6} \text{K}^{-1}$ )						
	t	C'	He-Ne	D	e	F'	g
-40~-20	-2.5	-2.3	-2.2	-2.2	-2.1	-1.8	-1.5
-20~ 0	-2.8	-2.5	-2.5	-2.4	-2.3	-2.0	-1.8
0~20	-3.0	-2.7	-2.7	-2.6	-2.5	-2.2	-1.9
20~40	-3.2	-2.9	-2.8	-2.7	-2.6	-2.3	-2.1
40~60	-3.3	-3.0	-2.9	-2.8	-2.7	-2.4	-2.1
60~80	-3.3	-3.0	-3.0	-2.9	-2.7	-2.4	-2.1

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>5</sup> Pa)	1.29
Specific Gravity d	3.74
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.