

# S-PHM52

Code(d) **618634**

Code(e) **620630**

Refractive Index $n_d$	<b>1.61800</b> 1.618000	Abbe Number $v_d$	<b>63.4</b> 63.33	Dispersion $n_F-n_C$	<b>0.00975</b> 0.009758
Refractive Index $n_e$	1.620327	Abbe Number $v_e$	63.02	Dispersion $n_F'-n_C'$	0.009844

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.59108
$n_{1970}$	1.97009	1.59587
$n_{1530}$	1.52958	1.60103
$n_{1129}$	1.12864	1.60561
$n_t$	1.01398	1.60714
$n_s$	0.85211	1.60983
$n_{A'}$	0.76819	1.61167
$n_r$	0.70652	1.61335
$n_C$	0.65627	1.61504
$n_{C'}$	0.64385	1.61551
$n_{\text{He-Ne}}$	0.6328	1.61595
$n_D$	0.58929	1.61791
$n_d$	0.58756	1.61800
$n_e$	0.54607	1.62033
$n_F$	0.48613	1.62479
$n_{F'}$	0.47999	1.62535
$n_{\text{He-Cd}}$	0.44157	1.62940
$n_g$	0.435835	1.63010
$n_h$	0.404656	1.63451
$n_i$	0.365015	1.64199

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0349
$\Delta\theta_{C,A'}$	-0.0072
$\Delta\theta_{g,d}$	0.0071
$\Delta\theta_{g,F}$	0.0051
$\Delta\theta_{i,g}$	0.0239

Constants of Dispersion Formula	
$A_1$	1.09966550E+00
$A_2$	4.78125422E-01
$A_3$	1.13214074E+00
$B_1$	1.32718559E-02
$B_2$	-6.01649685E-04
$B_3$	1.30595472E+02

Other Properties	
Bubble Quality Group B	
Specific Gravity d	3.67
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	-3.7	-3.6	-3.6	-3.6	-3.4	-3.2	-3.0
-20~0	-3.8	-3.7	-3.7	-3.6	-3.5	-3.2	-3.0
0~20	-4.0	-3.7	-3.7	-3.6	-3.5	-3.2	-3.0
20~40	-4.1	-3.7	-3.7	-3.6	-3.5	-3.2	-3.0
40~60	-4.2	-3.8	-3.8	-3.6	-3.5	-3.2	-3.0
60~80	-4.2	-3.8	-3.8	-3.7	-3.6	-3.3	-3.0

Partial Dispersions	
$n_C-n_t$	0.007893
$n_C-n_{A'}$	0.003370
$n_d-n_C$	0.002964
$n_e-n_C$	0.005291
$n_g-n_d$	0.012103
$n_g-n_F$	0.005309
$n_h-n_g$	0.004403
$n_i-n_g$	0.011891
$n_C-n_t$	0.008364
$n_e-n_{C'}$	0.004820
$n_{F'-n_e}$	0.005024
$n_i-n_{F'}$	0.016643

Thermal Properties	
Strain Point StP (°C)	--
Annealing Point AP (°C)	--
Transformation Temperature Tg (°C)	587
Yield Point At (°C)	617
Softening Point SP (°C)	--
Expansion Coefficients (-30~+70°C)	101
$\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C)	120
Thermal Conductivity k (W/m·K)	0.599

Mechanical Properties	
Young's Modulus E ( $10^8\text{N/m}^2$ )	715
Rigidity Modulus G ( $10^8\text{N/m}^2$ )	277
Poisson's Ratio $\sigma$	0.292
Knoop Hardness Hk[Class]	390   4
Abrasion Aa	434
Photoelastic Constant $\beta$ (nm/cm/ $10^5\text{Pa}$ )	1.00

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	5
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	5.0
Phosphate Resistance PR	4.0

Relative Partial Dispersions	
$\theta_{C,t}$	0.8089
$\theta_{C,A'}$	0.3454
$\theta_{d,C}$	0.3038
$\theta_{e,C}$	0.5422
$\theta_{g,d}$	1.2403
$\theta_{g,F}$	0.5441
$\theta_{h,g}$	0.4512
$\theta_{i,g}$	1.2186
$\theta'_{C,t}$	0.8497
$\theta'_{e,C'}$	0.4896
$\theta'_{F',e}$	0.5104
$\theta'_{i,F}$	1.6907

Coloring			
$\lambda_{80}$	37	$\lambda_5$	33
$\lambda_{70}$			

Internal Transmittance	
$\lambda(\text{nm})$	$\tau_{10\text{mm}}$
280	
290	
300	
310	
320	
330	0.05
340	0.25
350	0.51
360	0.72
370	0.85
380	0.923
390	0.957
400	0.974
420	0.986
440	0.990
460	0.992
480	0.994
500	0.996
550	0.998
600	0.998
650	0.998
700	0.998
800	0.997
900	0.996
1000	0.996
1200	0.996
1400	0.996
1600	0.991
1800	0.979
2000	0.961
2200	0.926
2400	0.89