

# PBM18Y

Code(d) **596387**

Code(e) **599385**

Refractive Index $n_d$	<b>1.59551</b>	Abbe Number $\nu_d$	<b>38.77</b>	Dispersion $n_F-n_C$	<b>0.015361</b>
	1.595509				
Refractive Index $n_e$	1.599153	Abbe Number $\nu_e$	38.50	Dispersion $n_F-n_C'$	0.015561

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.56207
$n_{1970}$	1.97009	1.56696
$n_{1530}$	1.52958	1.57243
$n_{1129}$	1.12864	1.57779
$n_t$	1.01398	1.57975
$n_s$	0.85211	1.58338
$n_{A'}$	0.76819	1.58599
$n_r$	0.70652	1.58846
$n_C$	0.65627	1.59097
$n_{C'}$	0.64385	1.59169
$n_{\text{He-Ne}}$	0.6328	1.59236
$n_D$	0.58929	1.59537
$n_d$	0.58756	1.59551
$n_e$	0.54607	1.59915
$n_F$	0.48613	1.60634
$n_{F'}$	0.47999	1.60725
$n_{\text{He-Cd}}$	0.44157	1.61400
$n_g$	0.435835	1.61520
$n_h$	0.404656	1.62284
$n_i$	0.365015	1.63656
$n_{334}$	0.334148	1.65255
$n_{326}$	0.326106	1.65795

Constants of Dispersion Formula	
$A_1$	1.34660215E+00
$A_2$	1.36322343E-01
$A_3$	1.83371587E-01
$B_1$	1.06313733E-02
$B_2$	4.91403013E-02
$B_3$	2.39154655E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	2~3
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	2.0

Mechanical Properties	
Young's Modulus E (GPa)	59.8
Rigidity Modulus G (GPa)	24.4
Poisson's Ratio $\sigma$	0.223
Knoop Hardness HK(Class)	410 4
Abrasion Aa	138

Partial Dispersions	
$n_C-n_t$	0.011228
$n_C-n_{A'}$	0.004982
$n_d-n_C$	0.004534
$n_e-n_C$	0.008178
$n_g-n_d$	0.019689
$n_g-n_F$	0.008862
$n_h-n_g$	0.007643
$n_i-n_g$	0.021360
$n_C-n_t$	0.011940
$n_e-n_{C'}$	0.007466
$n_{F'}-n_e$	0.008095
$n_i-n_{F'}$	0.029310

Relative Partial Dispersions	
$\theta_{C,t}$	0.7309
$\theta_{C,A'}$	0.3243
$\theta_{d,C}$	0.2952
$\theta_{e,C}$	0.5324
$\theta_{g,d}$	1.2818
$\theta_{g,F}$	0.5769
$\theta_{h,g}$	0.4976
$\theta_{i,g}$	1.3905
$\theta'_{C,t}$	0.7673
$\theta'_{e,C}$	0.4798
$\theta'_{F',e}$	0.5202
$\theta'_{i,F'}$	1.8836

※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"	
$\Delta\theta_{C,t}$	0.0023
$\Delta\theta_{C,A'}$	0.0015
$\Delta\theta_{g,d}$	-0.0024
$\Delta\theta_{g,F}$	-0.0018
$\Delta\theta_{i,g}$	-0.0099

Thermal Properties	
Strain Point StP (°C)	377
Annealing Point AP (°C)	419
Transformation Temperature Tg (°C)	441
Yield Point At (°C)	478
Softening Point SP (°C)	565
Expansion Coefficients (-30~+70°C)	88
$\alpha$ ( $10^{-7} \text{K}^{-1}$ ) (+100~+300°C)	100
Thermal Conductivity $\lambda$ W/(m·K)	0.865

Coloring			
$\lambda_{80}$	340	$\lambda_5$	315
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	335	$\lambda_{0.05}$	316

CCI		
B	G	R
0.00	0.02	0.02

Internal Transmittance		
$\lambda(\text{nm})$	$\tau$ 10mm	$\tau$ 25mm
240		
250		
260		
270		
280		
290		
300		
310		
320	0.22	0.02
330	0.68	0.39
340	0.912	0.79
350	0.975	0.939
360	0.990	0.976
365	0.993	0.983
370	0.995	0.988
380	0.997	0.992
390	0.998	0.994
400	0.998	0.995
420	0.998	0.996
440	0.999	0.997
460	0.999	0.997
480	0.999	0.998
500	0.999	0.998
550	0.999	0.998
600	0.999	0.998
650	0.999	0.998
700	0.999	0.998
800	0.999	0.998
900	0.999	0.998
1000	0.998	0.996
1200	0.998	0.996
1400	0.996	0.990
1600	0.994	0.986
1800	0.979	0.948
2000	0.956	0.89
2200	0.907	0.78
2400	0.87	0.71

Other Properties	
Photoelastic Constant $\beta$ nm/(cm $\cdot$ 10 $^5$ Pa)	2.79
Specific Gravity d	3.37
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 ( $10^{-6} \text{K}^{-1}$ )								
	t	C'	He-Ne	D	e	F'	g	i	
-40~-20	2.5	3.1	3.2	3.4	3.7	4.4	5.2	7.6	
-20~ 0	2.5	3.3	3.3	3.5	3.9	4.6	5.4	7.9	
0~20	2.6	3.4	3.4	3.7	4.0	4.7	5.5	8.1	
20~40	2.7	3.5	3.5	3.8	4.1	4.9	5.7	8.4	
40~60	2.8	3.6	3.6	3.9	4.2	5.0	5.9	8.7	
60~80	2.8	3.7	3.7	4.0	4.3	5.2	6.1	8.9	