

BSM51Y

Code(d) **603606**Code(e) **605604**

Refractive Index n_d	1.60311 1.603109	Abbe Number ν_d	60.65	Dispersion $n_F - n_C$	0.009944
Refractive Index n_e	1.605481	Abbe Number ν_e	60.40	Dispersion $n_{F'} - n_{C'}$	0.010024

Refractive Indices		
$\lambda(\mu m)$		
n_{2325}	2.32542	1.57281
n_{1970}	1.97009	1.57865
n_{1530}	1.52958	1.58482
n_{1129}	1.12864	1.59008
n_t	1.01398	1.59177
n_s	0.85211	1.59465
$n_{A'}$	0.76819	1.59658
n_r	0.70652	1.59834
n_C	0.65627	1.60007
$n_{C'}$	0.64385	1.60056
n_{He-Ne}	0.6328	1.60101
n_D	0.58929	1.60302
n_d	0.58756	1.60311
n_e	0.54607	1.60548
n_F	0.48613	1.61002
$n_{F'}$	0.47999	1.61058
n_{He-Cd}	0.44157	1.61468
n_g	0.435835	1.61539
n_h	0.404656	1.61985
n_i	0.365015	1.62743
n_{334}	0.334148	1.63557
n_{326}	0.326106	1.63815

Constants of Dispersion Formula ※1	
A_1	1.22393171E+00
A_2	3.06482383E-01
A_3	8.23950901E-01
B_1	6.49521083E-03
B_2	2.08194161E-02
B_3	7.95168951E+01

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	4
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	51.2
Phosphate Resistance PR	2.2

Mechanical Properties	
Young's Modulus E (GPa)	90.1
Rigidity Modulus G (GPa)	35.9
Poisson's Ratio σ	0.256
Knoop Hardness Hk[Class]	570 6
Abrasion Aa	130

Partial Dispersions	
$n_C - n_t$	0.008303
$n_C - n_{A'}$	0.003489
$n_d - n_C$	0.003035
$n_e - n_C$	0.005407
$n_g - n_d$	0.012286
$n_g - n_F$	0.005377
$n_h - n_g$	0.004454
$n_i - n_g$	0.012031
$n_C - n_t$	0.008787
$n_e - n_{C'}$	0.004923
$n_{F'} - n_e$	0.005101
$n_i - n_{F'}$	0.016844

Relative Partial Dispersions	
$\theta_{C,t}$	0.8350
$\theta_{C,A'}$	0.3509
$\theta_{d,C}$	0.3052
$\theta_{e,C}$	0.5437
$\theta_{g,d}$	1.2355
$\theta_{g,F}$	0.5407
$\theta_{h,g}$	0.4479
$\theta_{i,g}$	1.2099
$\theta'_{C,t}$	0.8766
$\theta'_{e,C'}$	0.4911
$\theta'_{F',e}$	0.5089
$\theta'_{i,F'}$	1.6804

※1 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"	
$\Delta \theta_{C,t}$	0.0037
$\Delta \theta_{C,A'}$	0.0015
$\Delta \theta_{g,d}$	-0.0033
$\Delta \theta_{g,F}$	-0.0026
$\Delta \theta_{i,g}$	-0.0073

Thermal Properties	
Strain Point StP (°C)	538
Annealing Point AP (°C)	568
Transformation Temperature Tg (°C)	589 *
Yield Point At (°C)	632 *
Softening Point SP (°C)	684
Expansion Coefficients (-30~+70°C)	64 *
α ($10^{-7} K^{-1}$) (+100~+300°C)	79 *
Thermal Conductivity λ W/(m·K)	0.961

Temperature Coefficients of Refractive Index									
Range of Temperature (°C)	$\Delta n / \Delta T$ relative ($10^{-6} K^{-1}$)								
	t	C'	He-Ne	D	e	F'	g	i	
-40~-20	2.5	2.8	2.8	2.9	3.1	3.3	3.6	4.3	
-20~ 0	2.6	2.9	2.9	3.0	3.1	3.4	3.7	4.4	
0~20	2.6	2.9	2.9	3.1	3.2	3.5	3.8	4.6	
20~40	2.6	3.0	3.0	3.1	3.3	3.6	3.9	4.7	
40~60	2.7	3.0	3.0	3.2	3.3	3.6	4.0	4.8	
60~80	2.7	3.1	3.1	3.3	3.4	3.7	4.1	4.9	

Coloring			
λ_{90}	325	λ_5	290
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	316	$\lambda_{0.05}$	291

CCI		
B	G	R
0.00	0.03	0.03

Internal Transmittance		
$\lambda(nm)$	τ 10mm	τ 25mm
240		
250		
260		
270		
280		
290	0.03	
300	0.33	0.06
310	0.69	0.40
320	0.88	0.72
330	0.950	0.87
340	0.977	0.944
350	0.988	0.970
360	0.993	0.983
365	0.995	0.987
370	0.996	0.990
380	0.997	0.993
390	0.998	0.995
400	0.998	0.996
420	0.998	0.996
440	0.998	0.996
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	0.997
1000	0.997	0.993
1200	0.997	0.993
1400	0.985	0.963
1600	0.992	0.980
1800	0.983	0.959
2000	0.967	0.920
2200	0.89	0.74
2400	0.78	0.54

Other Properties	
Photoelastic Constant β nm/(cm·10 ⁵ Pa)	1.93
Specific Gravity d	3.36
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.