

# S-NBM52

Code(d) **622411**

Code(e) **626408**

Refractive Index $n_d$	<b>1.62205</b> 1.622050	Abbe Number $\nu_d$	<b>41.08</b>	Dispersion $n_F-n_C$	<b>0.015143</b>
Refractive Index $n_e$	1.625645	Abbe Number $\nu_e$	40.84	Dispersion $n_F-n_{C'}$	0.015320

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.58373
$n_{1970}$	1.97009	1.59030
$n_{1530}$	1.52958	1.59737
$n_{1129}$	1.12864	1.60375
$n_t$	1.01398	1.60592
$n_s$	0.85211	1.60980
$n_{A'}$	0.76819	1.61250
$n_r$	0.70652	1.61501
$n_C$	0.65627	1.61754
$n_{C'}$	0.64385	1.61825
$n_{\text{He-Ne}}$	0.6328	1.61892
$n_D$	0.58929	1.62192
$n_d$	0.58756	1.62205
$n_e$	0.54607	1.62564
$n_F$	0.48613	1.63268
$n_{F'}$	0.47999	1.63357
$n_{\text{He-Cd}}$	0.44157	1.64014
$n_g$	0.435835	1.64130
$n_h$	0.404656	1.64868
$n_i$	0.365015	1.66182

Constants of Dispersion Formula	
$A_1$	1.39799204E+00
$A_2$	1.72238041E-01
$A_3$	1.21742991E+00
$B_1$	9.46113686E-03
$B_2$	4.44077736E-02
$B_3$	1.05313930E+02

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

Mechanical Properties	
Young's Modulus E (GPa)	80.8
Rigidity Modulus G (GPa)	32.5
Poisson's Ratio $\sigma$	0.243
Knoop Hardness Hk(Class)	540   5
Abrasion Aa	120

Partial Dispersions	
$n_C-n_t$	0.011617
$n_C-n_{A'}$	0.005036
$n_d-n_C$	0.004511
$n_e-n_C$	0.008106
$n_g-n_d$	0.019249
$n_g-n_F$	0.008617
$n_h-n_g$	0.007384
$n_i-n_g$	0.020524
$n_C-n_t$	0.012329
$n_e-n_{C'}$	0.007394
$n_{F'}-n_e$	0.007926
$n_i-n_{F'}$	0.028252

Relative Partial Dispersions	
$\theta_{C,t}$	0.7672
$\theta_{C,A'}$	0.3326
$\theta_{d,C}$	0.2979
$\theta_{e,C}$	0.5353
$\theta_{g,d}$	1.2711
$\theta_{g,F}$	0.5690
$\theta_{h,g}$	0.4876
$\theta_{i,g}$	1.3553
$\theta'_{C,t}$	0.8048
$\theta'_{e,C'}$	0.4826
$\theta'_{F',e}$	0.5174
$\theta'_{i,F'}$	1.8441

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0278
$\Delta\theta_{C,A'}$	0.0070
$\Delta\theta_{g,d}$	-0.0083
$\Delta\theta_{g,F}$	-0.0060
$\Delta\theta_{i,g}$	-0.0257

Thermal Properties	
Strain Point StP (°C)	541
Annealing Point AP (°C)	568
Transformation Temperature Tg (°C)	584 *
Yield Point At (°C)	645 *
Softening Point SP (°C)	701
Expansion Coefficients (-30~+70°C)	74 *
$\alpha$ (10 <sup>-7</sup> K <sup>-1</sup> ) (+100~+300°C)	87 *
Thermal Conductivity $\lambda$ W/(m·K)	0.957

Coloring			
$\lambda_{80}$	355	$\lambda_5$	320
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	346	$\lambda_{0.05}$	320

CCI		
B	G	R
0.00	0.24	0.25

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	0.04
330	0.33
340	0.69
350	0.86
360	0.933
370	0.962
380	0.976
390	0.984
400	0.989
420	0.993
440	0.994
460	0.996
480	0.997
500	0.998
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.984
1600	0.991
1800	0.984
2000	0.967
2200	0.87
2400	0.75

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
-40~-20	2.7	3.2	3.2	3.4	3.6	4.1	4.7
-20~ 0	2.7	3.3	3.3	3.5	3.7	4.2	4.9
0~20	2.7	3.3	3.3	3.5	3.8	4.3	5.0
20~40	2.7	3.3	3.3	3.5	3.8	4.4	5.0
40~60	2.8	3.4	3.4	3.6	3.9	4.5	5.2
60~80	3.0	3.6	3.6	3.8	4.1	4.7	5.4

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>5</sup> Pa)	3.62
Specific Gravity d	2.86
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.