

# S-BAL 3

Code(d) **571530**

Code(e) **574527**

Refractive Index $n_d$	<b>1.57135</b>	Abbe Number $\nu_d$	<b>52.95</b>	Dispersion $n_F-n_C$	<b>0.010790</b>
	1.571351				
Refractive Index $n_e$	1.573920	Abbe Number $\nu_e$	52.65	Dispersion $n_F-n_C'$	0.010900

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.54361
$n_{1970}$	1.97009	1.54831
$n_{1530}$	1.52958	1.55341
$n_{1129}$	1.12864	1.55806
$n_t$	1.01398	1.55965
$n_s$	0.85211	1.56248
$n_{A'}$	0.76819	1.56445
$n_f$	0.70652	1.56627
$n_C$	0.65627	1.56810
$n_{C'}$	0.64385	1.56862
$n_{\text{He-Ne}}$	0.6328	1.56910
$n_D$	0.58929	1.57126
$n_d$	0.58756	1.57135
$n_e$	0.54607	1.57392
$n_F$	0.48613	1.57889
$n_{F'}$	0.47999	1.57952
$n_{\text{He-Cd}}$	0.44157	1.58409
$n_g$	0.435835	1.58489
$n_h$	0.404656	1.58993
$n_i$	0.365015	1.59867

Constants of Dispersion Formula	
$A_1$	1.29366890E+00
$A_2$	1.32440252E-01
$A_3$	1.10197293E+00
$B_1$	8.00367962E-03
$B_2$	3.54711196E-02
$B_3$	1.34517431E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	3
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	1.2
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E (GPa)	71.9
Rigidity Modulus G (GPa)	28.8
Poisson's Ratio $\sigma$	0.249
Knoop Hardness Hk(Class)	510   5
Abrasion Aa	172

Partial Dispersions	
$n_C-n_t$	0.008456
$n_C-n_{A'}$	0.003653
$n_d-n_C$	0.003246
$n_e-n_C$	0.005815
$n_g-n_d$	0.013536
$n_g-n_F$	0.005992
$n_h-n_g$	0.005041
$n_i-n_g$	0.013784
$n_C-n_t$	0.008970
$n_e-n_{C'}$	0.005301
$n_{F'}-n_e$	0.005599
$n_i-n_{F'}$	0.019152

Relative Partial Dispersions	
$\theta_{C,t}$	0.7837
$\theta_{C,A'}$	0.3386
$\theta_{d,C}$	0.3008
$\theta_{e,C}$	0.5389
$\theta_{g,d}$	1.2545
$\theta_{g,F}$	0.5553
$\theta_{h,g}$	0.4672
$\theta_{i,g}$	1.2775
$\theta'_{C,t}$	0.8229
$\theta'_{e,C}$	0.4863
$\theta'_{F,e}$	0.5137
$\theta'_{i,F'}$	1.7571

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta \theta_{C,t}$	-0.0114
$\Delta \theta_{C,A'}$	-0.0015
$\Delta \theta_{g,d}$	-0.0003
$\Delta \theta_{g,F}$	-0.0005
$\Delta \theta_{i,g}$	-0.0041

Thermal Properties	
Strain Point StP (°C)	483
Annealing Point AP (°C)	516
Transformation Temperature Tg (°C)	531
Yield Point At (°C)	573
Softening Point SP (°C)	652
Expansion Coefficients (-30~+70°C)	95
$\alpha (10^{-7} \text{K}^{-1})$ (+100~+300°C)	111
Thermal Conductivity $\lambda$ W/(m·K)	0.864

Coloring			
$\lambda_{80}$	360	$\lambda_5$	330
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	358	$\lambda_{0.05}$	332

CCI		
B	G	R
0.00	0.24	0.25

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	0.01
340	0.26
350	0.63
360	0.84
370	0.928
380	0.963
390	0.979
400	0.988
420	0.994
440	0.994
460	0.995
480	0.996
500	0.997
550	0.998
600	0.998
650	0.998
700	0.998
800	0.998
900	0.998
1000	0.997
1200	0.996
1400	0.991
1600	0.990
1800	0.972
2000	0.945
2200	0.88
2400	0.83

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	-1.0	-0.8	-0.7	-0.6	-0.5	-0.1	0.2
-20~ 0	-1.0	-0.7	-0.7	-0.6	-0.4	-0.1	0.3
0~20	-1.0	-0.7	-0.7	-0.6	-0.4	0.0	0.4
20~40	-1.0	-0.7	-0.6	-0.5	-0.3	0.1	0.5
40~60	-1.0	-0.7	-0.6	-0.5	-0.3	0.1	0.5
60~80	-1.0	-0.6	-0.6	-0.4	-0.2	0.2	0.6

Other Properties	
Photoelastic Constant $\beta$ nm/(cm·10 <sup>9</sup> Pa)	2.18
Specific Gravity d	2.98
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.