

# S-BAL 2

Code(d) **571508**

Code(e) **574505**

Refractive Index $n_d$	1.57099 1.570989	Abbe Number $v_d$	50.8 50.80	Dispersion $n_F-n_C$	0.01124 0.011240
Refractive Index $n_e$	1.573663	Abbe Number $v_e$	50.50	Dispersion $n_F-n_C$	0.011359

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.54240
$n_{1970}$	1.97009	1.54721
$n_{1530}$	1.52958	1.55244
$n_{1129}$	1.12864	1.55722
$n_t$	1.01398	1.55886
$n_s$	0.85211	1.56179
$n_{A'}$	0.76819	1.56383
$n_r$	0.70652	1.56572
$n_C$	0.65627	1.56762
$n_{C'}$	0.64385	1.56815
$n_{\text{He-Ne}}$	0.6328	1.56865
$n_D$	0.58929	1.57089
$n_d$	0.58756	1.57099
$n_e$	0.54607	1.57366
$n_F$	0.48613	1.57886
$n_{F'}$	0.47999	1.57951
$n_{\text{He-Cd}}$	0.44157	1.58430
$n_g$	0.435835	1.58514
$n_h$	0.404656	1.59045
$n_i$	0.365015	1.59972

Partial Dispersions	
$n_C-n_t$	0.008753
$n_C-n_{A'}$	0.003787
$n_d-n_C$	0.003373
$n_e-n_C$	0.006047
$n_g-n_d$	0.014148
$n_g-n_F$	0.006281
$n_h-n_g$	0.005308
$n_i-n_g$	0.014580
$n_C-n_t$	0.009286
$n_e-n_{C'}$	0.005514
$n_{F'}-n_e$	0.005845
$n_i-n_{F'}$	0.020209

Relative Partial Dispersions	
$\theta_{C,t}$	0.7787
$\theta_{C,A'}$	0.3369
$\theta_{d,C}$	0.3001
$\theta_{e,C}$	0.5380
$\theta_{g,d}$	1.2587
$\theta_{g,F}$	0.5588
$\theta_{h,g}$	0.4722
$\theta_{i,g}$	1.2972
$\theta'_{C,t}$	0.8175
$\theta'_{e,C'}$	0.4854
$\theta'_{F',e}$	0.5146
$\theta'_{i,F}$	1.7791

Thermal Properties	
Strain Point StP (°C)	492
Annealing Point AP (°C)	525
Transformation Temperature Tg (°C)	540
Yield Point At (°C)	582
Softening Point SP (°C)	663
Expansion Coefficients (-30~+70°C)	91
$\alpha$ (10 <sup>-7</sup> /°C) (+100~+300°C)	109
Thermal Conductivity k (W/m-K)	0.901

Coloring			
$\lambda_{80}$	37	$\lambda_5$	34
$\lambda_{70}$			

Internal Transmittance	
$\lambda(\text{nm})$	$\tau_{10\text{mm}}$
280	
290	
300	
310	
320	
330	
340	0.10
350	0.47
360	0.76
370	0.89
380	0.947
390	0.971
400	0.983
420	0.992
440	0.993
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	0.997
1400	0.992
1600	0.992
1800	0.976
2000	0.951
2200	0.89
2400	0.84

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0063
$\Delta\theta_{C,A'}$	-0.0005
$\Delta\theta_{g,d}$	-0.0005
$\Delta\theta_{g,F}$	-0.0005
$\Delta\theta_{i,g}$	-0.0024

Mechanical Properties	
Young's Modulus E (10 <sup>8</sup> N/m <sup>2</sup> )	727
Rigidity Modulus G (10 <sup>8</sup> N/m <sup>2</sup> )	292
Poisson's Ratio $\sigma$	0.245
Knoop Hardness Hk[Class]	510   5
Abrasion Aa	163
Photoelastic Constant $\beta$ (nm/cm/10 <sup>5</sup> Pa)	2.32

Constants of Dispersion Formula	
A <sub>1</sub>	1.30923813E+00
A <sub>2</sub>	1.14137353E-01
A <sub>3</sub>	1.17882259E+00
B <sub>1</sub>	8.38873953E-03
B <sub>2</sub>	3.99436485E-02
B <sub>3</sub>	1.40257892E+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

Other Properties	
Bubble Quality Group B	
Specific Gravity d	2.89
Remarks	

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	$dn/dt$ relative (10 <sup>-6</sup> /°C)						
	t	C'	He-Ne	D	e	F'	g
-40~-20	-0.7	-0.3	-0.3	-0.2	0.0	0.4	0.7
-20~0	-0.7	-0.3	-0.3	-0.1	0.0	0.4	0.8
0~20	-0.6	-0.2	-0.2	-0.1	0.1	0.5	0.9
20~40	-0.6	-0.2	-0.2	0.0	0.2	0.6	1.1
40~60	-0.6	-0.1	-0.1	0.1	0.2	0.7	1.2
60~80	-0.5	-0.1	-0.1	0.1	0.3	0.8	1.3