

# S-BAL14

Code(d) **569563**

Code(e) **571561**

Refractive Index $n_d$	<b>1.56883</b>	Abbe Number $v_d$	<b>56.3</b>	Dispersion $n_F-n_C$	<b>0.01010</b>
	1.568832		56.36		0.010092
Refractive Index $n_e$	1.571237	Abbe Number $v_e$	56.09	Dispersion $n_F-n_C'$	0.010185

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.54050
$n_{1970}$	1.97009	1.54565
$n_{1530}$	1.52958	1.55116
$n_{1129}$	1.12864	1.55601
$n_t$	1.01398	1.55761
$n_s$	0.85211	1.56040
$n_{A'}$	0.76819	1.56230
$n_r$	0.70652	1.56404
$n_C$	0.65627	1.56577
$n_{C'}$	0.64385	1.56626
$n_{\text{He-Ne}}$	0.6328	1.56671
$n_D$	0.58929	1.56874
$n_d$	0.58756	1.56883
$n_e$	0.54607	1.57124
$n_F$	0.48613	1.57587
$n_{F'}$	0.47999	1.57645
$n_{\text{He-Cd}}$	0.44157	1.58067
$n_g$	0.435835	1.58141
$n_h$	0.404656	1.58604
$n_i$	0.365015	1.59400

Partial Dispersions	
$n_C-n_t$	0.008164
$n_C-n_{A'}$	0.003476
$n_d-n_C$	0.003057
$n_e-n_C$	0.005462
$n_g-n_d$	0.012574
$n_g-n_F$	0.005539
$n_h-n_g$	0.004629
$n_i-n_g$	0.012595
$n_C-n_t$	0.008650
$n_e-n_{C'}$	0.004976
$n_{F'-n_e}$	0.005209
$n_i-n_{F'}$	0.017555

Relative Partial Dispersions	
$\theta_{C,t}$	0.8090
$\theta_{C,A'}$	0.3444
$\theta_{d,C}$	0.3029
$\theta_{e,C}$	0.5412
$\theta_{g,d}$	1.2459
$\theta_{g,F}$	0.5489
$\theta_{h,g}$	0.4587
$\theta_{i,g}$	1.2480
$\theta'_{C,t}$	0.8493
$\theta'_{e,C'}$	0.4886
$\theta'_{F',e}$	0.5114
$\theta'_{i,F}$	1.7236

Thermal Properties	
Strain Point StP (°C)	533
Annealing Point AP (°C)	562
Transformation Temperature Tg (°C)	580
Yield Point At (°C)	622
Softening Point SP (°C)	700
Expansion Coefficients (-30~+70°C)	80
$\alpha$ (10 <sup>-7</sup> /°C) (+100~+300°C)	93
Thermal Conductivity k (W/m-K)	0.967

Coloring			
$\lambda_{80}$	36	$\lambda_5$	33
$\lambda_{70}$			

Internal Transmittance	
$\lambda(\text{nm})$	$\tau_{10\text{mm}}$
280	
290	
300	
310	
320	
330	0.09
340	0.44
350	0.74
360	0.88
370	0.946
380	0.970
390	0.983
400	0.989
420	0.992
440	0.993
460	0.994
480	0.995
500	0.997
550	0.998
600	0.998
650	0.997
700	0.998
800	0.998
900	0.998
1000	0.997
1200	0.997
1400	0.989
1600	0.993
1800	0.983
2000	0.967
2200	0.914
2400	0.86

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0021
$\Delta\theta_{C,A'}$	0.0002
$\Delta\theta_{g,d}$	-0.0018
$\Delta\theta_{g,F}$	-0.0014
$\Delta\theta_{i,g}$	-0.0051

Mechanical Properties	
Young's Modulus E (10 <sup>8</sup> N/m <sup>2</sup> )	811
Rigidity Modulus G (10 <sup>8</sup> N/m <sup>2</sup> )	327
Poisson's Ratio $\sigma$	0.240
Knoop Hardness Hk[Class]	570   6
Abrasion Aa	134
Photoelastic Constant $\beta$ (nm/cm/10 <sup>5</sup> Pa)	2.32

Constants of Dispersion Formula	
A <sub>1</sub>	1.27553696E+00
A <sub>2</sub>	1.46083393E-01
A <sub>3</sub>	1.16754699E+00
B <sub>1</sub>	7.49692359E-03
B <sub>2</sub>	3.10421530E-02
B <sub>3</sub>	1.28947092E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	3
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

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	1.2	1.5	1.5	1.6	1.8	2.1	2.4
-20~ 0	1.2	1.5	1.6	1.7	1.8	2.2	2.5
0~20	1.3	1.6	1.6	1.7	1.9	2.2	2.6
20~40	1.3	1.7	1.7	1.8	2.0	2.3	2.7
40~60	1.4	1.7	1.8	1.8	2.0	2.4	2.8
60~80	1.4	1.8	1.8	1.9	2.1	2.5	2.9