

# S-NBH 5

Code(d) **654397**

Code(e) **658395**

Refractive Index $n_d$	<b>1.65412</b> 1.654115	Abbe Number $\nu_d$	<b>39.68</b>	Dispersion $n_F-n_C$	<b>0.016484</b>
Refractive Index $n_e$	1.658026	Abbe Number $\nu_e$	39.43	Dispersion $n_F-n_C'$	0.016687

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.61410
$n_{1970}$	1.97009	1.62070
$n_{1530}$	1.52958	1.62787
$n_{1129}$	1.12864	1.63448
$n_t$	1.01398	1.63677
$n_s$	0.85211	1.64090
$n_{A'}$	0.76819	1.64379
$n_r$	0.70652	1.64649
$n_C$	0.65627	1.64923
$n_{C'}$	0.64385	1.65000
$n_{\text{He-Ne}}$	0.6328	1.65072
$n_D$	0.58929	1.65397
$n_d$	0.58756	1.65412
$n_e$	0.54607	1.65803
$n_F$	0.48613	1.66571
$n_{F'}$	0.47999	1.66668
$n_{\text{He-Cd}}$	0.44157	1.67389
$n_g$	0.435835	1.67517
$n_h$	0.404656	1.68331
$n_i$	0.365015	1.69791

Constants of Dispersion Formula	
$A_1$	1.47544521E+00
$A_2$	1.93060095E-01
$A_3$	1.50939010E+00
$B_1$	9.55836740E-03
$B_2$	4.60430483E-02
$B_3$	1.26422746E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	1.0

Mechanical Properties	
Young's Modulus E ( $10^9\text{N/m}^2$ )	902
Rigidity Modulus G ( $10^8\text{N/m}^2$ )	361
Poisson's Ratio $\sigma$	0.248
Knoop Hardness Hk[Class]	580   6
Abrasion Aa	130
Photoelastic Constant $\beta$ (nm/cm/ $10^9\text{Pa}$ )	3.22

Partial Dispersions	
$n_C-n_t$	0.012452
$n_C-n_{A'}$	0.005432
$n_d-n_C$	0.004890
$n_e-n_C$	0.008801
$n_g-n_d$	0.021051
$n_g-n_F$	0.009457
$n_h-n_g$	0.008144
$n_i-n_g$	0.022741
$n_C-n_t$	0.013223
$n_e-n_{C'}$	0.008030
$n_F-n_e$	0.008657
$n_i-n_{F'}$	0.031224

Relative Partial Dispersions	
$\theta_{C,t}$	0.7554
$\theta_{C,A'}$	0.3295
$\theta_{d,C}$	0.2967
$\theta_{e,C}$	0.5339
$\theta_{g,d}$	1.2771
$\theta_{g,F}$	0.5737
$\theta_{h,g}$	0.4941
$\theta_{i,g}$	1.3796
$\theta'_{C,t}$	0.7924
$\theta'_{e,C'}$	0.4812
$\theta'_{F,e}$	0.5188
$\theta'_{i,F'}$	1.8712

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	0.0226
$\Delta\theta_{C,A'}$	0.0056
$\Delta\theta_{g,d}$	-0.0052
$\Delta\theta_{g,F}$	-0.0036
$\Delta\theta_{i,g}$	-0.0132

Thermal Properties	
Strain Point StP ( $^{\circ}\text{C}$ )	489
Annealing Point AP ( $^{\circ}\text{C}$ )	511
Transformation Temperature Tg ( $^{\circ}\text{C}$ )	524
Yield Point At ( $^{\circ}\text{C}$ )	575
Softening Point SP ( $^{\circ}\text{C}$ )	645
Expansion Coefficients (-30~+70 $^{\circ}\text{C}$ )	66
$\alpha$ ( $10^{-7}/^{\circ}\text{C}$ ) (+100~+300 $^{\circ}\text{C}$ )	84
Thermal Conductivity k (W/m·K)	0.965

Coloring			
$\lambda_{80}$	370	$\lambda_5$	325
$\lambda_{70}$			

Internal transmission			
$\lambda_{0.80}$	357	$\lambda_{0.05}$	328

CCI		
B	G	R
0.00	0.66	0.69

Internal Transmittance	
$\lambda(\text{nm})$	$\tau$ 10mm
280	
290	
300	
310	
320	
330	0.12
340	0.47
350	0.71
360	0.83
370	0.902
380	0.936
390	0.957
400	0.969
420	0.980
440	0.985
460	0.988
480	0.991
500	0.994
550	0.997
600	0.997
650	0.997
700	0.998
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.991
1600	0.994
1800	0.989
2000	0.976
2200	0.919
2400	0.80

Temperature Coefficients of Refractive Index							
Range of Temperature ( $^{\circ}\text{C}$ )	$dn/dT$ relative ( $10^{-6}/^{\circ}\text{C}$ )						
	t	C'	He-Ne	D	e	F'	g
-40~-20	3.5	4.1	4.1	4.3	4.6	5.1	5.8
-20~ 0	3.6	4.2	4.2	4.5	4.7	5.3	6.0
0~20	3.7	4.3	4.4	4.6	4.9	5.5	6.2
20~40	3.8	4.4	4.5	4.8	5.0	5.7	6.4
40~60	3.9	4.6	4.6	4.9	5.1	5.8	6.6
60~80	3.9	4.7	4.7	5.0	5.3	6.0	6.8

Other Properties	
Bubble Quality Group B	
Specific Gravity d	3.02
Remarks	

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