

# S-LAL54

Code(d) **651562**

Code(e) **654559**

Refractive Index $n_d$	<b>1.65100</b> 1.650996	Abbe Number $v_d$	<b>56.2</b> 56.16	Dispersion $n_F-n_C$	<b>0.01159</b> 0.011591
Refractive Index $n_e$	1.653758	Abbe Number $v_e$	55.89	Dispersion $n_F-n_C'$	0.011697

Refractive Indices		
$\lambda(\mu\text{m})$		
$n_{2325}$	2.32542	1.61893
$n_{1970}$	1.97009	1.62472
$n_{1530}$	1.52958	1.63089
$n_{1129}$	1.12864	1.63634
$n_t$	1.01398	1.63815
$n_s$	0.85211	1.64133
$n_{A'}$	0.76819	1.64350
$n_r$	0.70652	1.64549
$n_C$	0.65627	1.64749
$n_{C'}$	0.64385	1.64804
$n_{\text{He-Ne}}$	0.6328	1.64856
$n_D$	0.58929	1.65089
$n_d$	0.58756	1.65100
$n_e$	0.54607	1.65376
$n_F$	0.48613	1.65908
$n_{F'}$	0.47999	1.65974
$n_{\text{He-Cd}}$	0.44157	1.66459
$n_g$	0.435835	1.66543
$n_h$	0.404656	1.67073
$n_i$	0.365015	1.67982

Partial Dispersions	
$n_C-n_t$	0.009330
$n_C-n_{A'}$	0.003985
$n_d-n_C$	0.003511
$n_e-n_C$	0.006273
$n_g-n_d$	0.014434
$n_g-n_F$	0.006354
$n_h-n_g$	0.005299
$n_i-n_g$	0.014389
$n_C-n_t$	0.009888
$n_e-n_{C'}$	0.005715
$n_{F'-n_e}$	0.005982
$n_i-n_{F'}$	0.020079

Relative Partial Dispersions	
$\theta_{C,t}$	0.8049
$\theta_{C,A'}$	0.3438
$\theta_{d,C}$	0.3029
$\theta_{e,C}$	0.5412
$\theta_{g,d}$	1.2453
$\theta_{g,F}$	0.5482
$\theta_{h,g}$	0.4572
$\theta_{i,g}$	1.2414
$\theta'_{C,t}$	0.8453
$\theta'_{e,C'}$	0.4886
$\theta'_{F',e}$	0.5114
$\theta'_{i,F}$	1.7166

Thermal Properties	
Strain Point StP (°C)	604
Annealing Point AP (°C)	631
Transformation Temperature Tg (°C)	651
Yield Point At (°C)	675
Softening Point SP (°C)	723
Expansion Coefficients (-30~+70°C)	71
$\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C)	83
Thermal Conductivity k (W/m-K)	0.761

Coloring			
$\lambda_{80}$	37	$\lambda_5$	33
$\lambda_{70}$			

Internal Transmittance	
$\lambda(\text{nm})$	$\tau_{10\text{mm}}$
280	
290	
300	
310	
320	
330	0.13
340	0.44
350	0.71
360	0.85
370	0.919
380	0.953
390	0.970
400	0.980
420	0.988
440	0.991
460	0.993
480	0.995
500	0.997
550	0.999
600	0.998
650	0.998
700	0.999
800	0.999
900	0.998
1000	0.998
1200	0.998
1400	0.993
1600	0.993
1800	0.985
2000	0.969
2200	0.913
2400	0.78

Deviation of Relative Dispersions $\Delta\theta$ from "Normal"	
$\Delta\theta_{C,t}$	-0.0053
$\Delta\theta_{C,A'}$	-0.0001
$\Delta\theta_{g,d}$	-0.0028
$\Delta\theta_{g,F}$	-0.0024
$\Delta\theta_{i,g}$	-0.0134

Mechanical Properties	
Young's Modulus E ( $10^8\text{N/m}^2$ )	877
Rigidity Modulus G ( $10^8\text{N/m}^2$ )	343
Poisson's Ratio $\sigma$	0.277
Knoop Hardness Hk[Class]	530   5
Abrasion Aa	171
Photoelastic Constant $\beta$ (nm/cm/ $10^5\text{Pa}$ )	1.66

Constants of Dispersion Formula	
A <sub>1</sub>	1.41910189E+00
A <sub>2</sub>	2.58416881E-01
A <sub>3</sub>	1.07385537E+00
B <sub>1</sub>	7.26647428E-03
B <sub>2</sub>	2.63842499E-02
B <sub>3</sub>	1.02555463E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	3
Acid Resistance(Powder) Group RA(P)	5
Weathering Resistance(Surface) Group W(S)	3
Acid Resistance(Surface) Group SR	53.0
Phosphate Resistance PR	4.2

Other Properties	
Bubble Quality Group B	
Specific Gravity d	3.82
Remarks	

Temperature Coefficients of Refractive Index							
Range of Temperature (°C)	$dn/dt$ relative ( $10^{-6}/^\circ\text{C}$ )						
	t	C'	He-Ne	D	e	F'	g
-40~-20	0.6	0.8	0.8	0.9	1.0	1.4	1.7
-20~0	0.7	0.9	0.9	1.0	1.2	1.5	1.8
0~20	0.7	1.0	1.0	1.1	1.3	1.6	1.9
20~40	0.7	1.1	1.1	1.2	1.4	1.7	2.1
40~60	0.8	1.2	1.2	1.3	1.5	1.8	2.2
60~80	0.9	1.3	1.3	1.4	1.6	2.0	2.4