

<b>H-ZF10</b>	<b>689312</b>	$n_d = 1.68893$	$v_d = 31.16$	$n_F - n_C = 0.022109$
		$n_e = 1.69416$	$v_e = 30.92$	$n_F - n_C = 0.022450$

Refractive Indices		
	$\lambda$ (nm)	$n_\lambda$
$n_{2325}$	2325.42	1.64510
$n_{1970}$	1970.09	1.65089
$n_{1530}$	1529.58	1.65759
$n_{1129}$	1128.64	1.66444
$n_{1064}$	1064.00	1.66585
$n_t$	1013.98	1.66704
$n_s$	852.11	1.67195
$n_{A'}$	768.19	1.67555
$n_f$	706.52	1.67898
$n_C$	656.27	1.68251
$n_{C'}$	643.85	1.68351
$n_{He-Ne}$	632.80	1.68445
$n_D$	589.29	1.68874
$n_d$	587.56	1.68893
$n_e$	546.07	1.69416
$n_F$	486.13	1.70462
$n_{F'}$	479.99	1.70596
$n_g$	435.84	1.71786
$n_h$	404.66	1.72964
$n_i$	365.01	1.75182

Relative Partial Dispersion	
$P_{d,C}$	0.2904
$P_{e,d}$	0.2366
$P_{g,F}$	0.5989
$P'_{d,c'}$	0.2414
$P'_{e,d}$	0.2330
$P'_{g,F'}$	0.5301

Chemical Properties (grade)	
RC (S)	1
RA (S)	1
D <sub>w</sub>	1
D <sub>A</sub>	1
R <sub>OH</sub> (S)	1
RP (S)	1
CR	

Internal Transmittance		
$\lambda$ (nm)	$\tau_{5mm}$	$\tau_{10mm}$
2400	0.944	0.890
2200	0.966	0.933
2000	0.993	0.986
1800	0.998	0.996
1600	0.998	0.996
1400	0.998	0.996
1200	0.998	0.996
1060	0.998	0.996
1000	0.998	0.996
950	0.998	0.996
900	0.998	0.996
850	0.998	0.996
800	0.998	0.996
750	0.998	0.996
700	0.998	0.996
650	0.998	0.996
600	0.998	0.996
550	0.998	0.996
500	0.996	0.992
480	0.994	0.988
460	0.992	0.984
440	0.990	0.980
420	0.985	0.970
400	0.971	0.931
390	0.941	0.879
380	0.861	0.741
370	0.652	0.427
360	0.256	0.075
350		
340		
330		
320		
310		
300		
290		
280		

Deviation of Relative Partial Dispersions	
$\Delta P_{F,e}$	0.0001
$\Delta P_{g,F}$	0.0070
$\Delta P_{C,t}$	0.0086
$\Delta P_{C,s}$	0.0024

Expansion Coefficient $\alpha$ ( $\times 10^{-7}/K$ )	
$^{\circ}C$	$\alpha$
-50/-40	79
-40/-30	82
-30/-20	84
-20/-10	87
-10/0	89
0/10	90
10/20	91
20/30	92
30/40	93
40/50	94
50/60	94
60/70	95
70/80	95
80/90	96
90/100	97
100/110	98
110/120	99
120/130	100
130/140	102
140/150	103
150/160	104

Thermal Properties	
T <sub>g</sub> ( $^{\circ}C$ )	597
T <sub>s</sub> ( $^{\circ}C$ )	631
T <sub>10</sub> <sup>14.5</sup> ( $^{\circ}C$ )	523
T <sub>10</sub> <sup>13</sup> ( $^{\circ}C$ )	561
$\alpha_{-50/80^{\circ}C}$ ( $10^{-7}/K$ )	89
$\alpha_{100/300^{\circ}C}$ ( $10^{-7}/K$ )	109
$\lambda$ (W/(m K))	1.11

Constants of Dispersion Formula	
A <sub>0</sub>	2.76089226E+00
A <sub>1</sub>	-1.10845008E-02
A <sub>2</sub>	2.89559966E-02
A <sub>3</sub>	1.51547191E-03
A <sub>4</sub>	-8.76539698E-05
A <sub>5</sub>	1.38043475E-05

Mechanical Properties	
HK ( $10^7$ Pa)	545
F <sub>A</sub>	139
E (GPa)	85.4
G (GPa)	34.7
$\mu$	0.232
$\sigma_b$ (MPa)	82
B ( $10^{-12}$ /Pa)	2.71

Density	Solarization
$\rho$ (g/cm <sup>3</sup> )	$\Delta\lambda$ (%)
2.93	-0.4

Range of Temperature ( $^{\circ}C$ )	Temperature Coefficients of Refractive Index									
	dn/dt relative ( $\times 10^{-6} / ^{\circ}C$ )									
	t	s	C	C'	He-Ne	d	e	F	F'	g
-60 ~ -40	0.7	1.2	1.6	1.6	1.7	1.9	2.2	3.1	3.1	4.1
-40 ~ -20	0.7	1.2	1.6	1.6	1.7	2.0	2.4	3.2	3.2	4.3
-20 ~ 0	0.8	1.2	1.6	1.6	1.7	2.1	2.4	3.3	3.3	4.4
0 ~ 20	0.7	1.3	1.7	1.7	1.7	2.1	2.4	3.3	3.4	4.5
20 ~ 40	0.7	1.2	1.7	1.8	1.8	2.1	2.5	3.4	3.5	4.7
40 ~ 60	0.7	1.3	1.8	1.8	1.8	2.3	2.5	3.6	3.7	4.9
60 ~ 80	0.8	1.4	1.8	1.9	1.9	2.4	2.7	3.9	3.9	5.2
80 ~ 100	0.8	1.5	1.9	2.0	2.1	2.6	2.9	4.1	4.1	5.4
100 ~ 120	0.9	1.6	2.0	2.1	2.2	2.8	3.0	4.3	4.3	5.5
120 ~ 140	1.0	1.7	2.1	2.2	2.3	2.8	3.2	4.3	4.4	5.6
140 ~ 160	1.2	1.8	2.2	2.3	2.4	3.0	3.5	4.5	4.6	5.9

Coloration Code	
$\lambda_{80}(\lambda_{70})/\lambda_5$	400/360
Coloration of Internal Transmittance	
$\lambda\tau_{80}/\lambda\tau_5$	383/359

Constants of dn/dt		
D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
-2.36E-06	1.13E-08	-1.69E-11
E <sub>0</sub>	E <sub>1</sub>	$\lambda_{TK}$
9.20E-07	8.47E-10	2.63E-01