

H-ZF11	699301	$n_d = 1.69894$	$v_d = 30.05$	$n_F - n_C = 0.023259$
		$n_e = 1.70444$	$v_e = 29.81$	$n_{F'} - n_{C'} = 0.023628$

Refractive Indices		
	λ (nm)	n_λ
n_{2325}	2325.42	1.65368
n_{1970}	1970.09	1.65957
n_{1530}	1529.58	1.66640
n_{1129}	1128.64	1.67343
n_{1064}	1064.00	1.67487
n_t	1013.98	1.67610
n_s	852.11	1.68119
$n_{A'}$	768.19	1.68494
n_r	706.52	1.68852
n_C	656.27	1.69221
$n_{C'}$	643.85	1.69326
n_{He-Ne}	632.80	1.69425
n_D	589.29	1.69875
n_d	587.56	1.69894
n_e	546.07	1.70444
n_F	486.13	1.71547
$n_{F'}$	479.99	1.71689
n_g	435.84	1.72948
n_h	404.66	1.74204
n_i	365.01	1.76590

Constants of Dispersion Formula	
A_0	2.79026920E+00
A_1	-1.13154551E-02
A_2	2.98537059E-02
A_3	1.85548133E-03
A_4	-1.33930426E-04
A_5	1.81714166E-05

Density		Solarization	
ρ (g/cm ³)	2.96	$\Delta\lambda$ (%)	-0.5

Relative Partial Dispersion	
$P_{d,C}$	0.2894
$P_{e,d}$	0.2365
$P_{g,F}$	0.6023
$P'_{d,c'}$	0.2404
$P'_{e,d}$	0.2328
$P'_{g,F'}$	0.5328

Deviation of Relative Partial Dispersions	
$\Delta P_{F,e}$	0.0006
$\Delta P_{g,F}$	0.0087
$\Delta P_{C,t}$	0.0069
$\Delta P_{C,s}$	0.0013

Thermal Properties	
Tg (°C)	592
Ts (°C)	625
T ₁₀ ^{14.5} (°C)	528
T ₁₀ ¹³ (°C)	558
$\alpha_{50/80^\circ C}$ (10 ⁻⁷ /K)	86
$\alpha_{100/300^\circ C}$ (10 ⁻⁷ /K)	108
λ (W/(m·K))	1.17

Mechanical Properties	
HK (10 ⁷ Pa)	524
F _A	139
E (GPa)	88.1
G (GPa)	33.6
μ	0.312
σ_b (MPa)	74
B (10 ⁻¹² /Pa)	2.56

Chemical Properties (grade)	
RC (S)	1
RA (S)	1
D _W	1
D _A	1
R _{OH} (S)	1
RP (S)	1

Expansion Coefficient α (×10 ⁻⁷ /K)	
°C	α
-50/-40	79
-40/-30	82
-30/-20	84
-20/-10	86
-10/0	89
0/10	89
10/20	91
20/30	92
30/40	93
40/50	93
50/60	94
60/70	95
70/80	96
80/90	96
90/100	97
100/110	98
110/120	99
120/130	100
130/140	102
140/150	103
150/160	104

Internal Transmittance		
λ (nm)	τ_{5mm}	τ_{10mm}
2400	0.930	0.857
2200	0.956	0.905
2000	0.980	0.961
1800	0.993	0.985
1600	0.999	0.998
1400	0.999	0.998
1200	0.999	0.998
1060	0.999	0.998
1000	0.999	0.998
950	0.999	0.998
900	0.999	0.998
850	0.999	0.998
800	0.999	0.998
750	0.999	0.998
700	0.999	0.998
650	0.999	0.998
600	0.999	0.998
550	0.999	0.998
500	0.997	0.995
480	0.996	0.993
460	0.995	0.990
440	0.993	0.986
420	0.986	0.973
400	0.962	0.926
390	0.922	0.850
380	0.812	0.659
370	0.540	0.292
360	0.159	0.025
350		
340		
330		
320		
310		
300		
290		
280		

Range of Temperature (°C)	Temperature Coefficients of Refractive Index									
	dn/dt relative (×10 ⁻⁶ / °C)									
	t	s	C	C'	He-Ne	d	e	F	F'	g
-60~-40	0.4	0.8	1.1	1.1	1.2	1.5	1.9	3.0	3.0	4.0
-40~-20	0.3	0.8	1.1	1.2	1.3	1.6	2.0	3.0	3.1	4.0
-20~0	0.4	0.8	1.2	1.3	1.3	1.7	2.0	3.1	3.1	4.2
0~20	0.4	0.9	1.3	1.3	1.4	1.7	2.2	3.2	3.2	4.3
20~40	0.4	1.0	1.4	1.4	1.5	1.8	2.3	3.3	3.3	4.5
40~60	0.6	1.1	1.5	1.5	1.6	2.0	2.4	3.5	3.6	4.8
60~80	0.6	1.2	1.6	1.6	1.7	2.1	2.5	3.8	3.8	5.2
80~100	0.6	1.3	1.7	1.8	1.8	2.3	2.6	4.0	4.1	5.3
100~120	0.7	1.4	1.8	1.9	1.9	2.5	2.7	4.1	4.2	5.5
120~140	0.8	1.5	1.9	1.9	2.0	2.6	2.9	4.2	4.3	5.6
140~160	0.9	1.5	2.0	2.0	2.1	2.7	3.0	4.3	4.4	5.8

Coloration Code	
$\lambda_{80}(\lambda_{70})/\lambda_5$	405/365

Coloration of Internal Transmittance	
$\lambda\tau_{80}/\lambda\tau_5$	387/363

Constants of dn/dt		
D ₀	D ₁	D ₂
-2.91E-06	1.29E-08	-2.24E-11
E ₀	E ₁	λ_{TK}
8.96E-07	6.62E-10	2.79E-01