



Properties of Nikon i-line Glass Series

4786

n_d	1.474098	V_d	86.77
n_e	1.475403	V_e	86.36

Wavelength [μm]	Refractive Index	
-	2.32542	1.457846
-	2.05809	1.460152
-	1.97009	1.460859
-	1.52958	1.464101
-	1.12864	1.466930
-	1.06414	1.467434
t	1.01398	1.467850
s	0.85211	1.469431
A'	0.76819	1.470497
r	0.70652	1.471465
C	0.65627	1.472424
C'	0.64385	1.472691
He-Ne	0.63282	1.472940
D	0.58929	1.474049
d	0.58756	1.474098
e	0.54607	1.475403
F	0.48613	1.477888
F'	0.47999	1.478196
He-Cd	0.44157	1.480426
g	0.43584	1.480812
h	0.40466	1.483215
-	0.38887	1.484670
i	0.36502	1.487260
-	0.33415	1.491549
-	0.32611	1.492893

Abnormal dispersion	
ΔP_{CA}	-0.0307
ΔP_{dC}	-0.0099
ΔP_{gd}	0.0462
ΔP_{gF}	0.0363
ΔP_{ig}	0.1729

Dispersion Coefficients *8	
A0	2.1526633E+00
A1	-5.1741938E-03
A2	-2.5238000E-05
A3	7.3883481E-03
A4	8.7091815E-05
A5	-2.3786512E-06
A6	2.5433499E-07
A7	-8.9862525E-09
A8	1.2974356E-10

8 $n^2 = A0 + A1\lambda^2 + A2*\lambda^4 + A3*\lambda^{-2} + A4*\lambda^{-4} + A5*\lambda^{-6} + A6*\lambda^{-8} + A7*\lambda^{-10} + A8*\lambda^{-12}$
 measured at:
 temperature: 22.5 °C
 humidity: 50 %
 atmospheric pressure: 1013.25 hPa

Partial Dispersion	
F - C	0.005464
F' - C'	0.005505
C - t	0.004574
C - A'	0.001927
d - C	0.001674
e - C	0.002979
g - d	0.006714
g - F	0.002924
h - g	0.002403
i - g	0.006448
C' - t	0.004841
e - C'	0.002712
F' - e	0.002793
i - F'	0.009065

Relative Partial Dispersions	
C-t/ F-C	0.8371
C-A'/ F-C	0.3526
d-C/ F-C	0.3064
e-C/ F-C	0.5452
g-d/ F-C	1.2288
g-F/ F-C	0.5352
h-g/ F-C	0.4398
i-g/ F-C	1.1802
C'-t/ F'-C'	0.8794
e-C'/ F'-C'	0.4926
F'-e/ F'-C'	0.5074
i-F'/ F'-C'	1.6468

Specific Gravity	3.55
[g/cm ³]	

[wt%]	
Pb	0.0
As	0.0

Bubbles	※
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Contact us for details on bubbles

Fluorescence	[Class] *1	1
Solarization	[%]	2.5

*1: JOGIS 03

Transformation Temp.	[°C]	T _g	472
Yield Point	[°C]	At	495
Expansion Coefficient	[10 ⁻⁷ /°C]	α	125
			148
Thermal Conductivity	[W/mK]	λ	0.750
Specific Heat Capacity	[J/gK]	c	0.601
Thermal Diffusivity	[cm ² /sec]	κ	0.00352

Knoop Hardness	[Class] *2	Hk	358
			4
Abrasion	*3	A	354
Young's Modulus	[GPa]	E	77.7
Shear Modulus	[GPa]	G	29.9
Poisson's Ratio		μ	0.298
Stress Optical Coefficient	[10 ⁻⁸ cm ² /N]	β	0.77

*2: JOGIS 09
 *3: JOGIS 10

Water Resistance	[Class] *4	2
Acid Resistance	[Class] *4	3
Acid Resistance	[Class] *5	4
Alkaline Detergent Resistance	[Class] *6	4
Climate Resistance	[Class] *7	1

*4: JOGIS 06
 *5: ISO 8482
 *6: ISO 9689
 *7: JOGIS 07

°C	Δn/ΔT relative value [10 ⁻⁶ /°C]						
	t	C	d	e	F	g	i
-70 ~ -60	-3.3	-3.2	-3.1	-3.1	-2.9	-2.8	-2.4
-60 ~ -40	-3.8	-3.6	-3.5	-3.5	-3.4	-3.2	-2.8
-40 ~ -20	-4.2	-4.1	-4.0	-3.9	-3.8	-3.7	-3.3
-20 ~ 0	-4.6	-4.4	-4.4	-4.3	-4.2	-4.0	-3.6
0 ~ +20	-4.9	-4.7	-4.7	-4.6	-4.5	-4.3	-3.9
+20 ~ +40	-5.2	-5.0	-4.9	-4.9	-4.7	-4.6	-4.2
+40 ~ +60	-5.5	-5.2	-5.2	-5.1	-4.9	-4.8	-4.4
+60 ~ +80	-5.7	-5.5	-5.4	-5.3	-5.1	-5.0	-4.6
+80 ~ +90	-5.8	-5.6	-5.5	-5.4	-5.3	-5.1	-4.7

Internal Transmittance	
λ [nm]	τ (10 mm)
240	0.973
250	0.983
260	0.989
270	0.993
280	0.996
290	0.997
300	0.999
310	0.999
320	0.999
330	0.999
340	0.999
350	0.998
360	0.998
365	0.998
370	0.999
380	0.999
390	0.999
400	0.999
420	0.999
440	0.999
460	0.999
480	0.999
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.998
1000	0.998
1200	0.999
1400	0.998
1600	0.993
1800	0.988
2000	0.979
2200	0.955
2400	0.961

Color Code	
λ 80	-
λ 5	-



Properties of Nikon i-line Glass Series

5165

n_d	1.511829	V_d	64.95
n_e	1.513710	V_e	64.78

Wavelength [μm]	Refractive Index	
-	2.32542	1.482923
-	2.05809	1.487729
-	1.97009	1.489178
-	1.52958	1.495617
-	1.12864	1.500796
-	1.06414	1.501657
t	1.01398	1.502353
s	0.85211	1.504892
A'	0.76819	1.506528
r	0.70652	1.507979
C	0.65627	1.509393
C'	0.64385	1.509784
He-Ne	0.63282	1.510148
D	0.58929	1.511758
d	0.58756	1.511829
e	0.54607	1.513710
F	0.48613	1.517273
F'	0.47999	1.517714
He-Cd	0.44157	1.520906
g	0.43584	1.521458
h	0.40466	1.524903
-	0.38887	1.526993
i	0.36502	1.530728
-	0.33415	1.536955
-	0.32611	1.538917

Abnormal dispersion	
$\Delta P_{CA'}$	0.0085
ΔP_{dC}	0.0026
ΔP_{gd}	-0.0070
ΔP_{gF}	-0.0044
ΔP_{ig}	-0.0099

Dispersion Coefficients *8	
A0	2.2576188E+00
A1	-1.0517263E-02
A2	-1.2455953E-04
A3	1.0565994E-02
A4	1.2020898E-04
A5	1.3534118E-06
A6	8.4114850E-08
A7	0.0000000E+00
A8	0.0000000E+00

8 $n^2 = A0 + A1\lambda^2 + A2*\lambda^4 + A3*\lambda^{-2} + A4*\lambda^{-4} + A5*\lambda^{-6} + A6*\lambda^{-8} + A7*\lambda^{-10} + A8*\lambda^{-12}$

measured at:
 temperature: 22.5 °C
 humidity: 50 %
 atmospheric pressure: 1013.25 hPa

Partial Dispersion	
F - C	0.007881
F' - C'	0.007930
C - t	0.007039
C - A'	0.002865
d - C	0.002436
e - C	0.004317
g - d	0.009629
g - F	0.004185
h - g	0.003445
i - g	0.009270
C' - t	0.007431
e - C'	0.003926
F' - e	0.004004
i - F'	0.013014

Relative Partial Dispersions	
C-t/ F-C	0.8932
C-A'/ F-C	0.3635
d-C/ F-C	0.3091
e-C/ F-C	0.5479
g-d/ F-C	1.2219
g-F/ F-C	0.5310
h-g/ F-C	0.4371
i-g/ F-C	1.1763
C'-t/ F'-C'	0.9370
e-C'/ F'-C'	0.4951
F'-e/ F'-C'	0.5049
i-F'/ F'-C'	1.6412

Specific Gravity	2.44
[g/cm ³]	

[wt%]	
Pb	0.0
As	0.0

Bubbles	
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Fluorescence	[Class] *1	1
Solarization	[%]	0.5

*1: JOGIS 03

Transformation Temp.	[°C]	T _g	561	
Yield Point	[°C]	At	604	
Expansion Coefficient	[10 ⁻⁷ /°C]	α	(-30 ~ +70 °C)	58
			(+100 ~ +300 °C)	73
Thermal Conductivity	[W/mK]	λ	1.139	
Specific Heat Capacity	[J/gK]	c	0.801	
Thermal Diffusivity	[cm ² /sec]	κ	0.00583	

Knoop Hardness	[Class] *2	Hk	512
			5
Abrasion	*3	A	71
Young's Modulus	[GPa]	E	78.2
Shear Modulus	[GPa]	G	32.2
Poisson's Ratio		μ	2.90
Stress Optical Coefficient	[10 ⁻⁸ cm ² /N]	β	0.214

*2: JOGIS 09
 *3: JOGIS 10

Water Resistance	[Class] *4	3
(powder method)		
Acid Resistance	[Class] *4	3
(powder method)		
Acid Resistance	[Class] *5	4
(surface method)		
Alkaline Detergent Resistance	[Class] *6	1
Climate Resistance	[Class] *7	1

*4: JOGIS 06
 *5: ISO 8482
 *6: ISO 9689
 *7: JOGIS 07

Effect of Temperature on Refractive Index								
°C	Δn/ΔT relative value [10 ⁻⁶ /°C]							
	t	C	d	e	F	g	i	
-70 ~ -60	3.0	3.2	3.3	3.4	3.6	3.8	4.3	
-60 ~ -40	2.8	3.1	3.2	3.3	3.5	3.7	4.2	
-40 ~ -20	2.8	3.0	3.1	3.2	3.4	3.7	4.3	
-20 ~ 0	2.8	3.0	3.2	3.3	3.5	3.7	4.3	
0 ~ +20	2.9	3.1	3.3	3.4	3.6	3.9	4.5	
+20 ~ +40	3.0	3.3	3.4	3.5	3.8	4.0	4.7	
+40 ~ +60	3.2	3.5	3.6	3.7	4.0	4.3	4.9	
+60 ~ +80	3.4	3.7	3.8	4.0	4.2	4.5	5.2	
+80 ~ +90	3.5	3.9	4.0	4.1	4.4	4.7	5.4	

Internal Transmittance	
λ [nm]	τ (10 mm)
240	-
250	-
260	-
270	-
280	-
290	0.04
300	0.22
310	0.56
320	0.82
330	0.935
340	0.976
350	0.991
360	0.995
365	0.996
370	0.998
380	0.999
390	0.999
400	0.999
420	0.999
440	0.999
460	0.999
480	0.999
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.976
1600	0.994
1800	0.987
2000	0.969
2200	0.86
2400	0.76

Color Code	
λ 80	323
λ 5	297



Properties of Nikon i-line Glass Series

5742

n_d	1.576526	V_d	42.05
n_e	1.579781	V_e	41.77

Wavelength [μm]	Refractive Index	
-	2.32542	1.544942
-	2.05809	1.548691
-	1.97009	1.549846
-	1.52958	1.555248
-	1.12864	1.560382
-	1.06414	1.561375
t	1.01398	1.562214
s	0.85211	1.565569
A'	0.76819	1.567954
r	0.70652	1.570191
C	0.65627	1.572458
C'	0.64385	1.573099
He-Ne	0.63282	1.573699
D	0.58929	1.576406
d	0.58756	1.576526
e	0.54607	1.579781
F	0.48613	1.586170
F'	0.47999	1.586978
He-Cd	0.44157	1.592951
g	0.43584	1.594005
h	0.40466	1.600716
-	0.38887	1.604910
i	0.36502	1.612653
-	0.33415	1.626396
-	0.32611	1.630987

Abnormal dispersion	
$\Delta P_{C,A}$	0.0032
$\Delta P_{d,C}$	0.0005
$\Delta P_{g,d}$	-0.0029
$\Delta P_{g,F}$	-0.0024
$\Delta P_{i,g}$	-0.0141

Dispersion Coefficients *8	
A0	2.4305046E+00
A1	-8.2678834E-03
A2	-8.3302283E-05
A3	1.8792549E-02
A4	2.9895386E-04
A5	4.0942941E-05
A6	-2.4258256E-06
A7	1.1962186E-07
A8	5.0283456E-09

8 $n^2 = A0 + A1\lambda^2 + A2*\lambda^4 + A3*\lambda^{-2} + A4*\lambda^{-4} + A5*\lambda^{-6} + A6*\lambda^{-8} + A7*\lambda^{-10} + A8*\lambda^{-12}$

measured at:
 temperature: 22.5 °C
 humidity: 50 %
 atmospheric pressure: 1013.25 hPa

Partial Dispersion	
F - C	0.013712
F' - C'	0.013879
C - t	0.010244
C - A'	0.004503
d - C	0.004068
e - C	0.007324
g - d	0.017478
g - F	0.007835
h - g	0.006712
i - g	0.018648
C' - t	0.010885
e - C'	0.006683
F' - e	0.007197
i - F'	0.025675

Relative Partial Dispersions	
C-t/ F-C	0.7471
C-A'/ F-C	0.3284
d-C/ F-C	0.2967
e-C/ F-C	0.5341
g-d/ F-C	1.2747
g-F/ F-C	0.5714
h-g/ F-C	0.4895
i-g/ F-C	1.3600
C'-t/ F'-C'	0.7842
e-C'/ F'-C'	0.4815
F'-e/ F'-C'	0.5185
i-F'/ F'-C'	1.8498

Specific Gravity	3.15
[g/cm ³]	

[wt%]	
Pb	35
As	0.0

Bubbles	
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Fluorescence	[Class] *1	2
Solarization	[%]	0.0

*1: JOGIS 03

Transformation Temp.	[°C]	T _g	422
Yield Point	[°C]	At	461
Expansion Coefficient	[10 ⁻⁷ /°C]	α	87
			108
Thermal Conductivity	[W/mK]	λ	0.945
Specific Heat Capacity	[J/gK]	c	0.613
Thermal Diffusivity	[cm ² /sec]	κ	0.00490

Knoop Hardness	[Class] *2	Hk	415
			4
Abrasion	*3	A	105
Young's Modulus	[GPa]	E	64.6
Shear Modulus	[GPa]	G	26.5
Poisson's Ratio		μ	2.97
Stress Optical Coefficient	[10 ⁻⁸ cm ² /N]	β	0.221

*2: JOGIS 09
 *3: JOGIS 10

Water Resistance	[Class] *4	1
(powder method)		
Acid Resistance	[Class] *4	1
(powder method)		
Acid Resistance	[Class] *5	2
(surface method)		
Alkaline Detergent Resistance	[Class] *6	1
Climate Resistance	[Class] *7	1

*4: JOGIS 06
 *5: ISO 8482
 *6: ISO 9689
 *7: JOGIS 07

Effect of Temperature on Refractive Index							
°C	Δn/ΔT relative value [10 ⁻⁶ /°C]						
	t	C	d	e	F	g	i
-70 ~ -60	2.5	3.1	3.4	3.6	4.1	4.7	6.7
-60 ~ -40	2.3	2.9	3.2	3.4	3.9	4.6	6.6
-40 ~ -20	2.1	2.8	3.1	3.3	3.8	4.5	6.6
-20 ~ 0	2.0	2.7	3.0	3.3	3.8	4.6	6.7
0 ~ +20	2.0	2.7	3.0	3.3	3.9	4.6	6.9
+20 ~ +40	2.1	2.8	3.1	3.4	4.0	4.8	7.1
+40 ~ +60	2.1	2.9	3.2	3.5	4.1	4.9	7.4
+60 ~ +80	2.2	3.0	3.4	3.6	4.3	5.1	7.7
+80 ~ +90	2.3	3.1	3.5	3.8	4.4	5.3	7.9

Internal Transmittance	
λ [nm]	τ (10 mm)
240	-
250	-
260	-
270	-
280	-
290	-
300	-
310	0.06
320	0.55
330	0.88
340	0.965
350	0.987
360	0.993
365	0.995
370	0.999
380	0.999
390	0.999
400	0.999
420	0.999
440	0.999
460	0.999
480	0.999
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.999
1200	0.999
1400	0.997
1600	0.995
1800	0.974
2000	0.943
2200	0.88
2400	0.85

Color Code	
λ 80	330
λ 5	310



Properties of Nikon i-line Glass Series

5859

n_d	1.590422	V_d	59.48
n_e	1.592790	V_e	59.30

Wavelength [μm]	Refractive Index	
-	2.32542	1.555833
-	2.05809	1.561513
-	1.97009	1.563218
-	1.52958	1.570763
-	1.12864	1.576864
-	1.06414	1.577892
t	1.01398	1.578726
s	0.85211	1.581804
A'	0.76819	1.583814
r	0.70652	1.585610
C	0.65627	1.587371
C'	0.64385	1.587860
He-Ne	0.63282	1.588315
D	0.58929	1.590334
d	0.58756	1.590422
e	0.54607	1.592790
F	0.48613	1.597298
F'	0.47999	1.597857
He-Cd	0.44157	1.601917
g	0.43584	1.602620
h	0.40466	1.607022
-	0.38887	1.609700
i	0.36502	1.614499
-	0.33415	1.622529
-	0.32611	1.625067

Abnormal dispersion	
$\Delta P_{CA'}$	0.0104
ΔP_{dC}	0.0034
ΔP_{gd}	-0.0117
ΔP_{gF}	-0.0084
ΔP_{iG}	-0.0345

Dispersion Coefficients *8	
A0	2.4915858E+00
A1	-1.2477485E-02
A2	-2.0876118E-04
A3	1.4082534E-02
A4	1.4384470E-04
A5	8.7603745E-06
A6	-3.4480576E-07
A7	1.1644939E-08
A8	0.0000000E+00

8 $n^2 = A0 + A1\lambda^2 + A2*\lambda^4 + A3*\lambda^{-2} + A4*\lambda^{-4} + A5*\lambda^{-6} + A6*\lambda^{-8} + A7*\lambda^{-10} + A8*\lambda^{-12}$

measured at:
 temperature: 22.5 °C
 humidity: 50 %
 atmospheric pressure: 1013.25 hPa

Partial Dispersion	
F - C	0.009927
F' - C'	0.009997
C - t	0.008644
C - A'	0.003557
d - C	0.003051
e - C	0.005420
g - d	0.012198
g - F	0.005323
h - g	0.004401
i - g	0.011878
C' - t	0.009133
e - C'	0.004931
F' - e	0.005066
i - F'	0.016642

Relative Partial Dispersions	
C-t/ F-C	0.8708
C-A'/ F-C	0.3583
d-C/ F-C	0.3074
e-C/ F-C	0.5460
g-d/ F-C	1.2288
g-F/ F-C	0.5362
h-g/ F-C	0.4434
i-g/ F-C	1.1966
C'-t/ F'-C'	0.9136
e-C'/ F'-C'	0.4932
F'-e/ F'-C'	0.5068
i-F'/ F'-C'	1.6647

Specific Gravity	2.87
[g/cm ³]	

[wt%]	
Pb	0.0
As	0.2

Bubbles	
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Fluorescence	[Class] *1	-
Solarization	[%]	0.0

*1: JOGIS 03

Transformation Temp.	[°C]	T _g	607
Yield Point	[°C]	At	631
Expansion Coefficient	[10 ⁻⁷ /°C]	α	43
			58
(-30 ~ +70 °C)	[10 ⁻⁷ /°C]		
Thermal Conductivity	[W/mK]	λ	0.884
Specific Heat Capacity	[J/gK]	c	0.693
Thermal Diffusivity	[cm ² /sec]	κ	0.00445

Knoop Hardness	[Class] *2	Hk	497
			5
Abrasion	*3	A	75
Young's Modulus	[GPa]	E	79.9
Shear Modulus	[GPa]	G	31.0
Poisson's Ratio		μ	3.43
Stress Optical Coefficient	[10 ⁻⁸ cm ² /N]	β	0.289

*2: JOGIS 09
 *3: JOGIS 10

Water Resistance	[Class] *4	4
(powder method)		
Acid Resistance	[Class] *4	5
(powder method)		
Acid Resistance	[Class] *5	7
(surface method)		
Alkaline Detergent Resistance	[Class] *6	4
Climate Resistance	[Class] *7	3

*4: JOGIS 06
 *5: ISO 8482
 *6: ISO 9689
 *7: JOGIS 07

Effect of Temperature on Refractive Index							
°C	Δn/ΔT relative value [10 ⁻⁶ /°C]						
	t	C	d	e	F	g	i
-70 ~ -60	4.9	5.3	5.4	5.5	5.7	5.9	6.4
-60 ~ -40	4.8	5.1	5.2	5.3	5.5	5.8	6.3
-40 ~ -20	4.6	5.0	5.1	5.2	5.4	5.7	6.3
-20 ~ 0	4.5	4.9	5.1	5.2	5.4	5.7	6.5
0 ~ +20	4.6	4.9	5.1	5.2	5.5	5.8	6.7
+20 ~ +40	4.6	5.0	5.2	5.3	5.6	6.0	6.9
+40 ~ +60	4.7	5.1	5.3	5.5	5.8	6.2	7.2
+60 ~ +80	4.8	5.3	5.5	5.6	6.0	6.4	7.5
+80 ~ +90	4.9	5.4	5.6	5.8	6.1	6.6	7.7

Internal Transmittance	
λ [nm]	τ (10 mm)
240	0.52
250	0.73
260	0.85
270	0.912
280	0.943
290	0.961
300	0.973
310	0.980
320	0.986
330	0.991
340	0.994
350	0.995
360	0.996
365	0.997
370	0.998
380	0.998
390	0.999
400	0.999
420	0.999
440	0.999
460	0.999
480	0.999
500	0.999
550	0.999
600	0.999
650	0.999
700	0.999
800	0.999
900	0.999
1000	0.998
1200	0.999
1400	0.966
1600	0.982
1800	0.966
2000	0.915
2200	0.72
2400	0.44

Color Code	
λ 80	264
λ 5	222



Properties of Nikon i-line Glass Series

7054

n_d	1.706229	V_d	54.69
n_e	1.709308	V_e	54.46

Wavelength [μm]	Refractive Index	
-	2.32542	1.668299
-	2.05809	1.673845
-	1.97009	1.675525
-	1.52958	1.683106
-	1.12864	1.689607
-	1.06414	1.690763
t	1.01398	1.691717
s	0.85211	1.695356
A'	0.76819	1.697821
r	0.70652	1.700070
C	0.65627	1.702304
C'	0.64385	1.702929
He-Ne	0.63282	1.703512
D	0.58929	1.706115
d	0.58756	1.706229
e	0.54607	1.709308
F	0.48613	1.715217
F'	0.47999	1.715954
He-Cd	0.44157	1.721321
g	0.43584	1.722255
h	0.40466	1.728109
-	0.38887	1.731685
i	0.36502	1.738114
-	0.33415	1.748933
-	0.32611	1.752369

Abnormal dispersion	
$\Delta P_{C,A'}$	0.0055
$\Delta P_{d,C}$	0.0021
$\Delta P_{g,d}$	-0.0097
$\Delta P_{g,F}$	-0.0076
$\Delta P_{i,g}$	-0.0422

Dispersion Coefficients *8	
A0	2.8562273E+00
A1	-1.3186004E-02
A2	-1.8310363E-04
A3	1.9696625E-02
A4	2.8111719E-04
A5	5.9507421E-06
A6	1.2191426E-07
A7	0.0000000E+00
A8	0.0000000E+00

8 $n^2 = A0 + A1\lambda^2 + A2*\lambda^4 + A3*\lambda^{-2} + A4*\lambda^{-4} + A5*\lambda^{-6} + A6*\lambda^{-8} + A7*\lambda^{-10} + A8*\lambda^{-12}$

measured at:
 temperature: 22.5 °C
 humidity: 50 %
 atmospheric pressure: 1013.25 hPa

Partial Dispersion	
F - C	0.012913
F' - C'	0.013025
C - t	0.010588
C - A'	0.004483
d - C	0.003925
e - C	0.007003
g - d	0.016025
g - F	0.007038
h - g	0.005854
i - g	0.015859
C' - t	0.011213
e - C'	0.006378
F' - e	0.006646
i - F'	0.022160

Relative Partial Dispersions	
C-t/ F-C	0.8199
C-A'/ F-C	0.3472
d-C/ F-C	0.3040
e-C/ F-C	0.5424
g-d/ F-C	1.2410
g-F/ F-C	0.5450
h-g/ F-C	0.4533
i-g/ F-C	1.2281
C'-t/ F'-C'	0.8609
e-C'/ F'-C'	0.4897
F'-e/ F'-C'	0.5103
i-F'/ F'-C'	1.7014

Specific Gravity	3.91
[g/cm ³]	

	[wt%]
Pb	0.0
As	0.2

Bubbles	
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Fluorescence	[Class] *1	2
Solarization	[%]	0.0

*1: JOGIS 03

Transformation Temp.	[°C]	T _g	641
Yield Point	[°C]	At	661
Expansion Coefficient	[10 ⁻⁷ /°C]	α	57
			70
Thermal Conductivity	[W/mK]	λ	0.852
Specific Heat Capacity	[J/gK]	c	0.558
Thermal Diffusivity	[cm ² /sec]	κ	0.00391

Knoop Hardness	[Class] *2	Hk	605
			6
Abrasion	*3	A	75
Young's Modulus	[GPa]	E	108.0
Shear Modulus	[GPa]	G	41.7
Poisson's Ratio		μ	2.07
Stress Optical Coefficient	[10 ⁻⁸ cm ² /N]	β	0.293

*2: JOGIS 09
 *3: JOGIS 10

Water Resistance	[Class] *4	1
(powder method)		
Acid Resistance	[Class] *4	4
(powder method)		
Acid Resistance	[Class] *5	5
(surface method)		
Alkaline Detergent Resistance	[Class] *6	4
Climate Resistance	[Class] *7	1

*4: JOGIS 06
 *5: ISO 8482
 *6: ISO 9689
 *7: JOGIS 07

Effect of Temperature on Refractive Index							
°C	Δn/ΔT relative value [10 ⁻⁶ /°C]						
	t	C	d	e	F	g	i
-70 ~ -60	3.8	4.2	4.4	4.5	4.8	5.2	6.2
-60 ~ -40	3.6	4.0	4.2	4.3	4.7	5.1	6.0
-40 ~ -20	3.4	3.8	4.0	4.2	4.5	5.0	6.0
-20 ~ 0	3.4	3.8	4.0	4.2	4.5	5.0	6.0
0 ~ +20	3.4	3.8	4.0	4.2	4.6	5.0	6.1
+20 ~ +40	3.4	3.9	4.1	4.3	4.7	5.1	6.3
+40 ~ +60	3.5	4.0	4.2	4.4	4.8	5.3	6.5
+60 ~ +80	3.6	4.1	4.4	4.6	5.0	5.5	6.7
+80 ~ +90	3.7	4.2	4.5	4.7	5.1	5.6	6.9

Internal Transmittance	
λ [nm]	τ (10 mm)
240	0.21
250	0.49
260	0.72
270	0.84
280	0.903
290	0.935
300	0.953
310	0.965
320	0.975
330	0.983
340	0.988
350	0.990
360	0.992
365	0.994
370	0.996
380	0.997
390	0.998
400	0.998
420	0.998
440	0.998
460	0.998
480	0.999
500	0.999
550	0.998
600	0.999
650	0.998
700	0.999
800	0.999
900	0.998
1000	0.999
1200	0.999
1400	0.993
1600	0.993
1800	0.981
2000	0.951
2200	0.86
2400	0.60

Color Code	
λ 80	282
λ 5	237