



Properties of NIFS Series

(Nikon Synthetic Fused Silica)

Refractive Indices	Wavelength	Refractive Index
	nm	
He	1082.989	1.44945
t	1013.98	1.45028
s	852.11	1.45251
A'	768.195	1.45393
r	706.519	1.45519
C	656.273	1.45641
C'	643.847	1.45675
He-Ne	632.8	1.45706
D	589.294	1.45844
d	587.562	1.45850
e	546.074	1.46012
F	486.133	1.46317
F'	479.992	1.46354
g	435.835	1.46674
h	404.656	1.46966
i	365.015	1.47458
KrF	248.3	1.50843
ArF	193.4	1.56017

measured at:

temperature : 25°C

humidity : 50%

atmospheric pressure : 760mmHg

Chemical Purity	(unit: ppm)
OH	100 ~ 1200
Cl	<50
Na	<0.001
K	<0.05
Mg	<0.02 ~ 0.1
Ca	<0.02
Al	<0.02 ~ 0.05
Ti	<0.02
Cr	<0.02
Mn	<0.02
Fe	<0.02
Co	<0.02
Ni	<0.02
Cu	<0.02
La	<0.02

n_d (He, 587.56nm)	1.45850
n_e (Hg, 546.07nm)	1.46012
$n_F - n_C$	0.00676
$n_F - n_C'$	0.00680
v_d	67.8
v_e	67.7

Thermal Coefficient $\Delta n / \Delta t$ *

(unit: K⁻¹)

Wavelength	0 ~ 20°C	20 ~ 40°C
643.8	9.6×10^{-6}	9.8×10^{-6}
587.6	9.8×10^{-6}	10.0×10^{-6}
546.1	9.9×10^{-6}	10.1×10^{-6}
365.0	11.0×10^{-6}	11.2×10^{-6}
237.8	14.6×10^{-6}	14.9×10^{-6}

Stress Coefficient *	3.5	nm / cm N / cm ²
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Mechanical Properties

Density	2.2 g / cm ³
Knoop Hardness (100g load)	590~620 kg / mm ²
Abrasion	58 Å
Young's Modulus	7400 kgf / mm ²
Shear Modulus	3200 kgf / mm ²
Poisson's Ratio	0.16
Bending Strength	67 N / mm ²

Thermal Properties

Softening Point *	log η = 7.6	1600 °C
Annealing Point *	log η = 13.0	1100 °C
Strain Point *	log η = 14.5	1000 °C
Linear Thermal Expansion Coefficient	100~300°C	$5.1 \sim 5.9 / 10^{-7} \cdot K^{-1}$
Thermal Conductivity	0°C	1.4 W / mK
Mean Heat Capacity *	0 ~ 100°C	770 J / kg K
	0 ~ 500°C	960 J / kg K
	0 ~ 900°C	1050 J / kg K

Electrical Properties

Dielectric Constant ϵ_r (0~1x10 ⁶ Hz) *	20°C	3.7
tan δ *	1MHz	1.0×10^{-4}
Electrical Resistivity *	2°C	$1.0 \times 10^{16} \Omega m$

* excerpts from literature

※We show each properties as representative value.