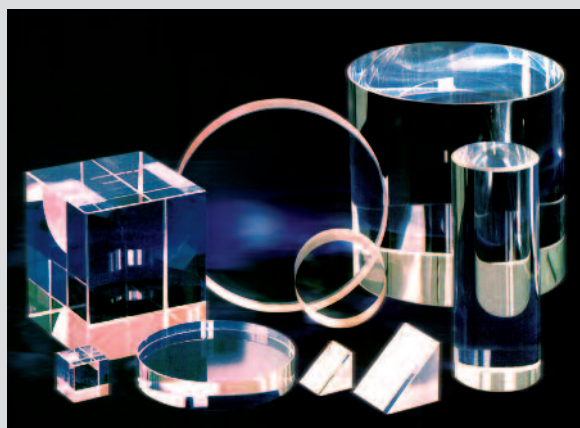


Spectrosil® 2000

Spectrosil® synthetic fused silica is manufactured using a patented, environmentally friendly process resulting in a glass of exceptional purity and excellent visual quality. It is a very homogeneous synthetic fused silica glass for deep UV optical applications.

Spectrosil® is chlorine-free resulting in outstanding laser damage resistance due to the reduced tendency to form E' centres.

Spectrosil® 2000 is free of bubbles and inclusions and due to its ultra-high purity, has exceptional optical transmission in the deep ultraviolet and visible, with a useful range from below 180 nm through to 2000 nm.



Spectrosil® Grade	2000
■ Refractive Index Homogeneity ¹⁾	≤ 10 ppm – lower values upon request
■ Striae	
Visible striae	3 Directions Free
ISO 10110-4	Class 5 in Functional Direction
MIL-G-174B	A in Functional Direction
■ Birefringence / Residual Strain ¹⁾	
(Typical values)	≤ 5 nm/cm
■ Bubbles	
Bubble class (DIN 58927)	0
Maximum number of inclusions ²⁾	0
■ Fluorescence	
(254 nm excitations)	None

¹⁾ Stress induced birefringence and optical homogeneity are valid for 80 % of the diameter of an ingot or for 90 % diameter of a machined component.

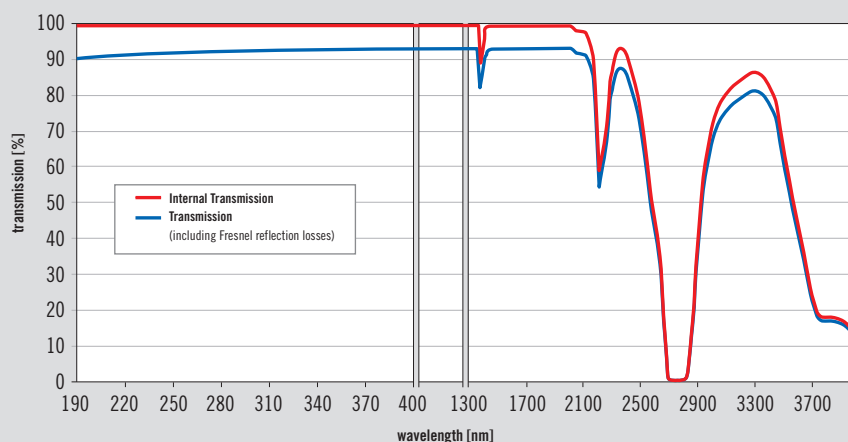
²⁾ Bubbles and Inclusion with $\varnothing \leq 80 \mu\text{m}$ are not counted. Inclusion free down to $10 \mu\text{m}$ upon request.

Transmission – Typical Internal Transmission (10 mm path length)

	$\lambda = 193.4 \text{ nm}$	$\lambda = 248 \text{ nm}$
Spectrosil® 2000	> 99 %	> 99.5 %

Typical Transmission Spectrum

Sample thickness: 10 mm



Other Properties

Abbe number: 67.8
Density: 2.2 g/cm³
Hardness (Mohs scale): 6-7

Thermal Properties

Strain point*: 950°C
Annealing point*: 1100°C
Softening point*: 1710°C
Coefficient of thermal expansion:
(Average K⁻¹ 0-600°C) 0.54 x 10⁻⁶

*Note that these values may vary,
depending on the thermal history of the glass.

Typical Chemical Analysis

Typical trace elements in ppb	Al	Ca	Co	Cr	Cu	Fe	K	Li	Mg
Spectrosil® 2000	<10	<10	<10	<10	<10	<10	<10	<10	<10

Typical trace elements in ppb	Mn	Na	Ti	V	Zn	Zr	in ppm	Cl	OH
Spectrosil® 2000	<10	<10	<10	<10	<10	<10		<0.15	800-1200
(limits of detection)									

Refractive Index & Thermal Coefficient (at 20°C & 1 bar / 760 mm Hg)

				n t	n s	n r	n c	n c'	n He-Ne	n D	
Wavelength (nm)	1128.95	1064.00	1060.00	1013.98	852.11	706.52	656.27	643.85	632.80	589.29	
Refractive Index (n)	1.44887	1.44963	1.44968	1.45024	1.45247	1.45515	1.45637	1.45670	1.45702	1.45840	
Thermal Coefficient (dn/dT (ppm/K))	9.6	9.6	9.6	9.6	9.7	9.9	9.9	10.0	10.0	10.1	
	n d	n e	n F'	n g	n h	n l					n KrF
Wavelength (nm)	587.56	546.07	486.13	435.83	404.66	365.01	334.24	312.66	253.73	248.30	
Refractive Index (n)	1.45846	1.46008	1.46313	1.46669	1.46962	1.47454	1.47975	1.48447	1.50547	1.50838	
Thermal Coefficient (dn/dT (ppm/K))	10.1	10.2	10.4	10.6	10.8	11.2	11.6	12.0	13.9	14.2	
	n ArF										
Wavelength (nm)	248.00	228.87	214.51	206.27	194.23	193.40	193.00	184.95			
Refractive Index (n)	1.50855	1.52109	1.53365	1.54259	1.55884	1.56014	1.56077	1.57495			
Thermal Coefficient (dn/dT (ppm/K))	14.2	15.5	17.0	18.1	20.3	20.5	20.6	22.7			

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