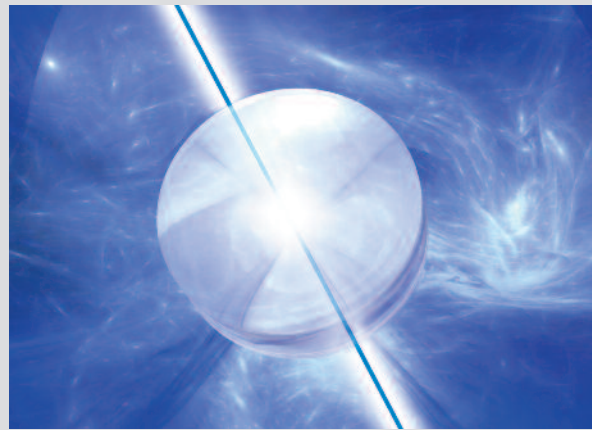


## Suprasil® UVL

Suprasil® UVL 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.

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

Suprasil® UVL 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.



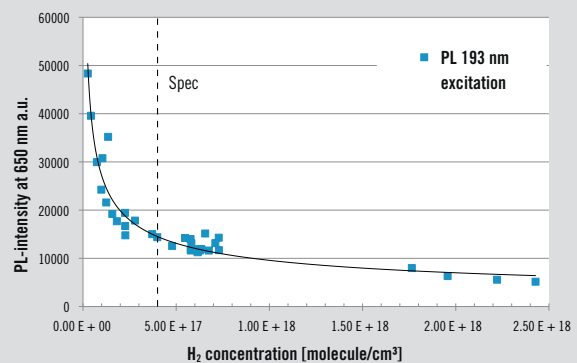
### Suprasil® UVL

■ <b>Refractive Index Homogeneity<sup>1)</sup></b>	≤ 10 ppm – lower values upon request
■ <b>Striae</b>	
Visible striae	3 Directions Free
ISO 10110-4	Class 5 in Functional Direction
MIL-G-174B	A in Functional Direction
■ <b>Birefringence / Residual Strain<sup>1)</sup></b>	
(Typical values)	≤ 5 nm/cm
■ <b>Bubbles</b>	
Bubble class (DIN 58927)	0
Maximum number of inclusions <sup>2)</sup>	0
■ <b>Fluorescence</b>	
(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.

### Photoluminescence @ 193 nm



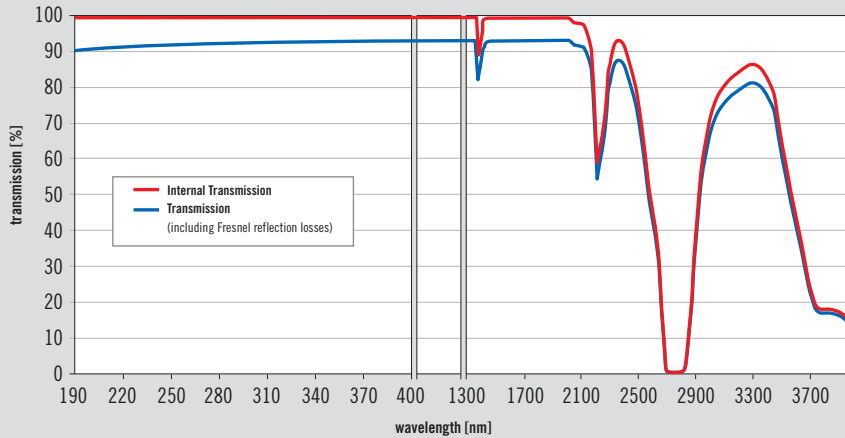
Measurement parameters:  $\lambda_{\text{exc}} = 193 \text{ nm}$ ; Rep. Rate = 200 Hz; P = 50 mJ  
H<sub>2</sub> specification:  $\geq 4 \cdot 10^{17}$  molecules / cm<sup>3</sup> in CA

### Transmission – Typical Internal Transmission (10 mm path length)

	$\lambda = 193.4 \text{ nm}$	$\lambda = 248 \text{ nm}$
Suprasil® UVL	> 99 %	> 99.5 %

## Typical Transmission Spectrum

Sample thickness: 10 mm



## Other Properties

Abbe number: 67.8  
Density: 2.2 g/cm<sup>3</sup>  
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<sup>-1</sup> 0-600°C) 0.54 x 10<sup>-6</sup>

\*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
Suprasil® UVL	<10	<10	<10	<10	<10	<10	<10	<10	<10

Typical trace elements in ppb	Mn	Na	Ti	V	Zn	Zr	in ppm	Cl	OH
Suprasil® UVL	<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
Refractive Index (n)	1.44887	1.44963	1.44968	1.45024	1.45247	1.45515	1.45637
Thermal Coefficient (dn/dT (ppm/K))	9.6	9.6	9.6	9.6	9.7	9.9	9.9

	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
Refractive Index (n)	1.45846	1.46008	1.46313	1.46669	1.46962	1.47454	1.47975
Thermal Coefficient (dn/dT (ppm/K))	10.1	10.2	10.4	10.6	10.8	11.2	11.6

	n ArF						
Wavelength (nm)	248.00	228.87	214.51	206.27	194.23	193.40	184.95
Refractive Index (n)	1.50855	1.52109	1.53365	1.54259	1.55884	1.56014	1.56077
Thermal Coefficient (dn/dT (ppm/K))	14.2	15.5	17.0	18.1	20.3	20.5	20.6

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