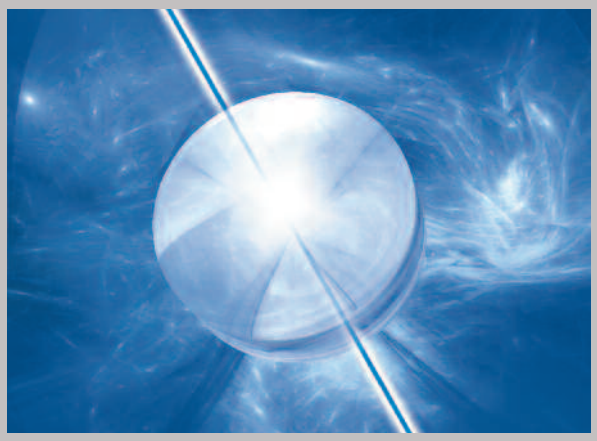
Heraeus

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.



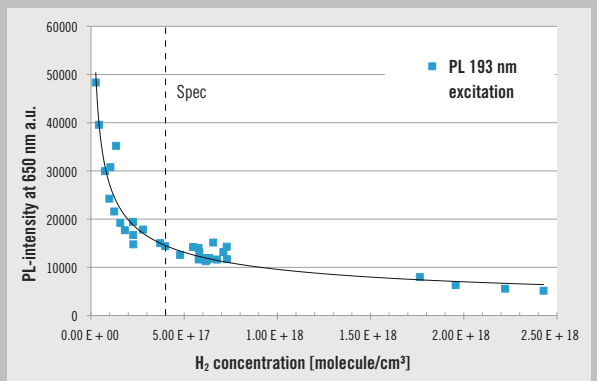
Suprasil® UVL

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 ø ≤ 80 µm are not counted. Inclusion free down to 10 µm upon request.

Photoluminescence @ 193 nm



Measurement parameters: λ_{Exc} = 193 nm; Rep. Rate = 200 Hz; P = 50 mJ
H_2 specification: ≥ $4 \cdot 10^{17}$ molecules / cm^3 in CA

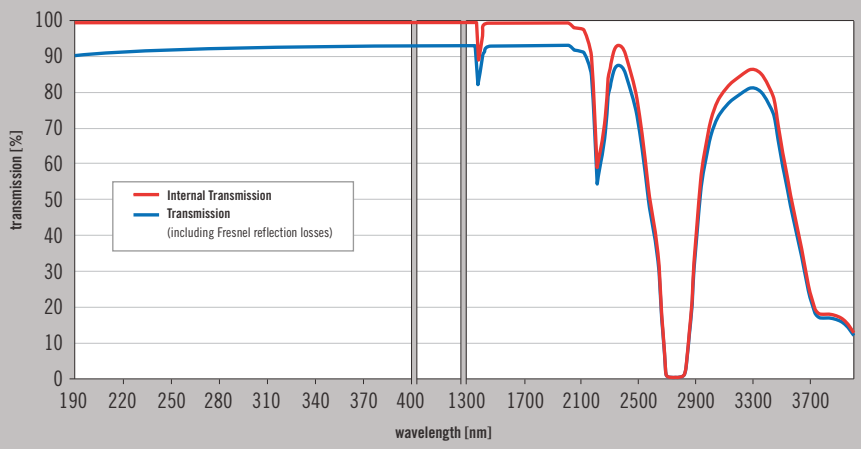
Transmission – Typical Internal Transmission (10 mm path length)

	λ = 193.4 nm	λ = 248 nm
Suprasil® UVL	> 99 %	> 99.5 %

Heraeus

Typical Transmission Spectrum

Sample thickness: 10 mm



Other Properties

Abbe number:	67.8
Density:	2.2 g/cm^3
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
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	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		

Germany

Heraeus Quarzglas GmbH & Co. KG
Heraeus Conamic
Optics
Quarzstraße 8
63450 Hanau
Phone +49 (6181) 35-62 85
Fax +49 (6181) 35-62 70
conamic.optics.eu@heraeus.com

USA

Heraeus Quartz North America LLC
Heraeus Conamic
Optics
100 Heraeus Blvd.
Buford, GA 30518
Phone +1 (678) 714-4350
Fax +1 (678) 714-4355
conamic.optics.us@heraeus.com

UK

Heraeus Conamic UK Ltd.
Neptune Road, Wallsend
Tyne & Wear NE28 6DD
United Kingdom
Phone +44 (191) 259 8454
Fax +44 (191) 263 8040
conamic.optics.uk@heraeus.com

China

Heraeus (China) Investment Co., Ltd.
Heraeus Conamic
Building 5,
No. 406 Guilin Road, Xuhui District,
Shanghai 200233
Phone +86 (21) 3357 5175
Fax +86 (21) 3357 5230
conamic.optics.cn@heraeus.com

www.optics.heraeus-conamic.com

HCA-PTN-OPT_17.0/E/07.2019