Suprasil® Standard Commercial Grade

Suprasil® Standard Commercial Grade is a high purity synthetic fused silica material manufactured by flame hydrolysis. It combines excellent physical properties with very good optical characteristics and excellent transmission from the deep UV to the near IR.

Technical features

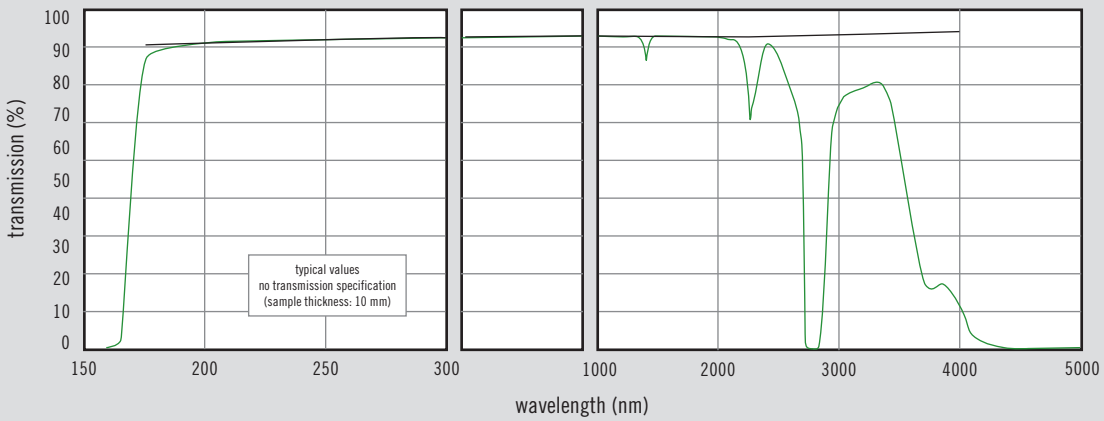
- Low Bubble and Inclusion content
  - Bubble class 0, occasionally isolated bubbles ≤ 10 mm
- High Purity
- UV-Transmission (typical)
  - k_{200}: $3.5 \cdot 10^{-3}$ / cm
- Standard Homogeneity in functional direction
  - not specified
  - Striae: MIL G 174 B Grade A
- Stress Induced Birefringence in functional direction
  - SIB ≤ 20 nm / cm
- Well established production processes

Refractive index and dispersion

n_C	=	1.45637 at 656.3 nm
n_d	=	1.45846 at 587.6 nm
n_F	=	1.46313 at 486.1 nm
n_g	=	1.46669 at 435.8 nm
n	=	1.50833 at 248.4 nm

At 20°C, 1 bar atmospheric pressure
Accuracy: $\pm 3 \cdot 10^{-5}$

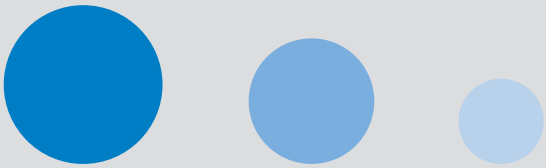
Transmission spectrum including reflection losses



Heraeus

Geometry available today

Diameter Ø



Ø 650 mm | Ø 320 mm | Ø 140 mm

Minimum order length

Ø 140 mm (±10 mm)	200 mm or a multiple thereof
Ø 320 mm (±15 mm)	100 mm or a multiple thereof
Ø 650 mm (±5 mm)	~ 200 mm

Typical chemical impurities in weight ppb

	AL	Ca	K	Na	Mg	Li	Cu	Fe	Ni	Cr	Mn	Ti	OH [ppm]
Suprasil® Standard Commercial Grade	≤10	≤15	≤10	≤10	≤5	≤1	≤3	≤5	≤1	≤1	≤2	≤5	400 – 1000

Mechanical Properties

Density (g/cm³)	2.2
Mohs hardness	5.5 ... 6.5
Micro hardness (N/mm²)	8600 ... 9800
Knoop hardness (N/mm²)	5800 ... 6200
Modulus of elasticity at 20°C (N/mm²)	$7.0 \cdot 10^4$
Modulus of torsion (N/mm²)	$3.0 \cdot 10^4$
Poisson´s ratio	0.17
Compressive strength (approx.) (N/mm²)	1150
Tensile strength (approx.) (N/mm²)	50
Bending strength (approx.) (N/mm²)	67
Torsional strength (approx.) (N/mm²)	30
Sound velocity (m/s)	5720

Mean specific heat (J/kg · K)

0 ... 100°C	772
0 ... 500°C	964
0 ... 900°C	1052

Heat conductivity (W/m · K)

20°C	1.38
100°C	1.46
200°C	1.55
300°C	1.67
400°C	1.84
950°C	2.68

Thermal Properties

Softening temperature (°C)	1600
Annealing temperature (°C)	1120
Strain temperature (°C)	1025
Max. working temperature continuous (°C)	950
short-term (°C)	1200

Mean expansion coefficient (K^{-1})

-50 ... 0°C	$2.7 \cdot 10^{-7}$
0 ... 100°C	$5.1 \cdot 10^{-7}$
0 ... 200°C	$5.8 \cdot 10^{-7}$
0 ... 300°C	$5.9 \cdot 10^{-7}$
0 ... 600°C	$5.4 \cdot 10^{-7}$
0 ... 900°C	$4.8 \cdot 10^{-7}$

Germany
Heraeus Quarzglas GmbH & Co. KG
Sales Microlithography and Standardoptics
Quarzstraße 8, 63450 Hanau
Telefon +49 (6181) 35-62 85
Fax +49 (6181) 35-62 70
sales.hqs.optics.de@heraeus.com
www.heraeus-quarzglas.com

China
Heraeus ShinEtsu Quartz (China) Inc.
QianJian Tower, 20th Floor
Room A, No. 971
Dongfang Road
200122 Shanghai
Telefon +86 (21) 68672266-809
Fax +86 (21) 68751434
sales.hqs.optics.cn@heraeus.com
www.heraeus-quarzglas.com

USA
Heraeus Quartz America, LLC.
Optics Division
100 Heraeus Blvd.
30518 Buford, Georgia
Telefon +1 (678) 714-4350
Fax +1 (678) 714-4353
sales.hqs.optics.us@heraeus.com
www.heraeus-quarzglas.com

UK
Heraeus QuartzTech Ltd.
4 Tannery House
Tannery Lane
Send, Woking
Surrey GU23 7EF
Telefon +44 (1483) 213323
Fax +44 (1483) 213329
sales.hqs.optics.uk@heraeus.com
www.heraeus-quarzglas.com

HQS-SO Suprasil Standard Commercial Grade 12.2007/V1.0_E/HQS-MO/SO