

## Suprasil® CG

Suprasil® CG 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
  - ▶ Ø 140 mm bubble class O, occasionally isolated bubbles
  - ▶ Ø 320 mm bubble class O, 1/ 1 \* 0.16
  - ▶ Ø 650 mm bubble class O, 1/ 1 \* 0.16
- 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  $\leq 20$  nm / cm
- Well established production processes



### Refractive index and dispersion

$$n_c = 1.45637 \text{ at } 656.3 \text{ nm}$$

$$n_d = 1.45846 \text{ at } 587.6 \text{ nm}$$

$$n_F = 1.46313 \text{ at } 486.1 \text{ nm}$$

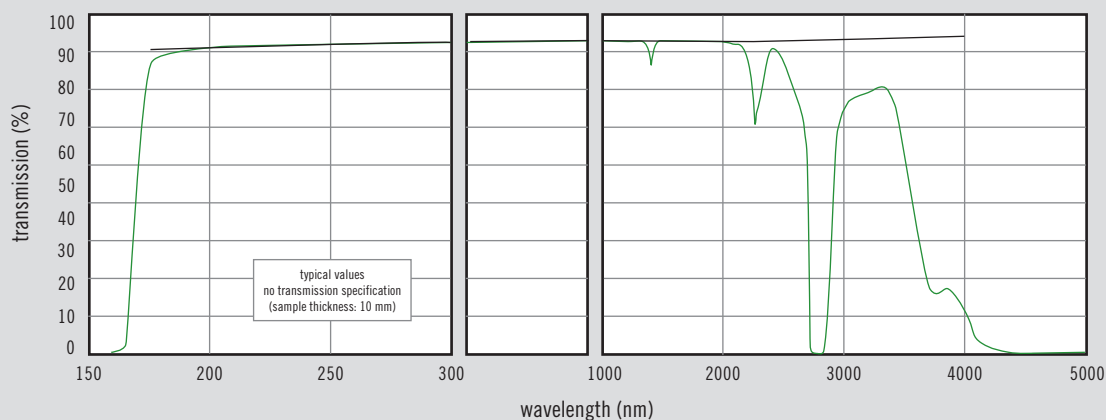
$$n_g = 1.46669 \text{ at } 435.8 \text{ nm}$$

$$n = 1.50833 \text{ at } 248.4 \text{ nm}$$

At 20°C, 1 bar atmospheric pressure

Accuracy:  $\pm 3 \cdot 10^{-5}$

### Transmission spectrum including reflection losses



## 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® CG	≤10	≤15	≤10	≤10	≤5	≤1	≤3	≤5	≤1	≤1	≤2	≤5	400 – 1000

## Mechanical Properties

Density (g/cm <sup>3</sup> )	2.2
Mohs hardness	5.5 ... 6.5
Micro hardness (N/mm <sup>2</sup> )	8600 ... 9800
Knoop hardness (N/mm <sup>2</sup> )	5800 ... 6200
Modulus of elasticity at 20°C (N/mm <sup>2</sup> )	7.0 · 10 <sup>4</sup>
Modulus of torsion (N/mm <sup>2</sup> )	3.0 · 10 <sup>4</sup>
Poisson's ratio	0.17
Compressive strength (approx.) (N/mm <sup>2</sup> )	1150
Tensile strength (approx.) (N/mm <sup>2</sup> )	50
Bending strength (approx.) (N/mm <sup>2</sup> )	67
Torsional strength (approx.) (N/mm <sup>2</sup> )	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-therm (°C)	1200

## Mean expansion coefficient (K<sup>-1</sup>)

-50 ... 0°C	2.7 · 10 <sup>-7</sup>
0 ... 100°C	5.1 · 10 <sup>-7</sup>
0 ... 200°C	5.8 · 10 <sup>-7</sup>
0 ... 300°C	5.9 · 10 <sup>-7</sup>
0 ... 600°C	5.4 · 10 <sup>-7</sup>
0 ... 900°C	4.8 · 10 <sup>-7</sup>

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