

## SUPRASIL® 3001 and 3002



### Highlights

- **Low OH-content**  
OH-content ~ 1 ppm OH
- **Low absorption\***

Absorption at 946 nm:	1.5 ppm/cm
Absorption at 1064 nm:	0.3 ppm/cm
Absorption at 1319 nm:	1 ppm/cm

### Index homogeneity

#### Striation

SUPRASIL® 3001:

- No striations in all three dimensions, i.e. superior to striae class A according to MIL-G-174-B

SUPRASIL® 3002:

- No striations in the primary functional direction, i.e. striae class A according to MIL-G-174-B
- Weak striations, if any, are parallel to the major faces

#### Index ( $\Delta n$ )

- Specified over 90% of the diameter or of the side length of a ground piece, respectively 80% for raw ingots.

SUPRASIL® 3001:

- In three dimensions  $\Delta n \leq 4 \cdot 10^{-6}$   
on request  $\Delta n \leq 1 \cdot 10^{-6}$
- Maximum weight approximately 15 kg, bigger unit weight on request

SUPRASIL® 3002:

- In primary functional direction  $\Delta n \leq 10 \cdot 10^{-6}$
- Dimensions and weight are practically not limited.

### Residual strain

SUPRASIL® 3001 and 3002:

- 6 nm/cm
- The residual strain value is specified over 90% of the diameter or edge length of a fine ground piece, or 80% of a raw formed ingot.

### Bubbles and inclusions<sup>1)</sup>

#### Bubble Grade

- Superior to 0 (according to DIN 58927 2/70)
- The sum of the cross sections of all bubbles within a piece is 0.03 mm<sup>2</sup> and is related to 100 cm<sup>3</sup> of a volume (TBCS-value).

#### Bubbles according to DIN ISO 10110

SUPRASIL® 3001: 1 / 2\*0.10 unit weight < 6 kg  
 SUPRASIL® 3002: 1 / 1\*0.16 unit weight < 6 kg  
 1 / 1\*0.25 unit weight 6 – 30 kg

#### Inclusions

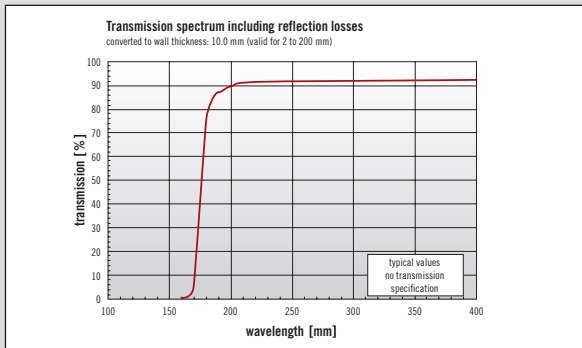
- none

<sup>1)</sup> Bubbles and inclusions < 0.08 mm diameter are not counted.

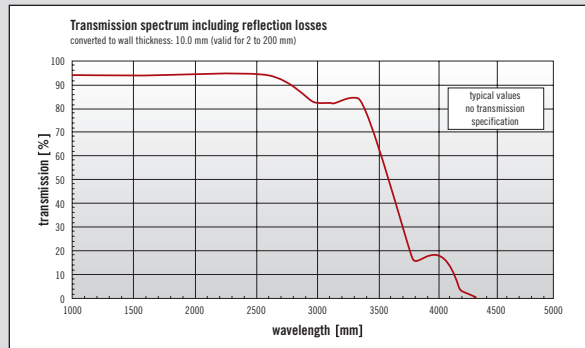
## Typical transmission graph

(including Fresnel reflection losses) for a wall thickness of 10 mm

### Broadband transmission covers (190 nm – 2600 nm)



### NIR transmission covers all NIR lasers from 800 – 2600 nm



### Decadic absorption coefficient at 200 nm

$k_{200} < 0.005 \text{ cm}^{-1}$  (typical)  
 $k_{200} < 0.01 \text{ cm}^{-1}$  (specified)

Internal transmission  $T = 10^{-kd}$   
and  $d =$  wall thickness

### Infrared absorption (typical)\*

- Practically no OH absorption
- absorption at 946 nm 1.5 ppm/cm  $\pm 0.4$  ppm/cm
- absorption at 1064 nm<sup>1), 2)</sup> 0.3 ppm/cm  $\pm 0.2$  ppm/cm
- absorption at 1319 nm<sup>1)</sup> 1 ppm/cm

1) Kondilenko & Co-Workers, Ginzton Lab, Stanford University, private communication, 2005

2) Dr. Mühlig, IPHT Jena

## Fluorescence: light blue

At stimulation with light at a wavelength of  $\lambda = 254 \text{ nm}$  (Hg low pressure lamp and Schott UG 5 filter) and visual inspection.

\* Data was taken under laboratory conditions. Actual data may differ. Customer is recommended to test under his own environmental conditions.

## Application range

- Ideally suited for high power NIR lasers
- Medical Science e.g. 940 nm lasers
- Material handling e.g. Nd-YAG lasers
- Telecommunications
- Spectroscopy

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