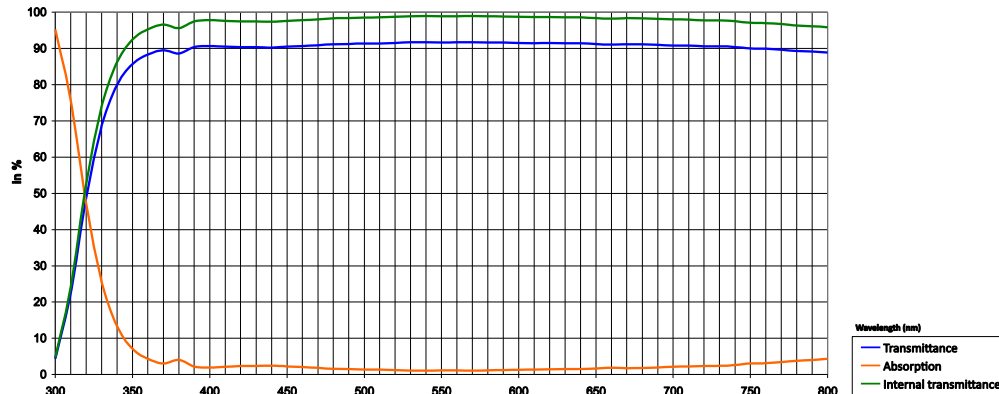


## Specification Borosilicate glass

SUPRAX 8488®

### Optical characteristics

- Transmittance / Absorption graph (Thickness d=10 mm)



Solarization resistance

Solarization stable in entire VIS region

### Electrical characteristics

- at 1 MHz/25°C

Dielectric constant $\epsilon_r$	5,4
Loss tangent $\tan \delta \cdot 10^{-4}$	96

- at 2,466 GHz (Microwave)

Temperature	20 °C	400 °C
Real part of the complex dielectric constant $\epsilon'$	5,1 ± 0,1	5,7 ± 0,1
Imaginary p. of the complex dielectric constant $\epsilon''$	0,050 ± 0,005	0,26 ± 0,03
Loss tangent $\tan \delta$	0,010 ± 0,001	0,045 ± 0,004
TEM half-value layer (mm)	610 ± 50	125 ± 10

- at 50Hz

Temperature	250 °C	380 °C
Volume resistance $\Omega \times \text{cm}$	7,1	5,8

### Food safety

- Tested in order to the German regulations "§ 31 Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch (LFGB or LMBG) and Bedarfsgegenständeverordnung". The paragraph 31, article 1 of LFGB reads. (Investigation dated from 04.02.2014)
- The total migration of the detected elements is less than 1mg/dm<sup>2</sup>. According to this testing parameters the glass sample SUPRAX 8488 is conform to the quality standards of the specified regulations § 31 Abs. 1 LMBG and regulation (EC) No 1935/2004.

### Chemical composition

- SiO<sub>2</sub> 76%
- Al<sub>2</sub>O<sub>3</sub> 4%
- B<sub>2</sub>O<sub>3</sub> 12%
- Na<sub>2</sub>O 6%
- BaO 1%
- ZrO<sub>2</sub> 1%

### Physical characteristics

- Coefficient of thermal expansion  $\alpha$  20°C; 300°C 4,1 x10<sup>-6</sup> /K
- Density  $\rho$  at 25°C 2,3 g/cm<sup>3</sup>
- Young's modulus E 67x10<sup>3</sup> N/mm<sup>2</sup>
- Poisson's ratio  $\mu$  0,20
- Refractive index  $n_d$  ( $\lambda = 587,6 \text{ nm}$ ) 1,482
- Abbe number  $v_d$  64,5
- Internal transmittance at 550 nm 98,9 % at 10 mm thickness
- Permanent operating temperature 400°C
- Max. short-term application temperature 300°C for thermally toughened glass
- Thermal shock resistance  $\Delta T$  450°C for 10 min
- Thermal conductivity  $\lambda$  at 90°C 130°C
- Transformation temperature  $T_g$  265°C for thermally toughened glass
- Glass temperature at viscosity dPas (Poise) 1,2W/(m K)
- Annealing point: 10<sup>13</sup> dPas 560°C
- Strain point: 10<sup>14,5</sup> dPas 530°C
- Littleton point: 10<sup>7,6</sup> dPas 800°C
- Working point: 10<sup>4,0</sup> dPas 1210°C

### Chemical characteristic

#### Hydrolytic resistance

#### Acid resistance

#### Alkaline resistance

Test acc. to	DIN ISO 720 / Class 1 (HGA1)	DIN ISO 1776	DIN ISO 695 (identical to)
max. abrasion acc.to DIN ISO	0,1	<100 $\mu\text{g Na}_2\text{O}/\text{dm}^2$	>75–175 mg/ dm <sup>2</sup>
max. abrasion MAXOS®	0,050	<60 $\mu\text{g Na}_2\text{O}/\text{dm}^2$	>100 mg/dm <sup>2</sup>

The values shown in this Specification represent measurements taken on samples and will vary depending upon the natural variance of glass components. Users should be aware that the values shown in this Material Specification are typical properties, and are not intended as absolute nor warrantable, therefore each user is recommended to perform tests to assure that finished parts will be suitable under end - use conditions.