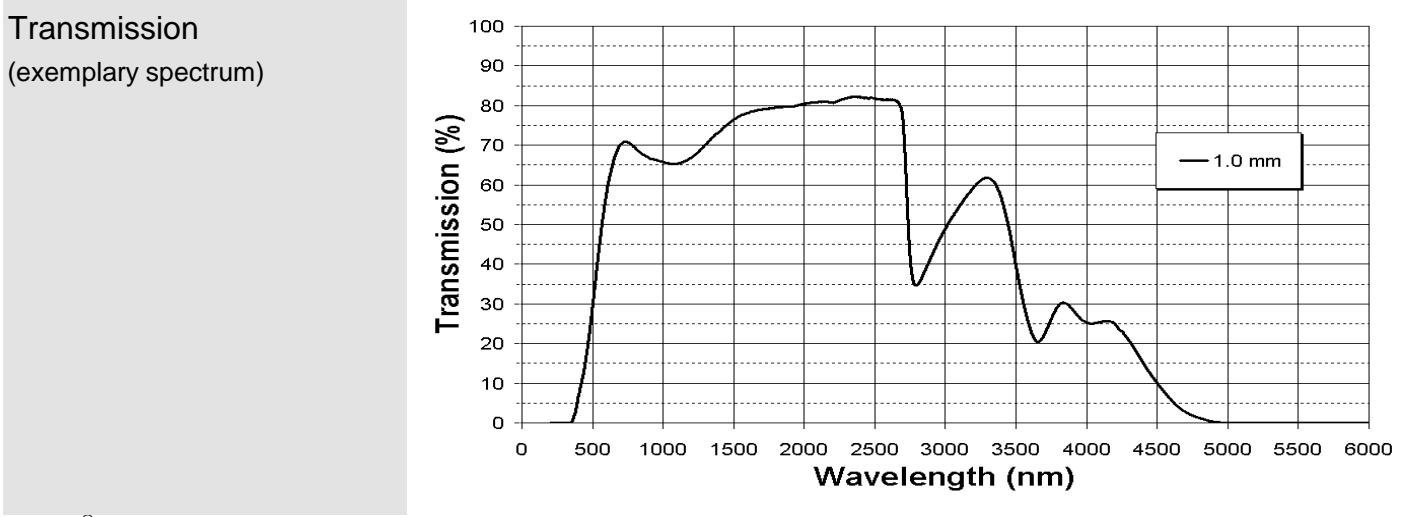


|                                  |  |                                      |
|----------------------------------|--|--------------------------------------|
| Glass Type/Application           | Neutral glass tubing, chemically highly resistant, with light protection<br>Pharmaceutical primary packaging   |                                      |
| Physical Data<br>(approx. value) | Coefficient of mean linear thermal expansion<br>$\alpha(20^{\circ}\text{C}; 300^{\circ}\text{C})$ acc. to ISO 7991 ..... $5.4 \cdot 10^{-6} \text{K}^{-1}$ |                                      |
|                                  | Transformation Temperature $T_g$ ..... 550 °C  |                                      |
|                                  | Glass temperature at viscosity $\eta$ in $\text{dPa} \cdot \text{s}$   |                                      |
|                                  | $10^{13}$ (annealing point).....   | 560 °C                               |
|                                  | $10^{7.6}$ (softening point) .....   | 770 °C                               |
|                                  | $10^4$ (working point) .....   | 1165 °C                              |
|                                  | Density $\rho$ at 25°C .....   | 2.42 $\text{g} \cdot \text{cm}^{-3}$ |

|               |                                   |             |
|---------------|-----------------------------------|-------------|
| Chemical Data | Hydrolytic resistance             |             |
|               | acc. to ISO 719 .....             | Class HGB 1 |
|               | acc. to Ph. Eur. ....             | Type I      |
|               | acc. to USP.....                  | Type I      |
|               | acc. to JP.....                   | fulfilled   |
|               | Acid resistance (DIN 12116) ..... | Class S 1   |
|               | Alkali resistance (ISO 695) ..... | Class A 2   |

|   |   |                               |                                |                                |                  |                   |                  |     |     |
|---|---|-------------------------------|--------------------------------|--------------------------------|------------------|-------------------|------------------|-----|-----|
| Chemical Composition<br>(main components in approx. weight %) | SiO <sub>2</sub>  | B <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | Na <sub>2</sub> O | K <sub>2</sub> O | BaO | CaO |
|   | 70  | 7.5                           | 6                              | 1                              | 5                | 6.5               | 1                | 2   | < 1 |
|   | The heavy metal content for the elements lead, cadmium, mercury and hexavalent chromium is below 100 ppm. |                               |                                |                                |                  |                   |                  |     |     |



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