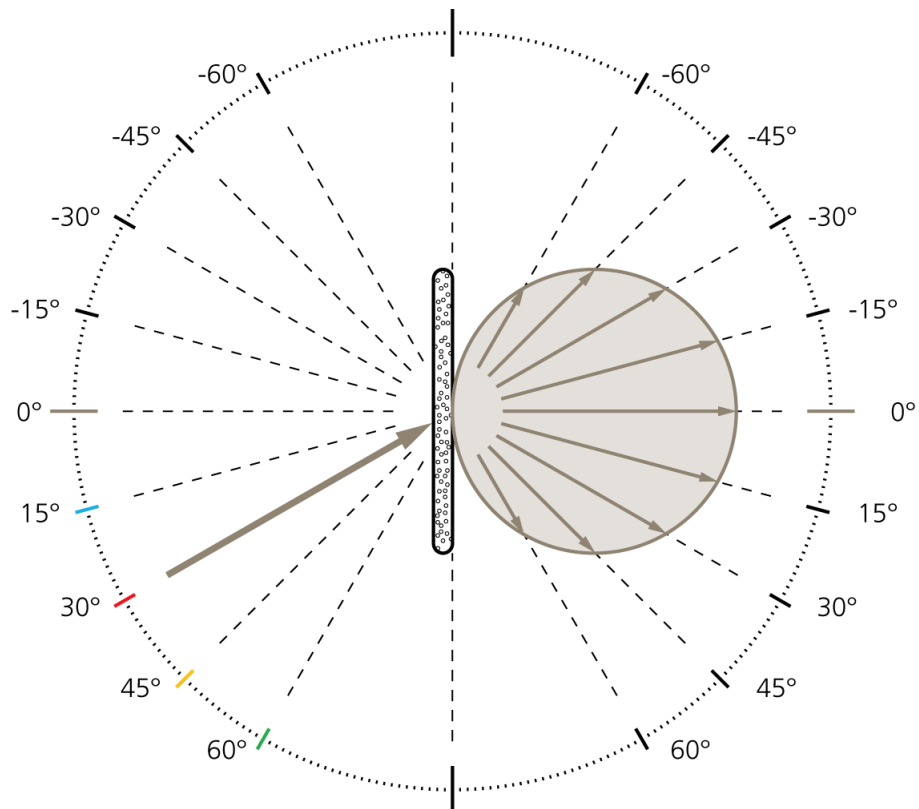


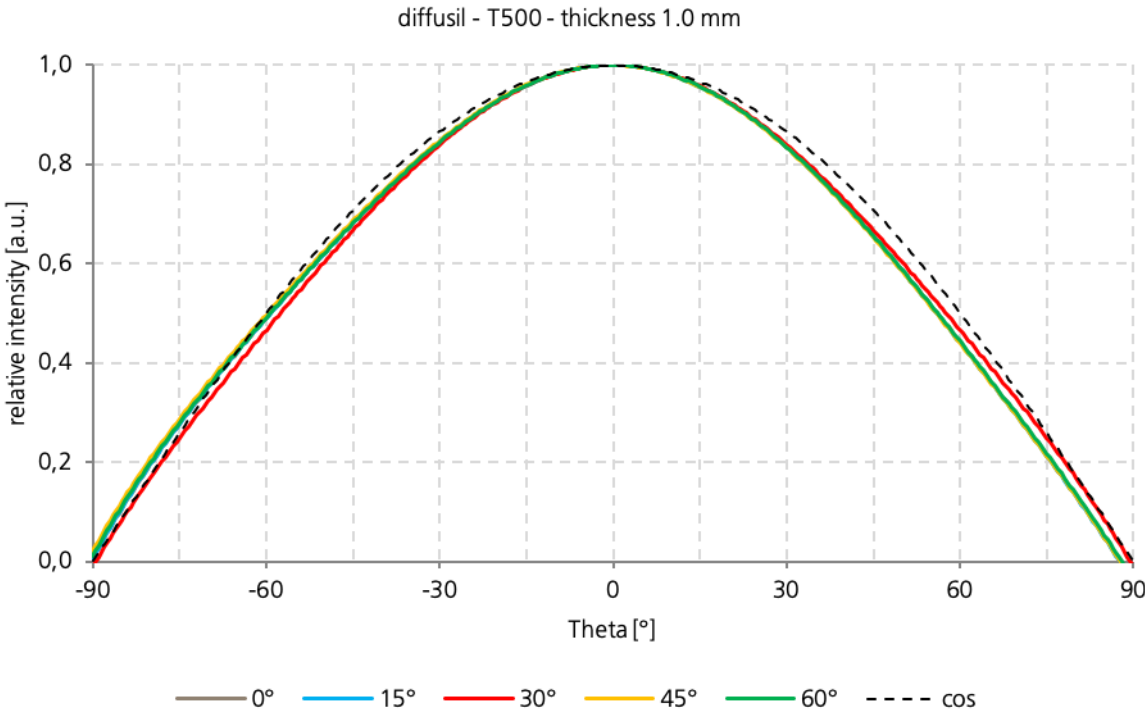
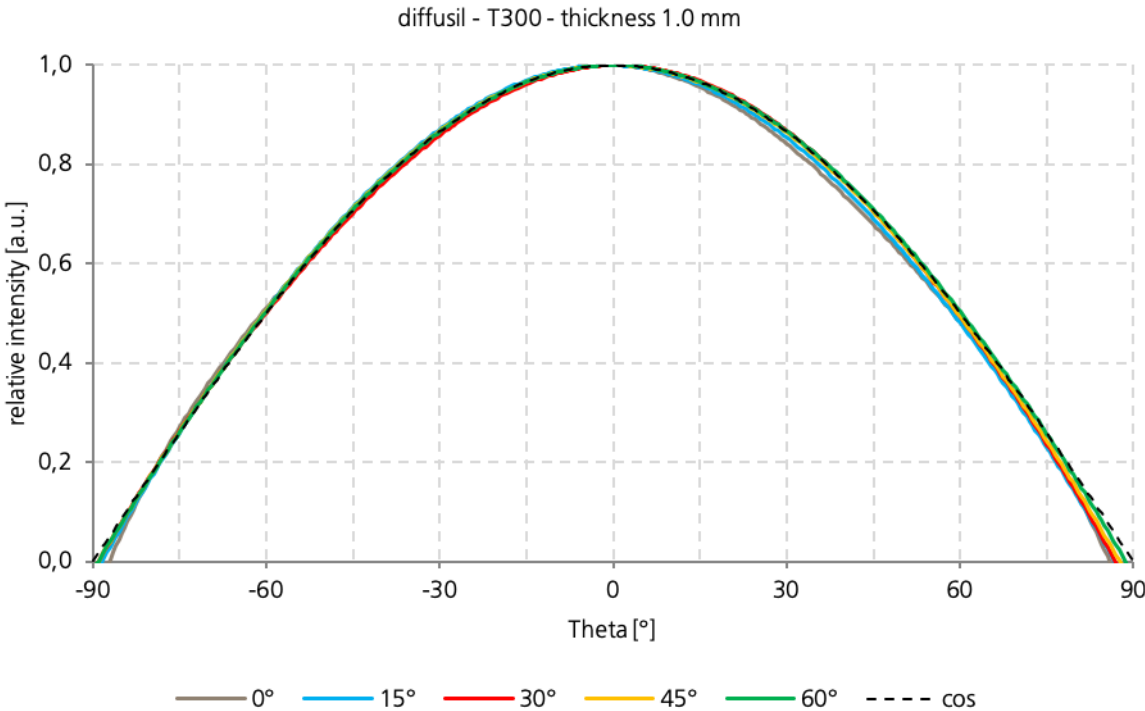


Scattering Behaviour

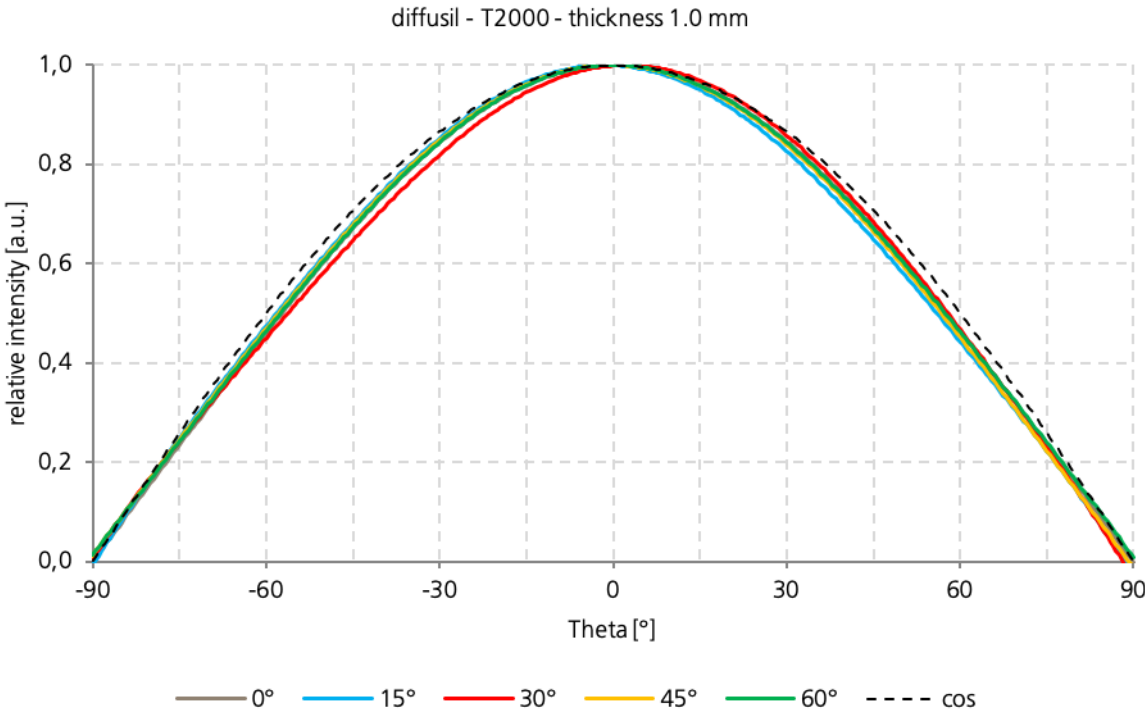
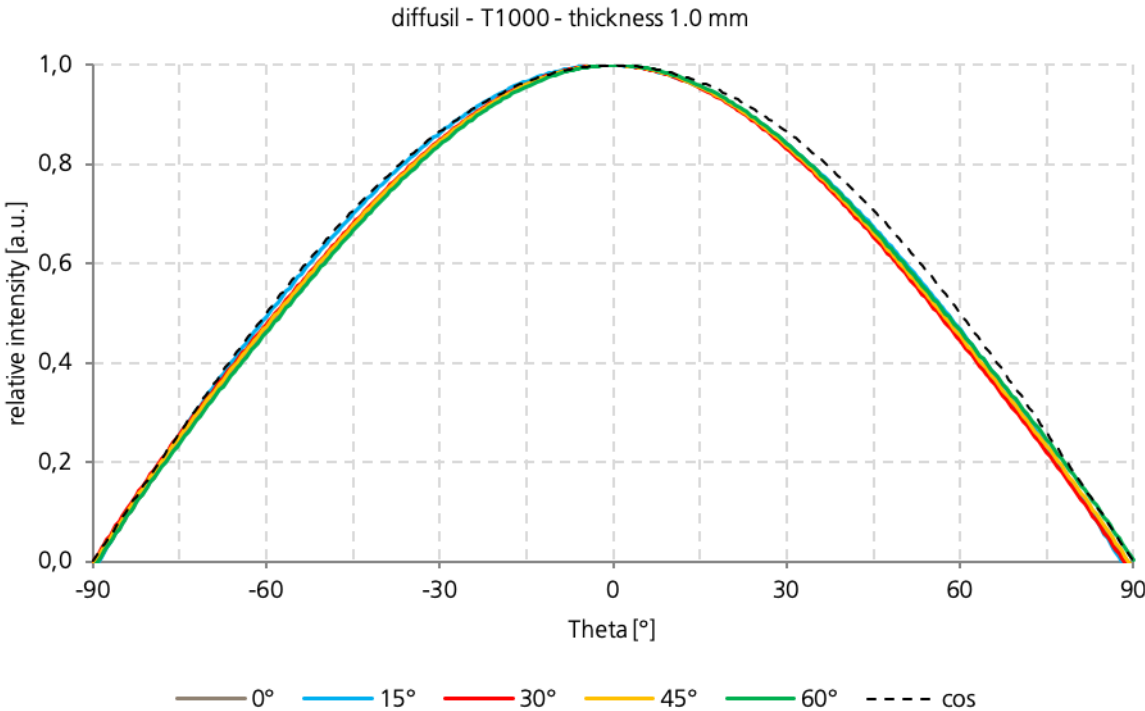
Size and number of the encapsulated gas bubbles are responsible for different scattering behavior of the diffusers. In order to meet the requirements of most scattering light applications, these parameters can be adapted. The following figures show the scattering characteristics in transmission of the different dopings and the different incident angles, based on the following angle definition:

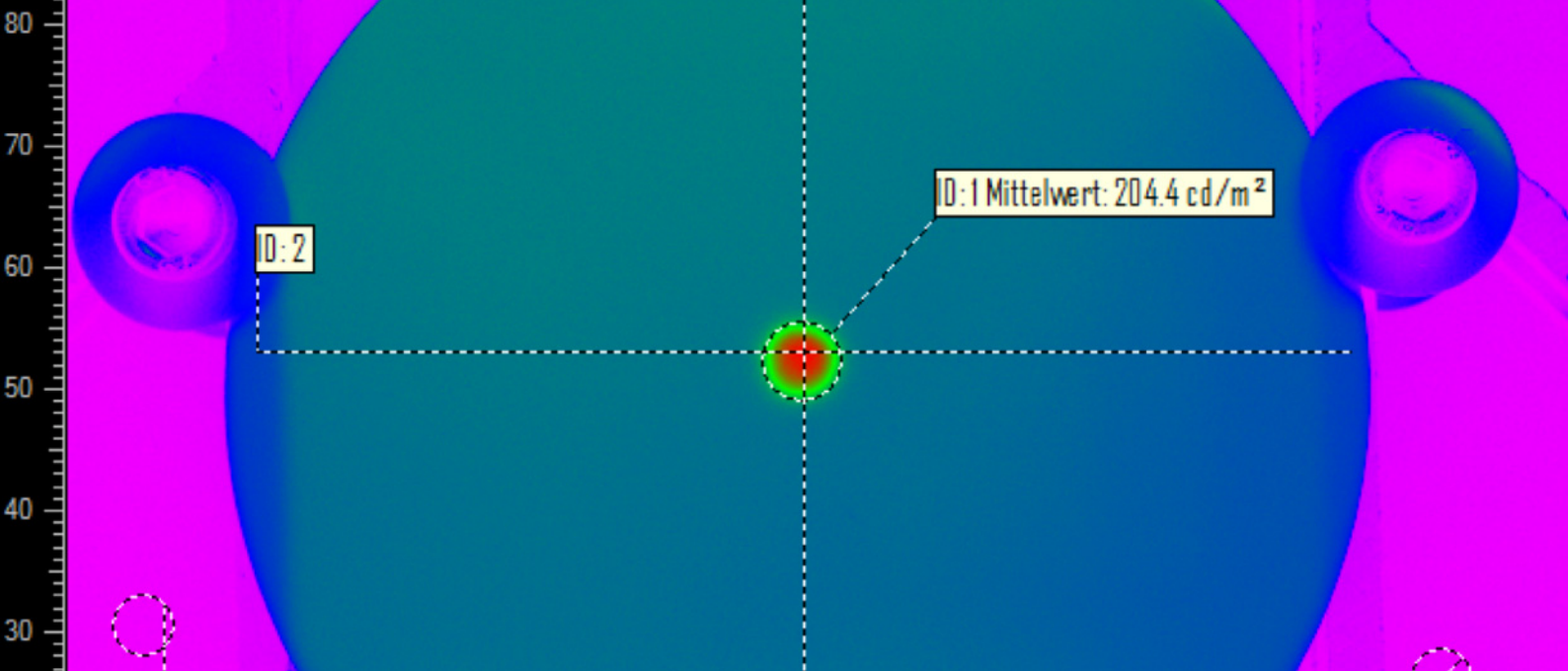


Scattering Behaviour



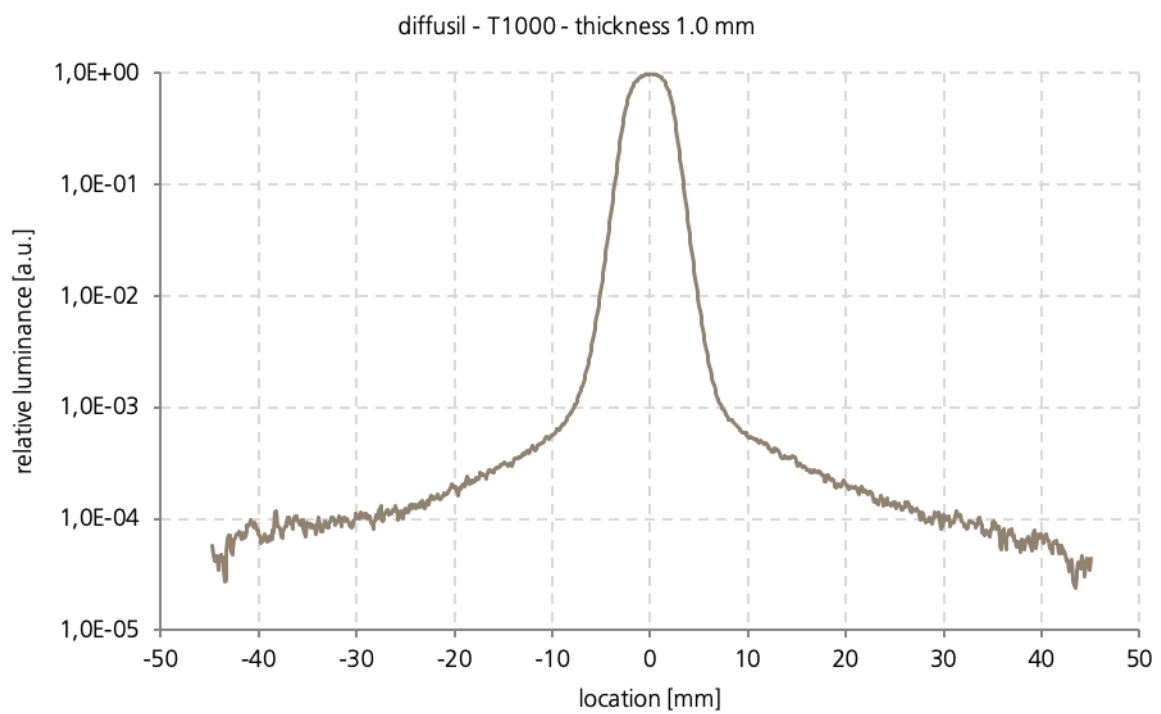
Scattering Behaviour

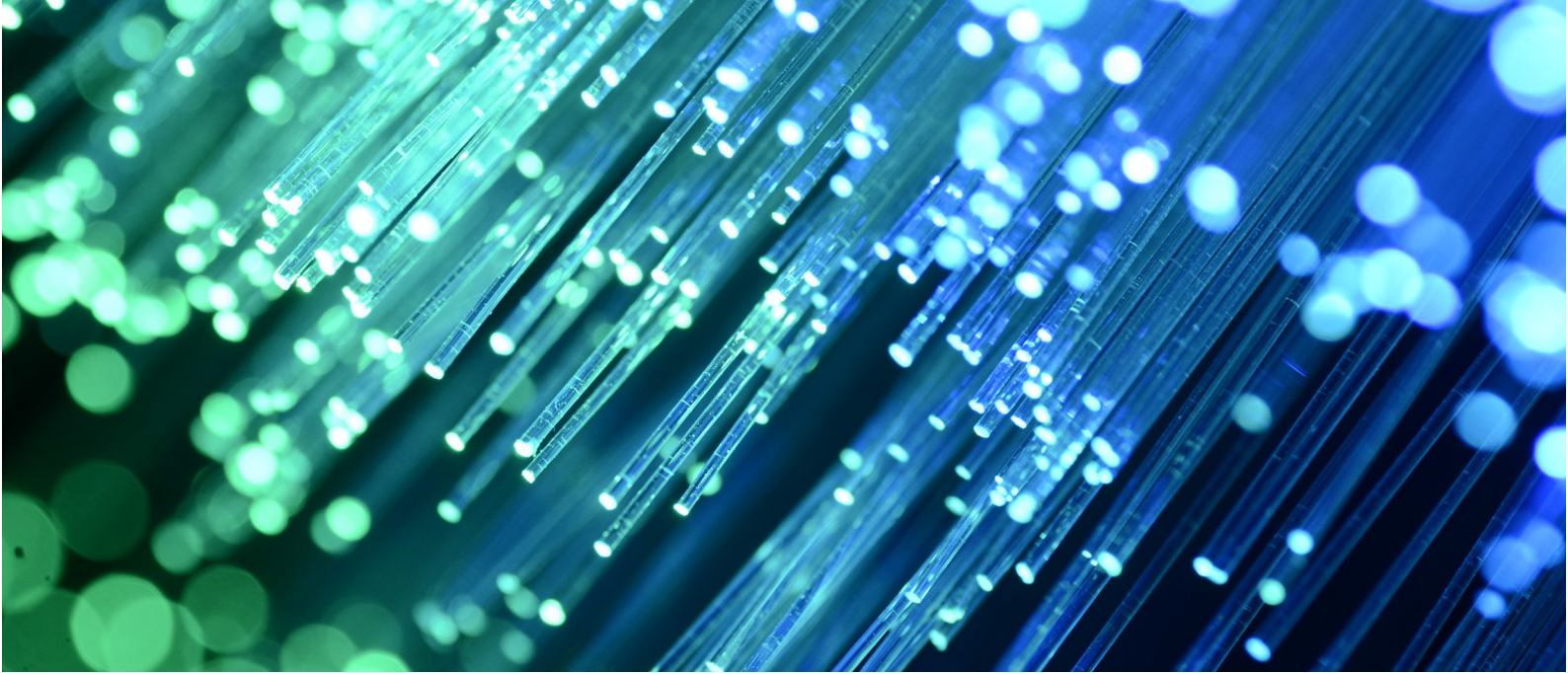




Luminance

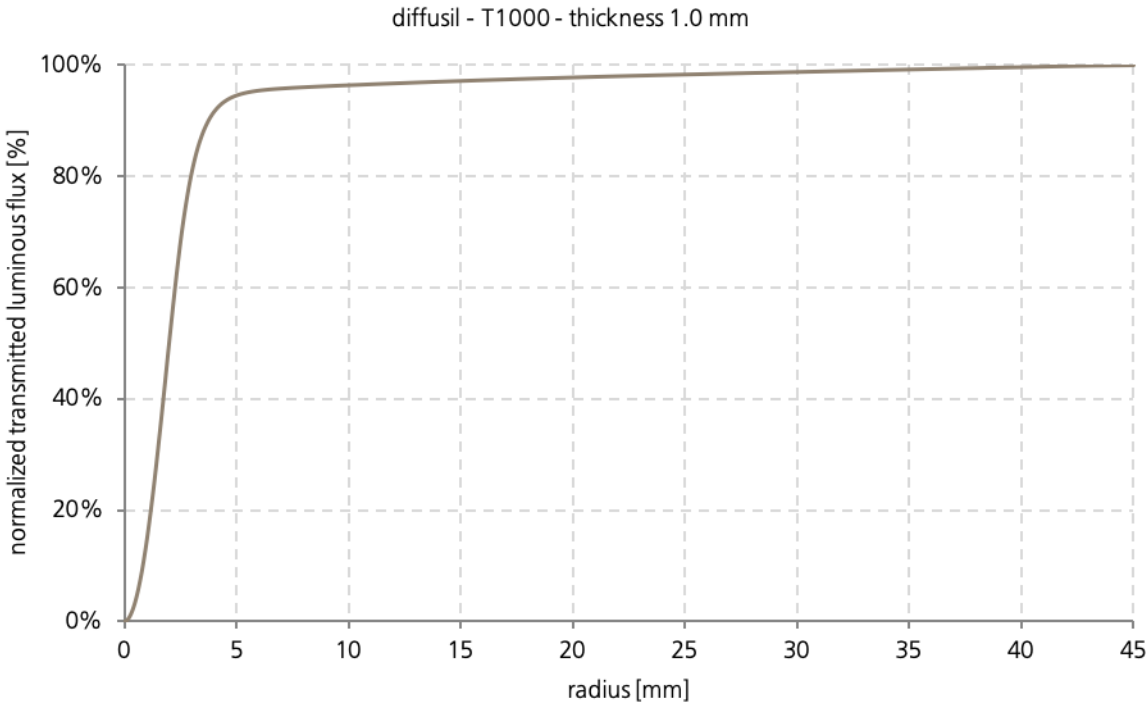
When irradiating a sample with a thickness of 1 mm with a collimated beam of 5 mm diameter, the following luminance distribution is shown due to the volume scattering. This distribution refers to the light exit surface of the material with a vertical view on the exit surface.





Luminance and Luminous Flux

Radial-integral view provides information on the radius in which luminous flux component of the total transmission is transmitted.





Further Material Properties

Chemical Material Properties

Typical impurity in ppm/weight

Al	Ca	Cu	Fe	K	Li	Mg	Na	Ti	Zr
< 0.08	< 0.03	< 0.01	< 0.02	< 0.04	< 0.01	< 0.01	< 0.02	< 0.01	< 0.05

Acid resistance: class 1; according to DIN 12 116
 Alkali resistance: class 1; according to DIN 52 322

Mechanical Material Properties

Density	ca. 2.15 - 2.19 g/cm ³	(depending on the chosen opacity)
Porosity	ca. 0.01 - 5.0%	(depending on the chosen opacity)
Elasticity modulus	ca. 50 - 54 kN/mm ²	(depending on the chosen opacity)
Bending stress	ca. 80 - 84 N/mm ²	(depending on the chosen opacity)

Thermotechnical Material Properties

Thermal coefficient of expansion	ca. $0.00 - 0.40 \cdot 10^{-6} \cdot \text{K}^{-1}$ (20 °C – 500 °C)
Thermal conductivity	ca. 1.24 W/m · K (@ 20 °C) ca. 1.35 W/m · K (@ 100 °C) ca. 1.47 W/m · K (@ 200 °C) ca. 1.70 W/m · K (@ 400 °C) ca. 1.85 W/m · K (@ 600 °C)
Softening temperature	ca. 1,600 °C
Max. working temperature, shortterm	ca. 1,200 °C
Max. working temperature, continuous	ca. 1,000 °C

Electrical Material Properties

Dielectric strength	ca. 3.70 (20 °C 1×10^6 Hz) ca. 3.77 (23 °C 9×10^8 Hz) ca. 3.81 (23 °C 3×10^{10} Hz)
Electrical resistivity	ca. $1 \times 10^{18} \Omega \cdot \text{cm}$ (@ 20 °C) ca. $1 \times 10^{10} \Omega \cdot \text{cm}$ (@ 400 °C) ca. $6.3 \times 10^6 \Omega \cdot \text{cm}$ (@ 800 °C)