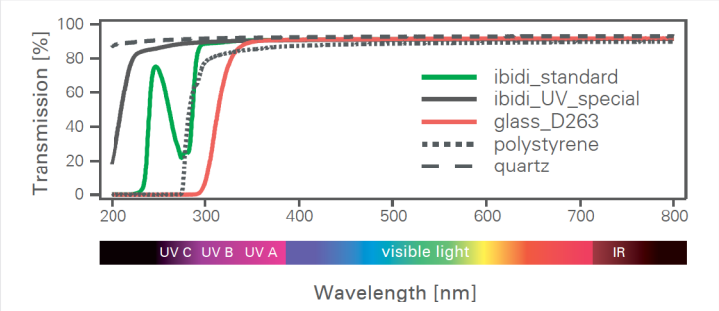
Material Dispersion / Abbe Number > 55

Material dispersion is defined as a variation in the refractive index, depending on the wavelength. In other words, dispersion is a measurement for chromatic aberrations. The Abbe number summarizes the dispersion into one value. It is calculated from the refractive indices of three different wavelengths. The higher the Abbe number, the better the optical quality for microscopy. A material with an Abbe number larger than 55 is considered to be well suited for high resolution microscopy. The ibidi Standard Bottom has an Abbe number of 56 in comparison to D 263M Schott borosilicate glass, which has an Abbe number of 55.

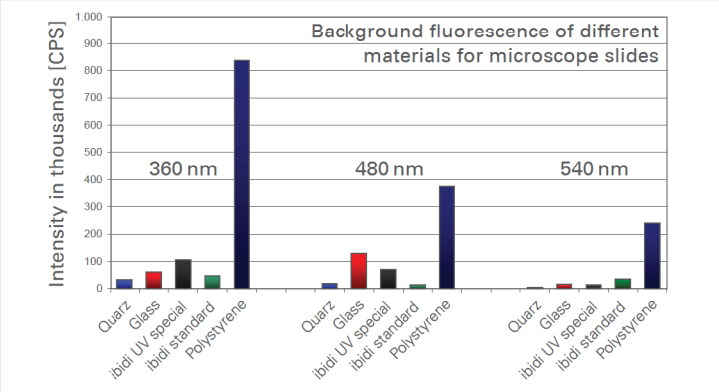
Transmission

Transmission is a crucial parameter for microscopy. It describes a material's ability to permit the passage of light through it at specific wavelengths. The more light that is absorbed, the less it can contribute to fluorescence excitation and image acquisition. Unlike normal cell cultureware, which is not transparent in UV light region below 300 nm, the ibidi Standard Bottom also permits light transmission in wavelengths below 300 nm.

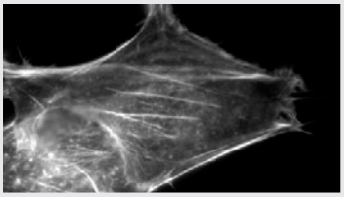


Low Fluorescence Background (Autofluorescence)

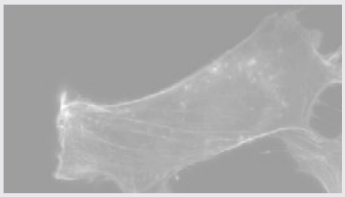
Autofluorescence is a material property that describes the intrinsic fluorescence value of the pure material. The fluorescence signal comes from the material and contributes to the imaging process as noise. This can be annoying when trying to image faint fluorescence signals. Depending on the wavelength and type of material, all materials show some degree of autofluorescence signals.



Autofluorescence Influences the Signal-to-Noise Ratio



ibidi Standard Bottom: Low autofluorescence



Culture Flask: High autofluorescence

Material	Thickness	Refractive Index n_D (589 nm)	Autofluorescence	Abbe Number
ibidi Standard Bottom	# 1.5	1.52	Low	56
ibidi UV bottom	# 1.0	1.53	Very low	58
Glass coverslip D 263 M	# 1.5	1.52	Low	55
Quartz glass coverslip	# 1.5	1.45	Very low	67
Polystyrene (normal Petri Dishes and culture flasks)	Various	1.56	High	33
PC	Various	1.59	High	31
PMMA	#1.5	1.49	Medium	57