

**DIFFRACTION LIMIT**

The resolution of a lens is limited by diffraction and calculated using the [effective F-number K'](#). The best possible resolution is achieved by closing the lens aperture by 1 to 2 steps, so that the lens resolution approaches the diffraction limit. Adjacent image elements become distinguishable when their distance is:

$$\Delta y' \geq 2.4 \cdot \lambda \cdot K'$$

With a optical wavelength  $\lambda$  for visible radiation of 550 nm this leads to e.g.:

**Effective F-number K' Diffraction limit Resolution\*  $\Delta y'$ min [ $\mu\text{m}$ ]**

2	2.6
2.8	3.7
4	5.3
5.6	7.4
8	10.8
11	14.5
16	21.1
22	29

\*at wavelength  $\lambda = 550$  nm

**EXAMPLE**

Effective F-number  $K' = 8$

Wavelength  $\lambda = 550$  nm

Diffraction Limit  $\Delta y'$ min = 10.6  $\mu\text{m}$



## LEGAL NOTICE

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