

On and off-axis parabolic mirrors

Parabolic mirrors are available for use from the UV(200 to 400nm) to the IR (1 to 40µm) wavebands. Parabolic mirrors comprise; Off-axis parabolic metal mirrors and precision parabolic mirrors. These mirrors are made from thin films of material that have differing refractive indices and thickness. The mirrors will be achromatic across all wavelengths as the rays are focused by a mirror that has no chromatic aberration. However, other aberrations form part of the design. The parabolic mirror will focus all of its on-axis rays to a single point. But, with the rays coming in at, for example, a few degrees above the axis will produce aberrations that spoil the image quality. Hence, whole parabolic mirrors for on-axis and near off-axis rays produce acceptable images and are used for astronomical mirrors. The off-axis parabolic is a small section cut from the whole mirror. The effect is to minimize the off-axis aberrations that would be there for the 'whole' parabolic mirror, but at the cost of having a small section from the 'whole' mirror.

The most frequently requested specifications for on- and off-axis parabolic mirrors are as follows:

Diameter range	25.4mm to 500mm (1" to about 20")
Diameter tolerance	better than ± 1.5 mm
Centre thickness	about 20% of diameter for thermal stability
Centre thickness tolerance	better than ± 0.2 mm at room temperature
Clear aperture	90% of diameter
Surface form error	better than $\lambda/4@ 632.8$ nm
Surface quality	< 20-10 (precision parabolic)
Surface roughness	better than 50 Angstroms RMS (off-axis parabolic)
Coating finish	ground back and edge
Chamfer	0.3x0.3@45°

Coatings

Various surface coats are available, such as: protected aluminium, enhanced aluminium, bare gold, and protected gold.

Our capabilities are always expanding so if your requirement is not mentioned above please enquire as we have many years of experience in this field.

Contact our multilingual technical sales team and discover how Knight Optical's high quality on- axis and off-axis parabolic mirror capabilities and service can improve your instrumentation and supply chain experience.