

Copper optics capabilities

In the infra-red wavebands from 1µm to over 10µm the copper surface will maintain its reflectivity of over 90%. However, copper does tarnish and therefore needs, for example, a transparent coating to block the tarnishing process or used in an environment where tarnishing cannot occur. Copper has a high thermal transmission and therefore can be used for high intensity light systems where even an absorption of a few percent would degrade the mirror. Copper mirrors are used, for example, within the gain and summing areas of Diode Pumped Solid-State Lasers (DPSSLs) where the small size and heat removal present challenges.

The most frequently requested specifications for copper metal optics are as follows:

Diameter range	25.4mm to 101.6mm
Diameter tolerance	better than ± 0.1 mm
Centre thickness	up to 50mm
Centre thickness tolerance	better than ± 0.05 mm
Clear aperture	90%
Centration tolerance	better than 1 arc minute
Form error	better than $\lambda/4$ (633nm) over aperture
Surface quality	< 40-20 scratch/ dig
Surface radius tolerance	less than 1 fringe over aperture
Linear dimension	up to 200mm
Linear tolerance	better than ± 0.1 mm
Angular tolerance	better than 5 arc minutes
Coating finish	ground
Chamfer	0.3x0.3@45°

Coatings

BBAR coating @0.2-9µm wavelengths

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 copper optics capabilities and service can improve your instrumentation and supply chain experience.