

Copper Mirrors for High Power, CO₂ Lasers

REO copper high reflectors are ideal for beam delivery and beam shaping tasks involving high power CO₂ lasers. In particular, these mirrors offer a combination of high reflectivity (>99.7% at 10.6 μm), excellent surface quality (40-20) and low scatter (surface roughness <50Å), and are produced from OFHC (oxygen free, high thermal conductivity) copper in order to deliver superior optical performance and maximum laser damage threshold. These CO₂ laser mirrors can be produced with plano, spherical or cylindrical surfaces over the 6 mm to 150 mm size range. In addition, through holes, mounting flanges and other mechanical features can be easily accommodated.



High power CO₂ laser beams can be particularly stressful to dielectric coatings and both the design and production of these coatings often involves trade-offs in performance, lifetime and cost. For this reason, REO can employ either traditional electron beam (e-beam) or Advanced Plasma Source (APS) coating technologies in order to deliver the precise combination of durability, damage resistance and cost characteristics required for a specific application. Furthermore, the optics are handled in a controlled environment throughout the manufacturing process, thus preventing any deterioration of the pristine optical surfaces prior to coating, and maximizing thin film adhesion and laser damage threshold.

Typical Specifications

Substrate Material	OFHC Copper
Design wavelengths	9.4 μm or 10.6 μm
Reflectivity (at 10.6 μm)	>99.7%
Surface quality	40-20
Surface roughness	<50Å
Surface shape	plano, spherical or cylindrical
Size range	6 mm to 150 mm
Temperature range	-196 °C to 400 °C
Humidity range	0 to 100%