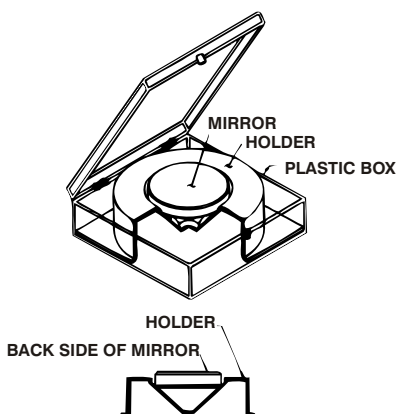




High energy lasers require the best mirrors available. Uncoated copper mirrors by SPAWR offer the highest quality and surface damage threshold available for medium and long wave IR lasers. High reflectance coatings on these mirrors are typically not required, however, they are available as a vacuum deposited protected silver coating or an electro chemically deposited hard gold coating.



Description	Laboratory Grade	Industrial Grade
Reflectivity	99% @ 10.6 $\mu$	99% @ 10.6 $\mu$
Surface Accuracy	$\lambda/20$	$\lambda/10$
Surface Smoothness	30 $\text{\AA}$ RMS	45 $\text{\AA}$ RMS
Scratch/Dig	20/10	60/40
Damage Threshold <sup>(1)</sup>	$>2.5 \times 10^5 \text{ J/cm}^2 \sqrt{s}$	$10^5 \text{ J/cm}^2 \sqrt{s}$
Material	High Purity Copper	High Purity Copper
<small>Mirrors larger than 6" diameter are flat or spherical to</small>	$\lambda/10$ @ 10.6 and 35 RMS	$\lambda/5$ @ 10.6 $\mu$

(1) SPAWR, "Metal Mirror Selection Guide"

Typical shipping/storage container for 1" to 2" diameter mirrors.

Laboratory Grade Catalog No.	Industrial Grade Catalog No.	Outside Diameter		Thickness		Approximate Weight
		(mm)	(inches)	(mm)	(inches)	
LCu-001	ICu-001	25.4	1	6.4	0.25	1 oz.
LCu-015	ICu-015	38.1	1.5	6.4	0.25	2 oz.
LCu-021	ICu-021	50.8	2	9.7	0.38	6 oz.
LCu-041	ICu-041	76.2	3	12.7	0.50	1 lb.
LCu-061	ICu-061	101.6	4	19.0	0.75	3 lb.
LCu-081	ICu-081	127.0	5	22.4	0.88	5 lb.
LCu-101	ICu-101	152.4	6	25.4	1.00	8 lb.
LCu-121	ICu-121	203.2	8	38.1	1.50	24 lb.
LCu-141	ICu-141	254.0	10	44.5	1.75	45 lb.
LCu-161	ICu-161	304.8	12	50.8	2.00	38 lb.
LCu-201	ICu-201	406.4	16	76.2	3.00	75 lb.

### GENERAL INFORMATION:

- SPAWR is a major supplier of state-of-the-art metal mirrors for use in very high power laser research.
- The highest quality metal mirrors, which have provided the highest CO<sub>2</sub> laser damage threshold, are produced by SPAWR.
- Optical characteristics are for 80% of the diameter of the mirror, and  $\lambda = 10.6\mu$
- Standard radii are concave and include 1M, 5M, 10M and 20M, for up to 4" Diameter.
- Mirrors larger than 16" diameter, including custom mirrors, will be quoted on request.
- A protective shipping/storage container is provided with each mirror.
- The 12" and 16" diameter mirrors are a lightweight ribbed structure.