

# METALLIC COATING MIRRORS

Metallic coatings are excellent broadband reflectors. Aluminium, silver or gold may be used. Aluminium has the broadest bandwidth extending from 200 nm to the near IR. Silver has the highest average reflectance and gold reflects well at longer wavelengths of infrared but cuts off at about 500 nm giving rise to its distinctive colour.

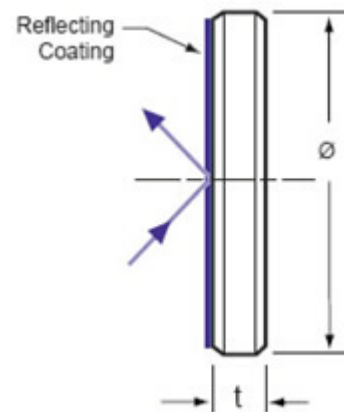
As metal coatings are prone to oxidation, they are normally protected with a thin layer of silicon dioxide. If a multilayer stack is used instead of a simple dielectric layer, it is possible to enhance the reflectance of metallic mirrors. "Enhanced" metal mirrors should be selected when the highest reflectance is required.

## Standard Specifications:

|                       |                        |
|-----------------------|------------------------|
| Optical Material:     | BK7, Silicon           |
| Dimension Tolerance:  | +0.0,-0.15mm           |
| Clear Aperture:       | >90%                   |
| Angular Tolerance:    | ±30 arc minutes        |
| Surface Quality:      | 20-10 scratch and dig  |
| Wavefront Distortion: | $\lambda/4$ at 632.8nm |
| Rear Surface Quality: | Fine Ground            |
| Bevel:                | <0.25mm X 45           |

## Coating Specifications:

|                        |  |
|------------------------|--|
| Technology:            | Thermal Evaporation(Resistive Heating)   |
| Adhesion & Durability: | Per MIL-C-675A, Insoluble in lab solvent |
| Angle of Incidence:    | 45 Degrees                               |



## Standard For High Power Laser Mirrors:

| Dimension(mm) | T(mm) | Shape    | Optical Material | Coating        | Product Number |
|---------------|-------|----------|------------------|----------------|----------------|
| 10            | 5.0   | Circular | BK7              | Al Protect     | UQT-LMCM0101   |
| 10            | 6.0   | Circular | BK7              | Enhance-Al     | UQT-LMCM0102   |
| 10x10         | 5.0   | Square   | BK7              | Silver Protect | UQT-LMCM0103   |
| 10            | 5.0   | Circular | Silicon          | Gold Protect   | UQT-LMCM0104   |
| 10x10         | 6.0   | Square   | BK7              | Enhance-Al     | UQT-LMCM0105   |
| 15            | 6.0   | Circular | BK7              | Al Protect     | UQT-LMCM0106   |
| 15x15         | 5.0   | Square   | BK7              | Enhance-Al     | UQT-LMCM0107   |
| 15            | 5.0   | Circular | BK7              | Silver Protect | UQT-LMCM0108   |
| 15            | 6.0   | Circular | Silicon          | Gold Protect   | UQT-LMCM0109   |
| 20x20         | 5.0   | Square   | BK7              | Al Protect     | UQT-LMCM0110   |
| 20            | 5.0   | Circular | BK7              | Enhance-Al     | UQT-LMCM0111   |
| 20            | 6.0   | Circular | BK7              | Silver Protect | UQT-LMCM0112   |
| 20x20         | 6.0   | Square   | Silicon          | Gold Protect   | UQT-LMCM0113   |
| 25            | 5.0   | Circular | BK7              | Al Protect     | UQT-LMCM0114   |
| 25            | 5.0   | Circular | BK7              | Enhance-Al     | UQT-LMCM0115   |
| 25x25         | 6.0   | Square   | BK7              | Silver Protect | UQT-LMCM0116   |

|           |     |          |         |                |              |
|-----------|-----|----------|---------|----------------|--------------|
| 25        | 5.0 | Circular | Silicon | Gold Protect   | UQT-LMCM0117 |
| 30        | 5.0 | Circular | BK7     | Al Protect     | UQT-LMCM0118 |
| 30        | 6.0 | Circular | BK7     | Enhance-Al     | UQT-LMCM0119 |
| 30x30     | 6.0 | Square   | Silicon | Gold Protect   | UQT-LMCM0120 |
| 40        | 5.0 | Circular | BK7     | Enhance-Al     | UQT-LMCM0121 |
| 40x40     | 6.0 | Square   | BK7     | Al Protect     | UQT-LMCM0122 |
| 50.8      | 8.0 | Circular | BK7     | Enhance-Al     | UQT-LMCM0123 |
| 50.8x50.8 | 8.0 | Square   | BK7     | Al Protect     | UQT-LMCM0124 |
| 50.8      | 8.0 | Circular | BK7     | Silver Protect | UQT-LMCM0125 |

Please Contact [ultiQuest](#) for other dimensions in prototype and production quantities.

#### NOTES!

- ➔ Enhanced-aluminum reflection mirrors with reflectance improved by about 5% produced by vacuum-depositing several layers of other dielectric films, replacing the protective coating of MgF2 on aluminum mirrors. The enhanced-aluminum mirrors are produced according to specifications given for wavelength and incident angle used, since the protective layer is a dielectric multilayer, no matter how few the number of layers.
- ➔ An MgF2 film is vacuum-deposited as the protective coating of aluminum flat mirror, and the reflectance of light in the ultraviolet region can be increased to the maximum (about 85%), by controlling the thickness of this protective coating.
- ➔ Gold mirrors of silicon substrates have higher durability than glass substrates because gold coating adheres to silicon much stronger and silicon substrate has higher thermal conductivity (thermal conductivity of silicon is 111 times against glass).
- ➔ Since gold coating has an extremely low mechanical strength, it can only be blown by air to clean its coating surface. It must be handled carefully.
- ➔ The reflectance curves are based on actual measurements and may be different with production lots.
- ➔ The surface flatness is the reflected wavefront distortion of the surface before coating.
- ➔ Be sure to wear laser safety goggles when checking optical path and adjusting optical axis