

Gold-Coated Mirrors

All-in-One: Precision Polymer Optics and Gold Coating



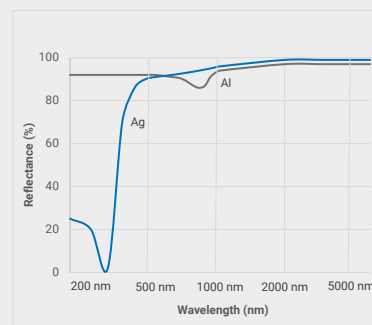
The unique design freedom provided by plastic injection molding enables the cost-effective production of highly complex mirrors—for example, with multiple functional surfaces or microstructures. Plastic mirrors offer general advantages due to their lower weight and high impact resistance.

Thanks to our high-precision tool inserts with outstanding surface quality, our mirrors come close to the quality of glass mirrors. This makes them suitable for imaging optics—such as mirrors for head-up displays—and goes well beyond their classic role as cost-effective reflectors in lamps and headlights.

Plastic mirrors require specific pre-treatment steps prior to metallization in order to achieve adhesion comparable to that of glass mirrors. VIAOPTIC has many years of experience with carefully selected materials and coating processes for gold metallization. Based on our standard systems using PC or COP, excellent adhesion and durability can be ensured (see table for details).

In addition, we're happy to support you in developing a customized coating system tailored to your application, and we'll test all required performance and resistance criteria.

Reflectivity Values



Gold PVD coatings deliver the highest reflectivity for applications in the infrared spectrum. Gold shows a significant performance advantage over aluminum particularly around 900 nm. Its greatest advantage over silver is its superior durability — since gold does not oxidize or corrode, our gold-coated mirrors have proven themselves in demanding, long-term field applications. No corrosion protection layer is needed.

Typical applications include mirrors for laser scanners or LiDAR distance measurement sensors, which often operate in the near-infrared range. These mirrors are also suitable for gas spectroscopy in the mid-infrared range. Due to the high design flexibility and precision, beamsplitters can also be implemented as gold-coated prism structures.

Environmental Requirements

Our coating processes are optimized for the specific requirements of plastic substrates. As a result, we achieve outstanding adhesion and environmental resistance. Adhesion is tested both before and after various environmental stress tests using a standardized tape test.

Test Conditions	Details
Cold	-25°C, 96h
Dry Heat	+80°C, 96h
Temperature Cycle	-25°C, 3h +80°C, 3h