

MRAK25-E03 - January 08, 2020

Item # MRAK25-E03 was discontinued on January 08, 2020. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

KNIFE-EDGE RIGHT-ANGLE PRISM MIRRORS

- ▶ Precision Cut Prisms Feature Bevel-Free 90° Angle
- ▶ Dielectric, Silver, Gold, and Aluminum Coatings Available
- ▶ 25 mm x 25 mm Faces

Application Idea

MRAK25-M01 Mounted on a KM100B Kinematic Platform Mount

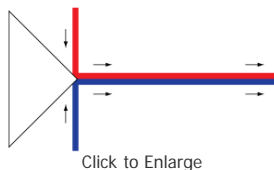


OVERVIEW

Features

- Right-Angle Prism with Mirror-Coated Legs
- "Knife Edge" Between the Two Coated Surfaces for Combining or Separating Beams
- 25 mm x 25 mm Reflective Surfaces

Thorlabs' Knife-Edge Right-Angle Prism Mirrors feature reflective coatings on the two legs and offer a clear aperture extending across the 90° angle between the coated surfaces. They are manufactured from N-BK7 and have 25 mm x 25 mm reflective legs. These prism mirrors are offered with one of the following reflective coatings: UV enhanced aluminum, protected aluminum, protected gold, protected silver, or a broadband dielectric coating for the 750 - 1100 nm range. Please see the *Specs* and *Graphs* tabs above for details on the reflectivity of the various coatings.



Click to Enlarge

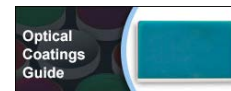
The precision corner between the two coated surfaces allows two counterpropagating beams to be made collinear with the output orthogonal to the input, as shown in the figure to the left. They can also be used to split a single input beam aimed directly at the knife edge. The prisms are ideal for situations where it is undesirable to use a beamsplitting cube, such as due to the geometry of the setup. Some diffraction and scatter will occur whenever a beam is split using these prisms.

These prisms feature a coating that extends to the edge of the optic. Care should be used when handling the prisms, as the coated edge is very delicate and can be chipped easily.

While the hypotenuse is polished, these mirrors are not intended for use as retroreflectors due to the adhesion layers used in the coating process. As a result, no specifications are given for the polished hypotenuse of the prism. For retroreflection applications we suggest the PS911K, an uncoated version of our knife edge prism, or our selection of mounted and unmounted retroreflectors. Thorlabs also offers a selection of hypotenuse-coated right-angle prism mirrors.

Care and Handling

Silver coated mirrors require additional care due to their susceptibility to damage from environmental conditions and improper handling. Fingerprints, contact with abrasive surfaces, and environments with high humidity or temperature will diminish the effectiveness of the protective overcoat leaving the silver coating susceptible to oxidation and degradation. When working with silver mirrors, follow standard practices for handling optics. Latex gloves or similar protective coverings are recommended to prevent oil and other residues on the user's fingers from reaching the optical surface. Even with such precautions, care should be taken not to touch the mirrored face or edges. Silver mirrors should be used and stored in areas at room temperature with minimal humidity. For information on how to clean mirrors and other optics, visit our [Optic Cleaning Tutorial](#).



Right Angle Prism Mirror Selection Guide

Metallic Coatings (250 nm - 20 μm)

Dielectric Coatings (400 nm - 1100 nm)

Laser Line (532 and 1064 nm)

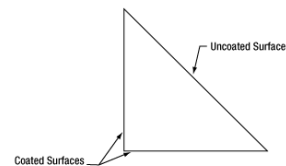
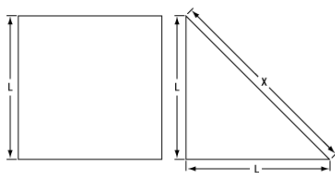
Knife Edge (250 nm - 20 μm)

S P E C S

Item #	MRAK25-F01	MRAK25-G01	MRAK25-P01
Coating (On Legs)	UV Enhanced Aluminum	Protected Aluminum	Protected Silver
Reflectance ^a	$R_{avg} > 90\%$ (250 - 450 nm)	$R_{avg} > 90\%$ (450 - 2000 nm) $R_{avg} > 95\%$ (2 - 20 μm)	$R_{avg} > 97\%$ (450 - 2000 nm) $R_{avg} > 96\%$ (2 - 20 μm)
Substrate Material	N-BK7		
L ^b	25.0 mm		
X ^b	35.4 mm		
Clear Aperture (Coated Surfaces)	Entire Face Length and Width, Excluding a 1.25 mm Border Along All Beveled Edges		
Clear Aperture (Hypotenuse)	90% of Face Length and Width		
Surface Flatness (All Surfaces)	$\lambda/8$ @ 632.8 nm Over the Clear Aperture (Peak to Valley)		
Surface Quality	20-10 Scratch-Dig		

Item #	MRAK25-M01	MRAK25-E03
Coating (On Legs)	Protected Gold	Broadband Dielectric
Reflectivity ^a	$R_{avg} > 96\%$ (800 nm - 20 μm)	R_s and $R_p > 99\%$ (750 - 1100 nm)
Substrate Material	N-BK7	
L ^b	25.0 mm	
X ^b	35.4 mm	
Clear Aperture (Coated Surfaces)	Entire Face Length and Width, Excluding a 1.25 mm Border Along All Beveled Edges	
Clear Aperture (Hypotenuse)	90% of Face Length and Width	
Surface Flatness (All Surfaces)	$\lambda/8$ @ 632.8 nm Over the Clear Aperture (Peak to Valley)	
Surface Quality	20-10 Scratch-Dig	

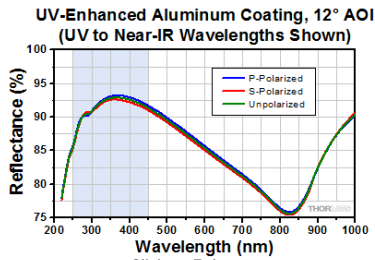
- For an angle of incidence from 0° to 45°.
- Defined in the diagram below.



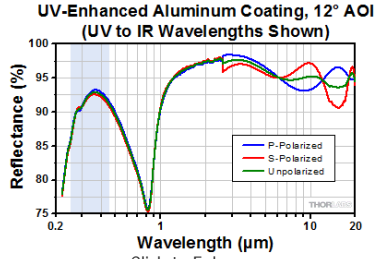
G R A P H S

All data shown below is for unpolarized light, unless otherwise stated. The shaded regions in the graphs denote the ranges over which we guarantee the specified reflectance. Please note that the reflectance outside of these bands is typical and can vary from lot to lot, especially in out-of-band regions where the reflectance is fluctuating or sloped.

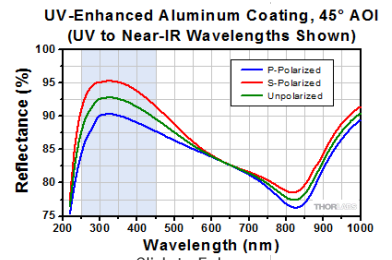
UV-Enhanced Aluminum Coating (250 - 450 nm)



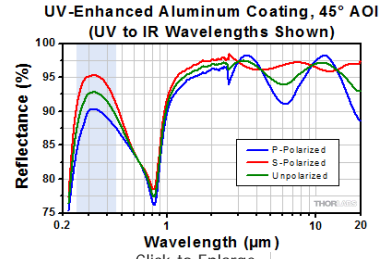
Excel Spreadsheet with Raw Data for UV-Enhanced Aluminum



Excel Spreadsheet with Raw Data for UV-Enhanced Aluminum

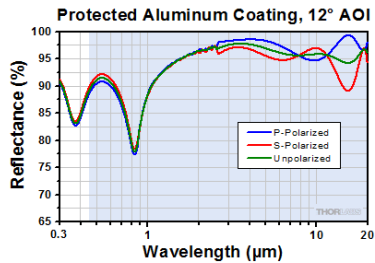


Excel Spreadsheet with Raw Data for UV-Enhanced Aluminum

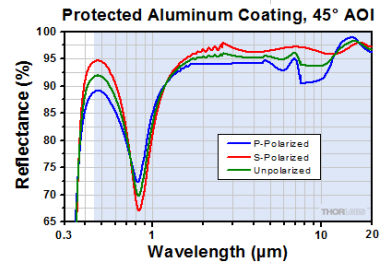


Excel Spreadsheet with Raw Data for UV-Enhanced Aluminum

Protected Aluminum Coating (450 nm - 20 μm)

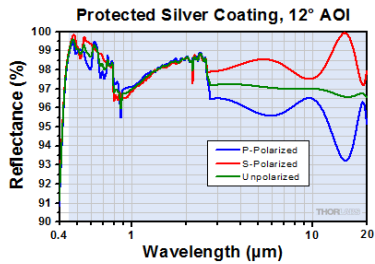


Excel Spreadsheet with Raw Data for Protected Aluminum

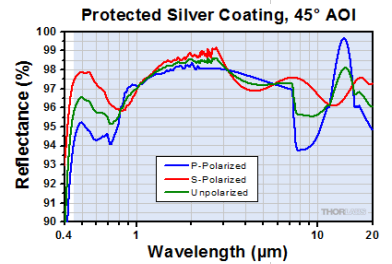


Excel Spreadsheet with Raw Data for Protected Aluminum

Protected Silver Coating (450 nm - 20 μm)

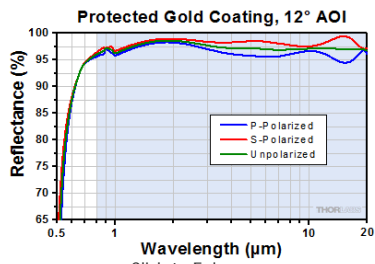


Excel Spreadsheet with Raw Data for Protected Silver

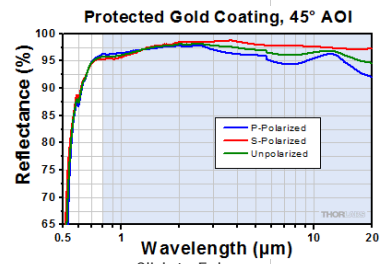


Excel Spreadsheet with Raw Data for Protected Silver

Protected Gold Coating (800 nm - 20 μm)



Excel Spreadsheet with Raw Data for Protected Gold

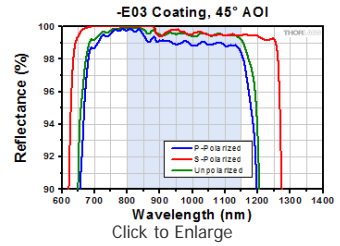
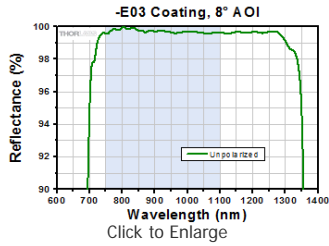


Excel Spreadsheet with Raw Data for Protected Gold

These plots show the reflectance of our -E03 (750 - 1100 nm) dielectric coating for a typical coating run. The shaded region in each graph denotes the spectral range over which the coating is highly reflective. Due to variations in each run, this recommended spectral range is narrower than the actual range over which the optic will be highly reflective. If you have any concerns about the interpretation of this data, please contact Tech Support. For applications that require a

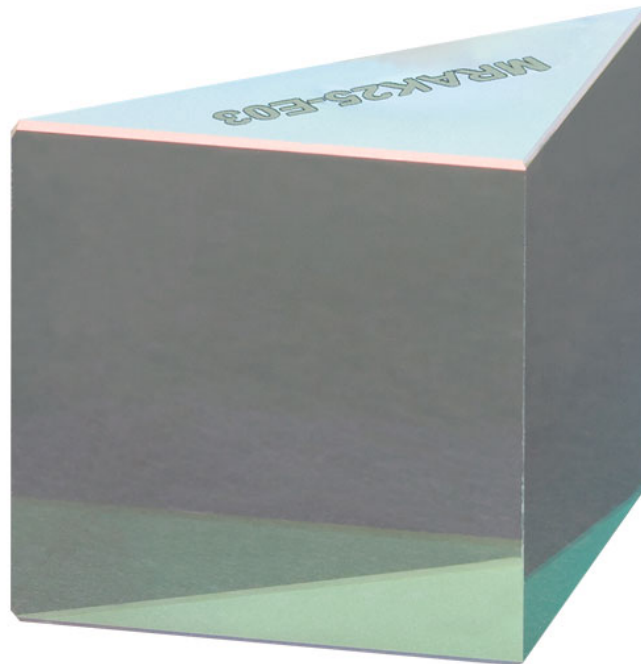
mirror that bridges the spectral range between the dielectric coatings, please consider a metallic mirror.

-E03 Coating (750 - 1100 nm)

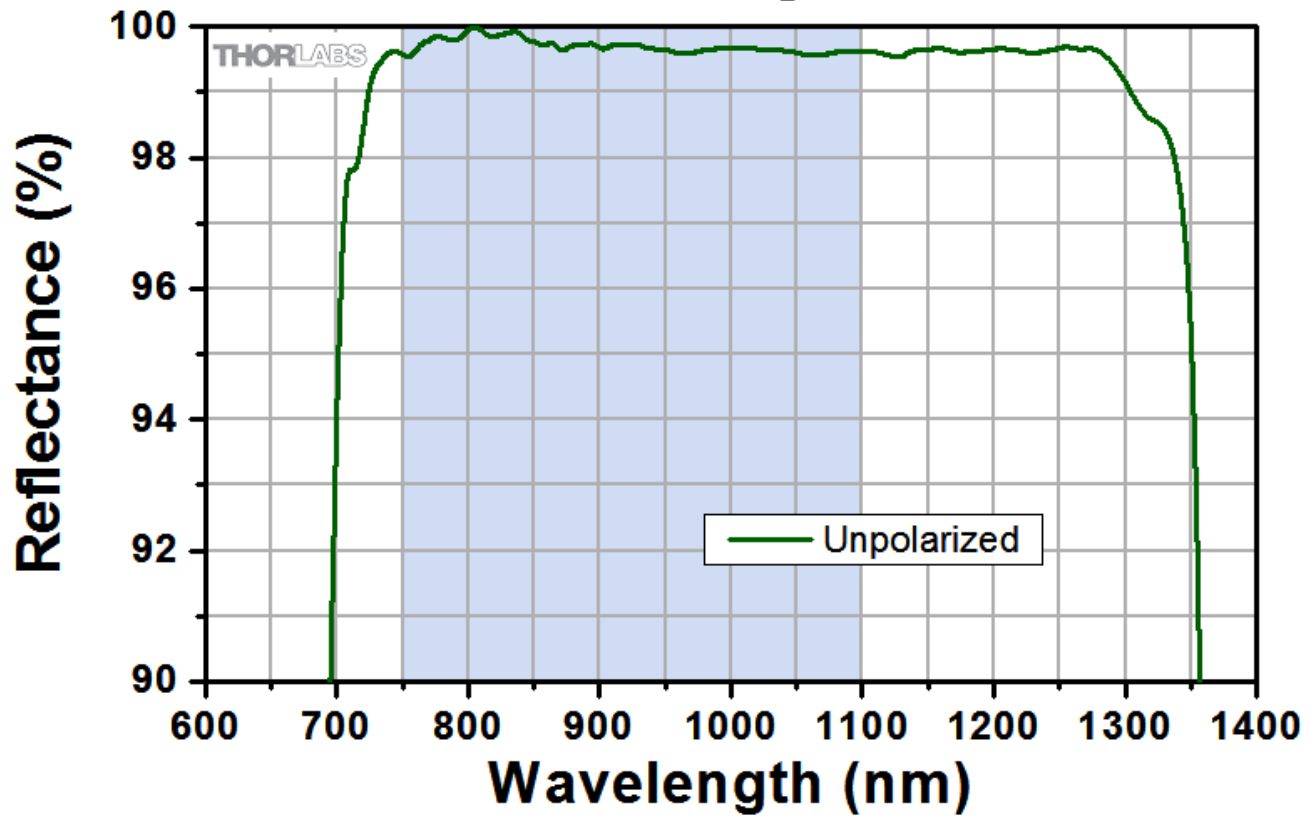


Excel Spreadsheet with Raw Data for -E03 Coating, 8° and 45° AOI

Part Number	Description	Price	Availability
MRAK25-F01	Customer Inspired! Knife-Edge Right-Angle Prism UV Enhanced Aluminum Mirror, 250-450 nm	\$133.10	Today
MRAK25-G01	Customer Inspired! Knife-Edge Right-Angle Prism Prot. Aluminum Mirror, 450 nm-20 μm	\$133.10	Today
MRAK25-P01	Customer Inspired! Knife-Edge Right-Angle Prism Prot. Silver Mirror, 450 nm-20 μm	\$133.10	Today
MRAK25-M01	Customer Inspired! Knife-Edge Right-Angle Prism Prot. Gold Mirror, 800 nm-20 μm	\$133.10	Today
MRAK25-E03	Customer Inspired! Knife-Edge Right-Angle Prism Dielectric Mirror, 750-1100 nm	\$220.75	Lead Time



-E03 Coating, 8° AOI



-E03 Coating, 45° AOI

