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THORLABS

CM750-150-E04 - April 19, 2021

Item # CM750-150-E04 was discontinued on April, 19, 2021. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

CONCAVE MIRRORS: IR DIELECTRIC COATING (1280 - 1600 NM)

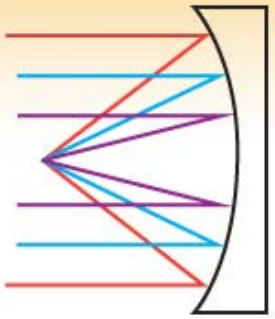
- **Focal Lengths from 12 - 200 mm**
- **Ø1/2", Ø1", Ø2", or Ø75 mm**
- **Dielectric Coating for 1280 - 1600 nm**
- **No Chromatic Aberration Introduced**

CM750-150-E04
(Ø75 mm)

CM508-150-E04
(Ø2")

CM254-100-E04
(Ø1")

CM127-050-E04
(Ø1/2")



Focus Polychromatic Beams without Chromatic Aberration

Hide Overview

OVERVIEW

Features

- Dielectric Coating Range; 1280 - 1600 nm (-E04)
- >99% Average Reflectivity in Dielectric Coating Range
- Four Diameter Options: 1/2", 1", 2", and 75 mm
- Focal Lengths Range from 12 mm - 200 mm

Thorlabs' Broadband Dielectric Concave Mirrors are designed for light collection, imaging, and focusing applications. These reflective optics focus light without introducing chromatic aberration, making them especially suitable for broadband sources.

All of the mirrors on this page can be mounted by our Precision Kinematic Mirror Mounts.

Thorlabs also offers metallic concave mirrors that operate over a broader wavelength range at the expense of lower reflectivity. Please contact Tech Support for custom versions of these optics.

Common Specifications	
Available Diameters	1/2", 1", 2", and 75 mm
Dielectric Coating Range	1280 - 1600 nm; R_{avg} >99%
Clear Aperture	>90% of Diameter
Surface Irregularity	λ/4 @ 633 nm
Surface Quality	20-10 Scratch-Dig
Diameter Tolerance	+0.0/-0.2 mm
Thickness Tolerance	±0.2 mm
Substrate	N-BK7[a]
Backside Surface	Fine Ground and Engraved with Part Number (Not Polished)

- a. Click Link for Detailed Specifications on the Substrate

Dielectric Concave Mirrors Selection Guide		
UV	350 - 400 nm	
Visible	400 - 750 nm	400 - 750 nm, Back Side Polished

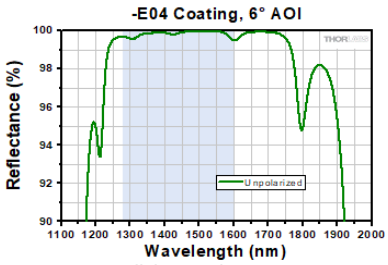
NIR	750 - 1100 nm	750 - 1100 nm, Back Side Polished
Telecom	1280 - 1600 nm	

See the *Concave Mirror Guide* tab, above, for our complete selection of concave mirrors.

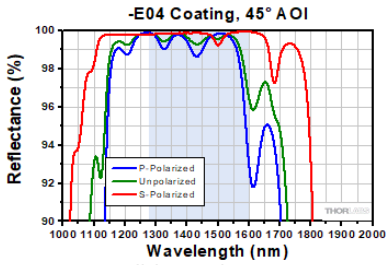
Hide Graphs

GRAPHS

These plots show the reflectivity of our -E04 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 two dielectric coatings, please consider a metallic concave mirror.



Click to Enlarge



Click to Enlarge

Excel Spreadsheet with Raw Data for -E04 Coating, 6° and 45° AOI

Hide Concave Mirror Guide

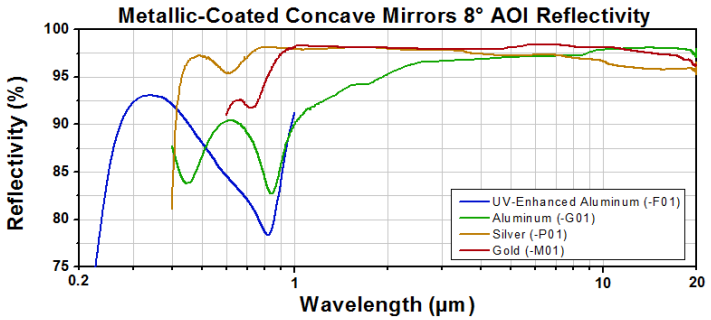
CONCAVE MIRROR GUIDE

Concave Mirror Selection Guide

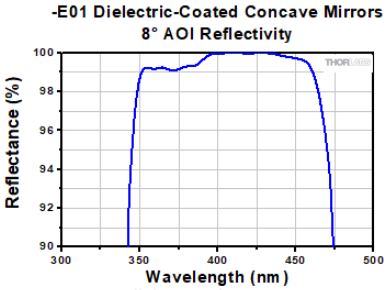
Thorlabs offers concave mirrors with both metallic and dielectric stack reflective coatings. Metallic-coated mirrors offer relatively high reflectivity (90-95%) over a wide wavelength range, while dielectric-coated mirrors provide even higher reflectivity (>99%) but over a smaller wavelength range. See the table to the right for an overview of the various coatings we offer for our concave mirrors. All coating options are available on optics with diameters ranging from Ø1/2" to Ø75 mm. Metallic mirrors are available with focal lengths from 9.5 - 1000 mm, while dielectric mirrors are available with focal lengths from 12 - 1000 mm.

Below are reflectivity plots for our metallic- and dielectric-coated concave mirrors. To view our selection of mirrors available with a particular coating, either click on the graphed line of interest or the corresponding coating name in the legend. Graphs are shown for an angle of incidence (AOI) of 8 or 6 degrees, which are the recommended angles at which to use a concave mirror.

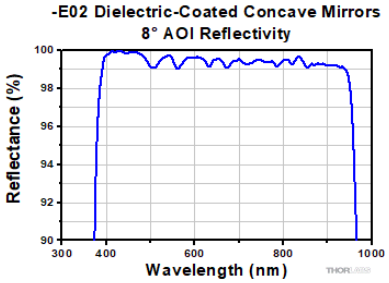
Concave Mirrors Options	
Mirror Type	**High-Reflectance Coating Wavelength**
UV Enhanced Aluminum	250 - 450 nm
Aluminum	450 nm - 20 µm
Silver	450 nm - 20 µm
Gold	800 nm - 20 µm
E01 Dielectric	350 - 400 nm
E02 Dielectric	400 - 750 nm
E02 Dielectric, Back Side Polished	
E03 Dielectric	750 - 1100 nm
E03 Dielectric, Back Side Polished	
E04 Dielectric	1280 - 1600 nm
Crystalline	1064 or 1550 nm



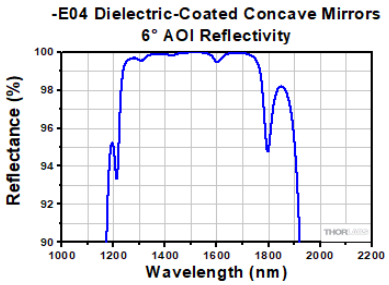
Click on a particular graphed line or the corresponding name in the legend to view concave mirrors with that coating option.
Metallic-Coated Concave Mirrors are available in UV Enhanced Aluminum, Aluminum, Silver, and Gold.



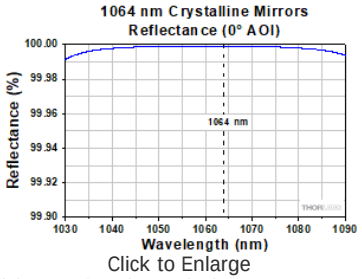
Click to Enlarge
Raw Data
Reflectance of -E01 Dielectric-Coated Concave Mirrors at 8° AOI.



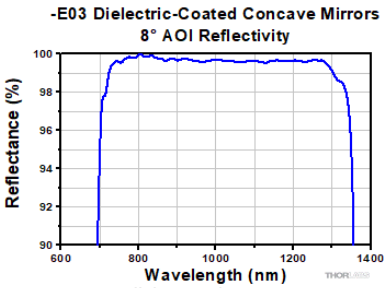
Click to Enlarge
Raw Data
Reflectance of -E02 Dielectric-Coated Concave Mirrors at 8° AOI.
These mirrors are also available with a Back Side Polish.



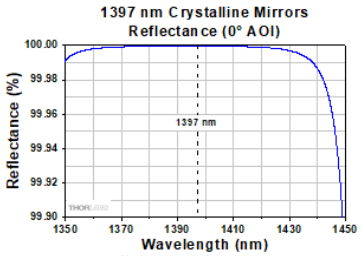
Click to Enlarge
Raw Data
Reflectance of -E04 Dielectric-Coated Concave Mirrors at 6° AOI.



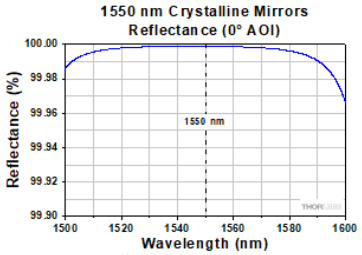
Click to Enlarge
Click Here for Theoretical Data From 800 - 1500 nm
Theoretical Reflectance of 1064 nm Crystalline Supermirrors



Click to Enlarge
Raw Data
Reflectance of -E03 Dielectric-Coated Concave Mirrors at 8° AOI.
These mirrors are also available with a Back Side Polish.



Click to Enlarge
Click Here for Theoretical Data From 900 - 1900 nm
Theoretical Reflectance of 1397 nm Crystalline Supermirrors



Click to Enlarge
Click Here for Theoretical Data From 1000 - 2000 nm
Theoretical Reflectance of 1550 nm Crystalline Supermirrors

Hide Ø1/2" (12.7 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Ø1/2" (12.7 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Item #	Focal Length	Center Thickness	Edge Thickness	Radius of Curvature	Reference Drawing
CM127-012-E04	12 mm	3.0 mm	3.8 mm	24.0 mm (0.94")	
CM127-025-E04	25 mm		3.4 mm	50.0 mm (1.97")	
CM127-050-E04	50 mm		3.2 mm	100.0 mm (3.94")	

Part Number	Description	Price	Availability
CM127-012-E04	Ø1/2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 12 mm	$92.79	Today
CM127-025-E04	Ø1/2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 25 mm	$92.79	Today
CM127-050-E04	Ø1/2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 50 mm	$92.79	Today

Hide Ø1" (25.4 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Ø1" (25.4 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Item #	Focal Length	Center Thickness	Edge Thickness	Radius of Curvature	Reference Drawing
CM254-025-E04	25 mm	6.0 mm	7.6 mm	50.0 mm (1.97")	
CM254-050-E04	50 mm		6.8 mm	100.0 mm (3.94")	
CM254-075-E04	75 mm		6.5 mm	150.0 mm (5.91")	
CM254-100-E04	100 mm		6.4 mm	200.0 mm (7.87")	

Part Number	Description	Price	Availability
CM254-025-E04	Ø1" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 25 mm	$119.04	Today
CM254-050-E04	Ø1" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 50 mm	$119.04	Today
CM254-075-E04	Ø1" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 75 mm	$119.04	Today
CM254-100-E04	Ø1" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 100 mm	$119.04	Today

Hide Ø2" (50.8 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Ø2" (50.8 mm) Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Item #	Focal Length	Center Thickness	Edge Thickness	Radius of Curvature	Reference Drawing
CM508-050-E04	50 mm	9.0 mm	12.2 mm	100.0 mm (3.94")	
CM508-100-E04	100 mm		10.6 mm	200.0 mm (7.87")	
CM508-150-E04	150 mm		10.1 mm	300.0 mm (11.81")	
CM508-200-E04	200 mm		9.8 mm	400.0 mm (15.75")	

Part Number	Description	Price	Availability
CM508-050-E04	Ø2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 50 mm	$181.80	Today
CM508-100-E04	Ø2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 100 mm	$181.80	Today
CM508-150-E04	Ø2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 150 mm	$181.80	Today
CM508-200-E04	Ø2" Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 200 mm	$181.80	Today

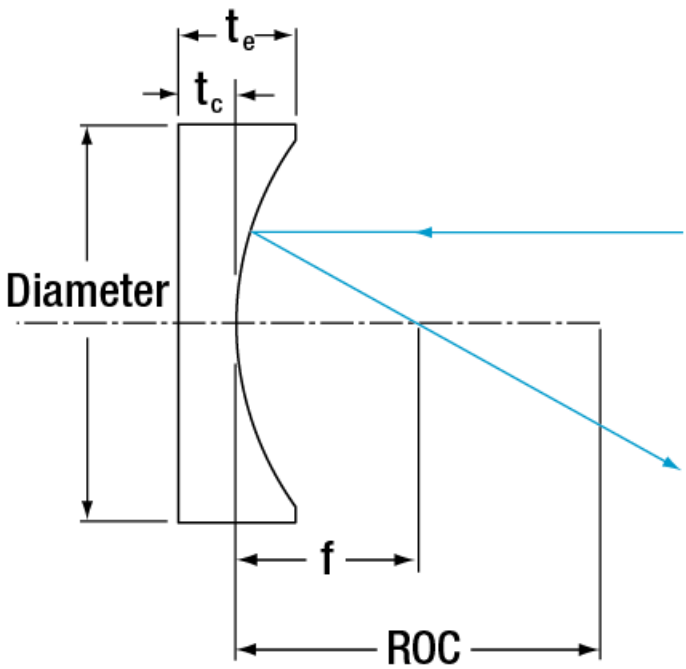
Hide Ø75 mm Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Ø75 mm Broadband Dielectric Concave Mirrors (1280 - 1600 nm)

Item #	Focal Length	Center Thickness	Edge Thickness	Radius of Curvature	Reference Drawing
CM750-075-E04	75 mm	12.0 mm	16.7 mm	150.0 mm (5.91")	
CM750-150-E04	150 mm		14.3 mm	300.0 mm (11.81")	

These items will be retired without replacement when stock is depleted. If you require one of these parts for line production, please contact our OEM Team.

Part Number	Description	Price	Availability
CM750-075-E04	Ø75 mm Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 75 mm	$113.62	Today
CM750-150-E04	Ø75 mm Dielectric-Coated Concave Mirror, 1280 - 1600 nm, f = 150 mm	$113.62	Lead Time



f: Focal Length
t_c: Center Thickness
t_e: Edge Thickness
ROC: Radius of Curvature

$$f = \frac{ROC}{2}$$