



OPTICS

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Lenses

- UV, visible, and NIR optical experiments
- Imaging and laser beam shaping
- Microscopy and precision instrumentation



Holmarc offers wide collection of lenses for UV, Visible and NIR applications. Our collection of lenses includes, convex and concave lenses, cylindrical lenses, achromatic lenses, cylindrical achromatic lenses, axicons etc. All the lenses are available in uncoated or Anti-Reflection coated options. In addition to the standard items custom lenses as are also available.

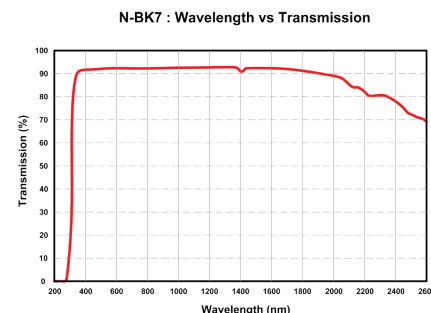
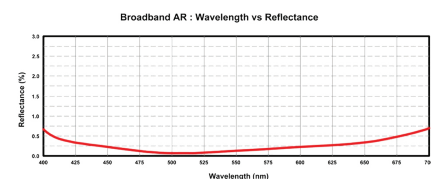
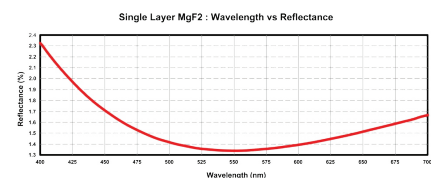
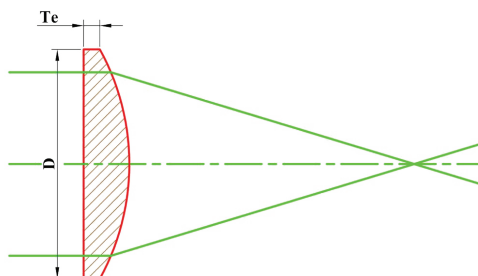
Spherical Singlets

Plano - Convex Lenses

Holmarc's Plano-Convex Lenses are high-precision optical elements designed to focus or collimate light efficiently with minimal spherical aberration. Featuring one flat surface and one convex surface, these lenses are ideal for applications where light must be concentrated or transformed into a parallel beam.

Material	BK7 or equivalent
Effective Focal Length Tolerance	$\pm 1\%$
Diameter Tolerance	+ 0.0, - 0.2 mm
Centering Tolerance	≤ 3 arc min
Surface Quality	40 - 20 (scratch-dig)
Clear Aperture	> 90% of Diameter
Design Wavelength	587.6 nm
Coating	Uncoated / Single layer MgF2 / Broadband AR

These lenses are available in uncoated, single layer MgF2 coated and Broadband AR coated options.. UV fused silica lenses are also available.



Model No					
Uncoated	Single Layer MgF ₂	Broadband AR	Diameter D (mm)	Focal Length F (mm)	Edge Thickness Te (mm)
HO-PXL12.5-1.2	HO-PXL12.5-1.2C	HO-PXL12.5-1.2B	12.5	15	2
HO-PXL12.5-1.6	HO-PXL12.5-1.6C	HO-PXL12.5-1.6B	12.5	20	2
HO-PXL12.5-02	HO-PXL12.5-02C	HO-PXL12.5-02B	12.5	25	2
HO-PXL12.5-2.4	HO-PXL12.5-2.4C	HO-PXL12.5-2.4B	12.5	30	2
HO-PXL12.5-3.2	HO-PXL12.5-3.2C	HO-PXL12.5-3.2B	12.5	40	2
HO-PXL12.5-04	HO-PXL12.5-04C	HO-PXL12.5-04B	12.5	50	2
HO-PXL12.5-08	HO-PXL12.5-08C	HO-PXL12.5-08B	12.5	100	2
HO-PXL25-01	HO-PXL25-01C	HO-PXL25-01B	25	25	2
HO-PXL25-1.6	HO-PXL25-1.6C	HO-PXL25-1.6B	25	40	2
HO-PXL25-02	HO-PXL25-02C	HO-PXL25-02B	25	50	2
HO-PXL25-3.2	HO-PXL25-3.2C	HO-PXL25-3.2B	25	80	2
HO-PXL25-04	HO-PXL25-04C	HO-PXL25-04B	25	100	2
HO-PXL25-06	HO-PXL25-06C	HO-PXL25-06B	25	150	2
HO-PXL25-08	HO-PXL25-08C	HO-PXL25-08B	25	200	2
HO-PXL25-12	HO-PXL25-12C	HO-PXL25-12B	25	300	2
HO-PXL25-20	HO-PXL25-20C	HO-PXL25-20B	25	500	2
HO-PXL25-40	HO-PXL25-40C	HO-PXL25-40B	25	1000	2
HO-PXL30-1.3	HO-PXL30-1.3C	HO-PXL30-1.3B	30	40	2.5
HO-PXL30-1.6	HO-PXL30-1.6C	HO-PXL30-1.6B	30	50	2.5
HO-PXL30-2.5	HO-PXL30-2.5C	HO-PXL30-2.5B	30	75	2.5
HO-PXL30-3.3	HO-PXL30-3.3C	HO-PXL30-3.3B	30	100	2.5
HO-PXL30-05	HO-PXL30-05C	HO-PXL30-05B	30	150	2
HO-PXL30-6.6	HO-PXL30-6.6C	HO-PXL30-6.6B	30	200	2
HO-PXL30-8.3	HO-PXL30-8.3C	HO-PXL30-8.3B	30	250	2
HO-PXL30-10	HO-PXL30-10C	HO-PXL30-10B	30	300	2
HO-PXL30-16.6	HO-PXL30-16.6C	HO-PXL30-16.6B	30	500	2
HO-PXL50-1.6	HO-PXL50-1.6C	HO-PXL50-1.6B	50	80	3
HO-PXL50-02	HO-PXL50-02C	HO-PXL50-02B	50	100	3
HO-PXL50-03	HO-PXL50-03C	HO-PXL50-03B	50	150	3
HO-PXL50-04	HO-PXL50-04C	HO-PXL50-04B	50	200	3
HO-PXL50-06	HO-PXL50-06C	HO-PXL50-06B	50	300	3
HO-PXL50-08	HO-PXL50-08C	HO-PXL50-08B	50	400	3
HO-PXL50-10	HO-PXL50-10C	HO-PXL50-10B	50	500	3
HO-PXL50-20	HO-PXL50-20C	HO-PXL50-20B	50	1000	3

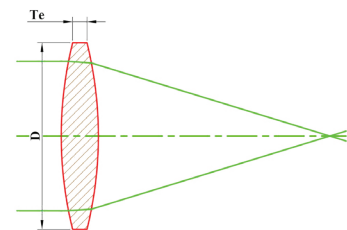
Bi - Convex Lenses

Holmarc's Bi-Convex Lenses are precision-engineered optical components featuring two outwardly curved surfaces, providing efficient light convergence and balanced imaging performance. Their symmetrical design minimizes aberrations, making them ideal for use in simple imaging systems, beam focusing, and illumination applications.

Material	BK7 or equivalent
Effective Focal Length Tolerance	± 1%
Diameter Tolerance	+ 0.0, - 0.2 mm
Centering Tolerance	≤ 3 arc min
Surface Quality	40 - 20 (scratch-dig)
Clear Aperture	> 90% of Diameter
Design Wavelength	587.6 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR

These lenses are available in uncoated, single layer MgF₂ coated and Broadband AR coated options.

UV fused silica lenses are also available



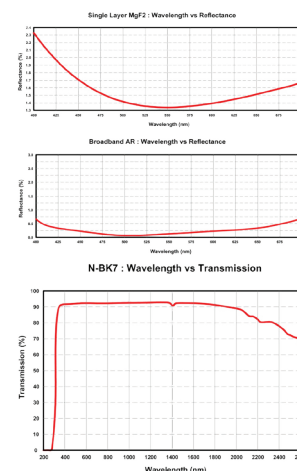
Applications

- Laser collimation and beam shaping
- Imaging and illumination systems
- Optical instruments and experiments
- Projection and detection setups
- Scientific and educational use

Applications

- Imaging and projection systems
- Beam focusing and shaping
- Optical instruments and laboratory setups
- Illumination and sensor systems
- Educational optics experiments

Model No					
Uncoated	Single Layer MgF ₂	Broadband AR	Diameter D (mm)	Focal Length F (mm)	Edge Thickness Te (mm)
HO-BXL12.5-1.2	HO-BXL12.5-1.2C	HO-BXL12.5-1.2B	12.5	15	2
HO-BXL12.5-1.6	HO-BXL12.5-1.6C	HO-BXL12.5-1.6B	12.5	20	2
HO-BXL12.5-02	HO-BXL12.5-02C	HO-BXL12.5-02B	12.5	25	2
HO-BXL12.5-2.4	HO-BXL12.5-2.4C	HO-BXL12.5-2.4B	12.5	30	2
HO-BXL12.5-3.2	HO-BXL12.5-3.2C	HO-BXL12.5-3.2B	12.5	40	2
HO-BXL12.5-04	HO-BXL12.5-04C	HO-BXL12.5-04B	12.5	50	2
HO-BXL12.5-08	HO-BXL12.5-08C	HO-BXL12.5-08B	12.5	100	2
HO-BXL25-01	HO-BXL25-01C	HO-BXL25-01B	25	25	2
HO-BXL25-1.6	HO-BXL25-1.6C	HO-BXL25-1.6B	25	40	2
HO-BXL25-02	HO-BXL25-02C	HO-BXL25-02B	25	50	2
HO-BXL25-3.2	HO-BXL25-3.2C	HO-BXL25-3.2B	25	80	2
HO-BXL25-04	HO-BXL25-04C	HO-BXL25-04B	25	100	2
HO-BXL25-06	HO-BXL25-06C	HO-BXL25-06B	25	150	2
HO-BXL25-08	HO-BXL25-08C	HO-BXL25-08B	25	200	2
HO-BXL25-12	HO-BXL25-12C	HO-BXL25-12B	25	300	2
HO-BXL25-20	HO-BXL25-20C	HO-BXL25-20B	25	500	2
HO-BXL25-40	HO-BXL25-40C	HO-BXL25-40B	25	1000	2
HO-BXL50-1.6	HO-BXL50-1.6C	HO-BXL50-1.6B	50	80	3
HO-BXL50-02	HO-BXL50-02C	HO-BXL50-02B	50	100	3
HO-BXL50-03	HO-BXL50-03C	HO-BXL50-03B	50	150	3
HO-BXL50-04	HO-BXL50-04C	HO-BXL50-04B	50	200	3
HO-BXL50-06	HO-BXL50-06C	HO-BXL50-06B	50	300	3
HO-BXL50-10	HO-BXL50-10C	HO-BXL50-10B	50	500	3
HO-BXL50-20	HO-BXL50-20C	HO-BXL50-20B	50	1000	3



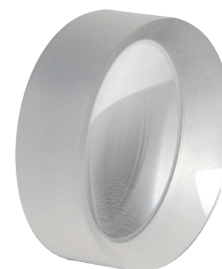
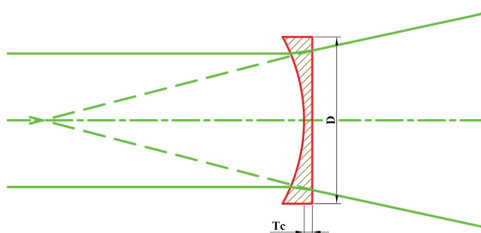
Plano - Concave Lenses

Holmarc's Plano-Concave Lenses are precision optical components designed to diverge collimated light and expand beam profiles with high accuracy. Featuring one flat surface and one inward-curved surface, these lenses provide negative focal lengths and are ideal for applications requiring controlled light divergence.

Plano-concave lenses are available as uncoated, single layer MgF₂ coated and broadband AR coated.

UV fused silica lenses are also available

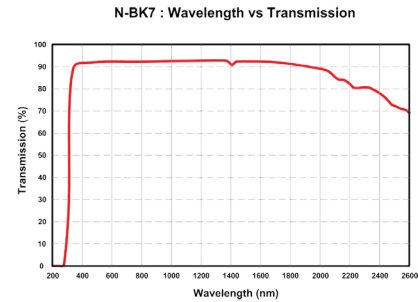
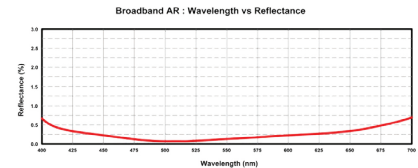
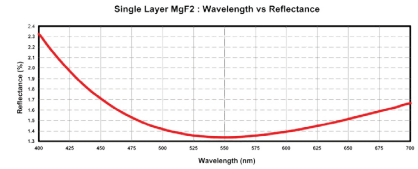
Material	BK7 or equivalent
Effective Focal Length Tolerance	± 1%
Diameter Tolerance	+ 0.0, - 0.2 mm
Centering Tolerance	≤ 3 arc min
Surface Quality	40 - 20 (scratch-dig)
Clear Aperture	> 90% of Diameter
Design Wavelength	587.6 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR
Center thickness, tc	2.5 mm



Applications

- Beam expansion and collimation control
- Optical testing and metrology
- Laser systems and optical benches
- Imaging and projection setups
- Educational and research experiments

Uncoated	Single Layer MgF ₂	Broadband AR	Diameter D (mm)	Focal Length F (mm)
HO-PVL12.5-02	HO-PVL12.5-02C	HO-PVL12.5-02B	12.5	-25
HO-PVL12.5-2.4	HO-PVL12.5-2.4C	HO-PVL12.5-2.4B	12.5	-30
HO-PVL12.5-04	HO-PVL12.5-04C	HO-PVL12.5-04B	12.5	-50
HO-PVL25-1.2	HO-PVL25-1.2C	HO-PVL25-1.2B	25	-30
HO-PVL25-1.6	HO-PVL25-1.6C	HO-PVL25-1.6B	25	-40
HO-PVL25-02	HO-PVL25-02C	HO-PVL25-02B	25	-50
HO-PVL25-3.2	HO-PVL25-3.2C	HO-PVL25-3.2B	25	-80
HO-PVL25-04	HO-PVL25-04C	HO-PVL25-04B	25	-100
HO-PVL25-06	HO-PVL25-06C	HO-PVL25-06B	25	-150
HO-PVL25-08	HO-PVL25-08C	HO-PVL25-08B	25	-200
HO-PVL25-12	HO-PVL25-12C	HO-PVL25-12B	25	-300
HO-PVL25-20	HO-PVL25-20C	HO-PVL25-20B	25	-500
HO-PVL25-40	HO-PVL25-40C	HO-PVL25-40B	25	-1000
HO-PVL50-1.6	HO-PVL50-1.6C	HO-PVL50-1.6B	50	-80
HO-PVL50-02	HO-PVL50-02C	HO-PVL50-02B	50	-100
HO-PVL50-03	HO-PVL50-03C	HO-PVL50-03B	50	-150
HO-PVL50-04	HO-PVL50-04C	HO-PVL50-04B	50	-200
HO-PVL50-06	HO-PVL50-06C	HO-PVL50-06B	50	-300
HO-PVL50-10	HO-PVL50-10C	HO-PVL50-10B	50	-500
HO-PVL50-20	HO-PVL50-20C	HO-PVL50-20B	50	-1000



Bi - Concave Lenses

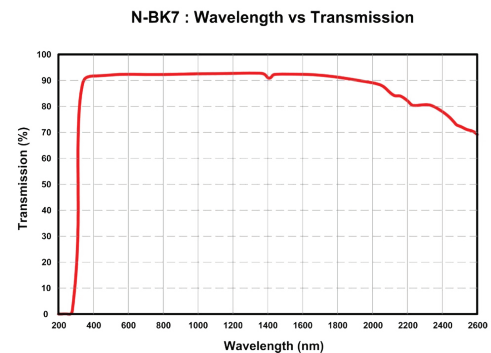
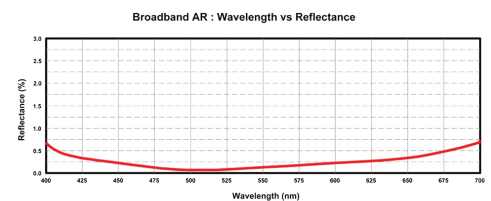
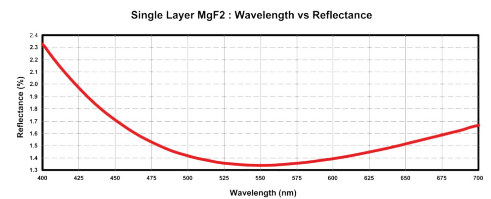
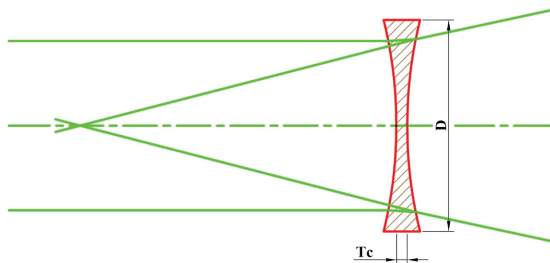
Holmarc's Bi-Concave Lenses are precision-crafted optical elements featuring two inwardly curved surfaces designed to diverge incoming light efficiently. With a negative focal length and symmetric geometry, these lenses provide controlled beam expansion and are ideal for applications requiring uniform light divergence and aberration-balanced performance.

Bi-concave lenses are available with UV fused silica material.

Material	BK7 or equivalent
Effective Focal Length Tolerance	± 1%
Diameter Tolerance	+ 0.0, - 0.2 mm
Centering Tolerance	≤ 3 arc min
Surface Quality	40 - 20 (scratch-dig)
Clear Aperture	> 90% of Diameter
Design Wavelength	587.6 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR
Center thickness, tc	2.5 mm

Applications

- Laser beam expansion and shaping
- Optical metrology and testing
- Imaging and projection systems
- Scientific experiments and optical benches
- Educational optics demonstrations



Uncoated	Single Layer MgF ₂	Broadband AR	Diameter D (mm)	Focal Length F (mm)
HO-BVL25-1.2	HO-BVL25-1.2C	HO-BVL25-1.2B	25	-30
HO-BVL25-1.6	HO-BVL25-1.6C	HO-BVL25-1.6B	25	-40
HO-BVL25-02	HO-BVL25-02C	HO-BVL25-02B	25	-50
HO-BVL25-3.2	HO-BVL25-3.2C	HO-BVL25-3.2B	25	-80
HO-BVL25-04	HO-BVL25-04C	HO-BVL25-04B	25	-100
HO-BVL25-06	HO-BVL25-06C	HO-BVL25-06B	25	-150
HO-BVL25-08	HO-BVL25-08C	HO-BVL25-08B	25	-200
HO-BVL25-12	HO-BVL25-12C	HO-BVL25-12B	25	-300
HO-BVL25-20	HO-BVL25-20C	HO-BVL25-20B	25	-500
HO-BVL25-40	HO-BVL25-40C	HO-BVL25-40B	25	-1000
HO-BVL50-1.6	HO-BVL50-1.6C	HO-BVL50-1.6B	50	-80
HO-BVL50-02	HO-BVL50-02C	HO-BVL50-02B	50	-100
HO-BVL50-03	HO-BVL50-03C	HO-BVL50-03B	50	-150
HO-BVL50-04	HO-BVL50-04C	HO-BVL50-04B	50	-200
HO-BVL50-06	HO-BVL50-06C	HO-BVL50-06B	50	-300
HO-BVL50-10	HO-BVL50-10C	HO-BVL50-10B	50	-500
HO-BVL50-20	HO-BVL50-20C	HO-BVL50-20B	50	-1000

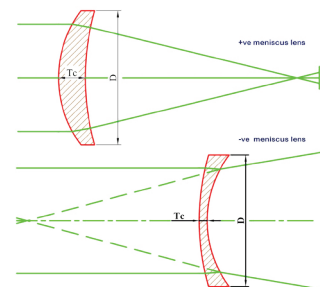
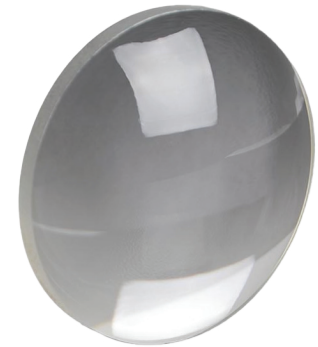
Meniscus Lenses

Positive meniscus lens is a convex-concave lens thicker at the center than at the edges. It is used to minimize spherical aberration. When used in combination with another lens, it will shorten the focal length, and increase the NA of system. Negative meniscus lens is a convex-concave lens thinner at the center than edges. It increases the divergence of the beam without introducing any significant spherical aberration. When used in combination with another lens, it will increase the focal length and decrease the NA of the system.

Minimize spherical aberrations
Positive or Negative configurations Available

Material	BK7 or equivalent
Effective Focal Length Tolerance	± 1%
Diameter Tolerance	+ 0.0, -0.2 mm
Centering Tolerance	≤ 3 arc min
Surface Quality	40 - 20 (scratch-dig)
Clear Aperture	> 90% of Diameter
Design Wavelength	587.6 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR
Center thickness, tc	3 mm for negative & 4 mm for Positive

Uncoated	Single Layer MgF ₂	Broadband AR	Type	Diameter (mm)	Focal Length F (mm)
HO-PML25-04	HO-PML25-04C	HO-PML25-04B	Positive	25	100
HO-PML25-05	HO-PML25-05C	HO-PML25-05B	Positive	25	125
HO-PML25-06	HO-PML25-06C	HO-PML25-06B	Positive	25	150
HO-PML25-08	HO-PML25-08C	HO-PML25-08B	Positive	25	200
HO-PML25-10	HO-PML25-10C	HO-PML25-10B	Positive	25	250
HO-PML25-12	HO-PML25-12C	HO-PML25-12B	Positive	25	300
HO-PML25-20	HO-PML25-20C	HO-PML25-20B	Positive	25	500
HO-NML25-04	HO-NML25-04C	HO-NML25-04B	Negative	25	-100
HO-NML25-05	HO-NML25-05C	HO-NML25-05B	Negative	25	-125
HO-NML25-06	HO-NML25-06C	HO-NML25-06B	Negative	25	-150
HO-NML25-08	HO-NML25-08C	HO-NML25-08B	Negative	25	-200
HO-NML25-10	HO-NML25-10C	HO-NML25-10B	Negative	25	-250
HO-NML25-12	HO-NML25-12C	HO-NML25-12B	Negative	25	-300
HO-NML25-20	HO-NML25-20C	HO-NML25-20B	Negative	25	-500



Cylindrical Lenses

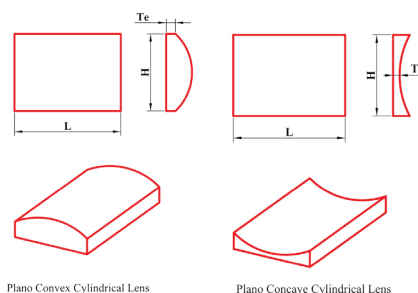
Plano Convex and Plano Concave Cylindrical Lenses

Cylindrical Lenses are well suited for applications which require magnification in one dimension only. Cylindrical lenses are available in either plano-concave or plano-convex configurations. Plano-concave lenses have a negative focal length and are used for image reduction or to spread light. Plano-convex lenses have a positive focal length, which makes them ideal for collecting and focusing light for many imaging applications.

Material	BK7 or equivalent
Effective Focal Length Tolerance	$\pm 2\%$
Length Tolerance	+0.0, -0.2 mm
Height Tolerance	+0.0, -0.2 mm
Centering Tolerance	≤ 3 arc min.
Surface quality	40 - 20 (scratch-dig)
Clear aperture	> 90 % of surface dimensions
Design wavelength	587.6 nm
Coating	Uncoated / Single layer MgF2 / Broadband AR

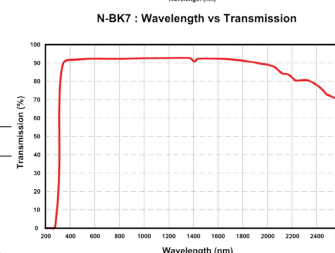
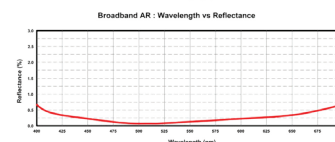
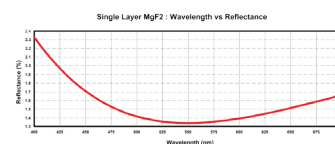
Plano Convex Cylindrical Lens

Uncoated	Model No.					
	Single Layer MgF2	Broadband AR	Focal Length F (mm)	Length L (mm)	Height H (mm)	Edge Thick- ness Te (mm)
HO-PXCL10-10	HO-PXCL10-10C	HO-PXCL10-10B	10	10	10	2
HO-PXCL12-10	HO-PXCL12-10C	HO-PXCL12-10B	10	12	10	2
HO-PXCL12-15	HO-PXCL12-15C	HO-PXCL12-15B	15	12	10	2
HO-PXCL20-15	HO-PXCL20-15C	HO-PXCL20-15B	15	20	10	2
HO-PXCL10-20	HO-PXCL10-20C	HO-PXCL10-20B	20	10	10	2
HO-PXCL20-20	HO-PXCL20-20C	HO-PXCL20-20B	20	20	10	2
HO-PXCL10-25	HO-PXCL10-25C	HO-PXCL10-25B	25	10	10	2
HO-PXCL20-25	HO-PXCL20-25C	HO-PXCL20-25B	25	20	10	2
HO-PXCL10-30	HO-PXCL10-30C	HO-PXCL10-30B	30	10	10	2
HO-PXCL20-30	HO-PXCL20-30C	HO-PXCL20-30B	30	20	10	2
HO-PXCL25-30	HO-PXCL25-30C	HO-PXCL25-30B	30	25	15	2
HO-PXCL15-40	HO-PXCL15-40C	HO-PXCL15-40B	40	15	10	2
HO-PXCL20-40	HO-PXCL20-40C	HO-PXCL20-40B	40	20	15	2
HO-PXCL30-40	HO-PXCL30-40C	HO-PXCL30-40B	40	30	20	2
HO-PXCL20-50	HO-PXCL20-50C	HO-PXCL20-50B	50	20	20	2
HO-PXCL30-50	HO-PXCL30-50C	HO-PXCL30-50B	50	30	20	2
HO-PXCL30-60	HO-PXCL30-60C	HO-PXCL30-60B	60	30	25	3
HO-PXCL40-75	HO-PXCL40-75C	HO-PXCL40-75B	75	40	25	3
HO-PXCL50-100	HO-PXCL50-100C	HO-PXCL50-100B	100	50	20	3
HO-PXCL70-100	HO-PXCL70-100C	HO-PXCL70-100B	100	70	30	3
HO-PXCL50-150	HO-PXCL50-150C	HO-PXCL50-150B	150	50	30	3
HO-PXCL75-150	HO-PXCL75-150C	HO-PXCL75-150B	150	75	30	3
HO-PXCL50-250	HO-PXCL50-250C	HO-PXCL50-250B	250	50	30	3
HO-PXCL75-250	HO-PXCL75-250C	HO-PXCL75-250B	250	75	30	3
HO-PXCL50-500	HO-PXCL50-500C	HO-PXCL50-500B	500	50	30	3
HO-PXCL75-500	HO-PXCL75-500C	HO-PXCL75-500B	500	75	30	3



Plano Convex Cylindrical Lens

Plano Concave Cylindrical Lens



Plano Concave Cylindrical Lens

Model No.		Broadband AR	Focal Length F (mm)	Length L (mm)	Height H (mm)	Edge Thickness Te (mm)
Uncoated	Single Layer MgF2					
HO-PVCL10-20	HO-PVCL10-20C	HO-PVCL10-20B	-20	10	10	2
HO-PVCL20-20	HO-PVCL20-20C	HO-PVCL20-20B	-20	20	10	2
HO-PVCL10-30	HO-PVCL10-30C	HO-PVCL10-30B	-30	10	10	2
HO-PVCL20-30	HO-PVCL20-30C	HO-PVCL20-30B	-30	20	10	2
HO-PVCL20-50	HO-PVCL20-50C	HO-PVCL20-50B	-50	20	20	2
HO-PVCL40-50	HO-PVCL40-50C	HO-PVCL40-50B	-50	40	20	3
HO-PVCL50-100	HO-PVCL50-100C	HO-PVCL50-100B	-100	50	20	3
HO-PVCL50-100-01	HO-PVCL50-100-01C	HO-PVCL50-100-01B	-100	50	30	3
HO-PVCL50-150	HO-PVCL50-150C	HO-PVCL50-150B	-150	50	20	3
HO-PVCL50-150-01	HO-PVCL50-150-01C	HO-PVCL50-150-01B	-150	50	30	3

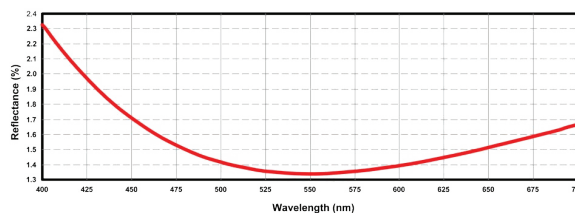
Cylindrical Achromatic Lenses

Holmarc's cylindrical achromatic lenses are used to focus polychromatic light in one dimension with reduced spherical and chromatic aberrations. Holmarc's cylindrical achromatic lenses are available either as uncoated or coated (single layer MgF2 or broadband AR). When used with monochromatic light source, these lenses produce smaller spot size than standard cylindrical lenses.

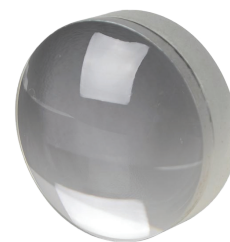
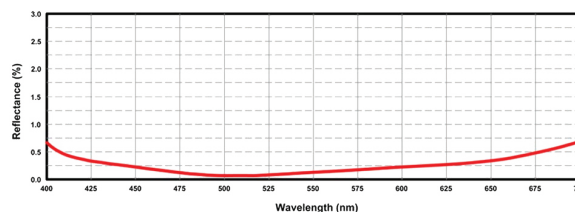
Material	BK7, SF1 & F2 (or equivalent)
Effective Focal Length Tolerance	$\pm 1\%$
Diameter tolerance	+ 0.0, -0.2 mm
Centering Tolerance	≤ 5 arc min.
Surface quality	40 - 20 (scratch-dig)
Clear aperture	> 90 % of dimensions
Design wavelengths	486.1 nm, 587.6 nm, & 656.3 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR (Ravg = < 0.5% @ 400-700 nm)

Model No.		Broadband AR	Diameter D (mm)	Focal Length F (mm)
Uncoated	Single Layer MgF2			
HO-CAL25-02	HO-CAL25-02C	HO-CAL25-02B	25	50
HO-CAL25-03	HO-CAL25-03C	HO-CAL25-03B	25	75
HO-CAL25-04	HO-CAL25-04C	HO-CAL25-04B	25	100
HO-CAL25-06	HO-CAL25-06C	HO-CAL25-06B	25	150
HO-CAL25-08	HO-CAL25-08C	HO-CAL25-08B	25	200
HO-CAL25-10	HO-CAL25-10C	HO-CAL25-10B	25	250

Single Layer MgF₂ : Wavelength vs Reflectance



Broadband AR : Wavelength vs Reflectance



Achromatic Lenses

Positive and Negative Achromatic Lenses

Achromatic lenses can be used as collimators, focusing lenses or light collectors. They are designed to eliminate chromatic and spherical aberrations and perform well for all paraxial imaging tasks. These lenses are available as uncoated, single Layer MgF₂ coated and broadband AR coated types.

These days Achromatic lenses are widely used in achromatic telescopes, microscopes and photographic lens.

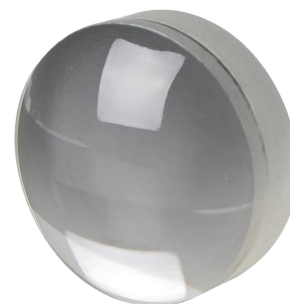
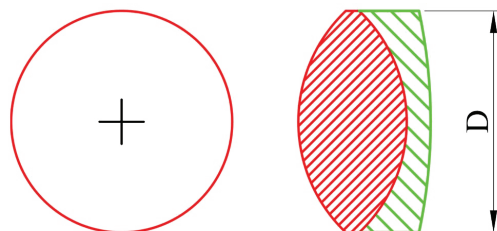
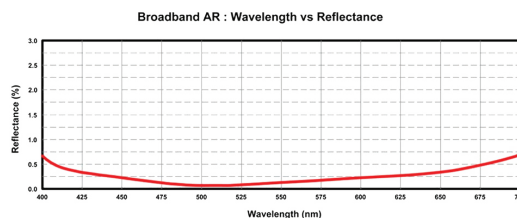
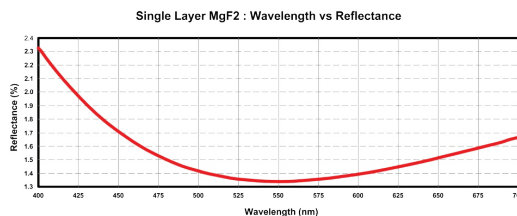
Material	BK7, N - SF1 & F2 (or equivalent)
Effective Focal Length	± 1%
Tolerance	
Diameter tolerance	+ 0.0, -0.2 mm
Centering Tolerance	≤ 3 arc min.
Surface quality	40 - 20 (scratch-dig)
Clear aperture	> 90 % of dimensions
Design wavelengths	486.1 nm, 587.6 nm, & 656.3 nm
Coating	Uncoated / Single layer MgF ₂ / Broadband AR (Ravg = < 0.5% @ 400-700 nm)

Positive Achromatic Lens

Uncoated	Single Layer AR	Broadband AR	Diameter D (mm)	Focal Length F (mm)
HO-PAL12.5-02	HO-PAL12.5-02C	HO-PAL12.5-02B	12.5	25
HO-PAL12.5-04	HO-PAL12.5-04C	HO-PAL12.5-04B	12.5	50
HO-PAL12.5-06	HO-PAL12.5-06C	HO-PAL12.5-06B	12.5	75
HO-PAL25-1.6	HO-PAL25-1.6C	HO-PAL25-1.6B	25	40
HO-PAL25-02	HO-PAL25-02C	HO-PAL25-02B	25	50
HO-PAL25-03	HO-PAL25-03C	HO-PAL25-03B	25	75
HO-PAL25-04	HO-PAL25-04C	HO-PAL25-04B	25	100
HO-PAL25-06	HO-PAL25-06C	HO-PAL25-06B	25	150
HO-PAL25-08	HO-PAL25-08C	HO-PAL25-08B	25	200
HO-PAL25-10	HO-PAL25-10C	HO-PAL25-10B	25	250
HO-PAL25-12	HO-PAL25-12C	HO-PAL25-12B	25	300
HO-PAL25-16	HO-PAL25-16C	HO-PAL25-16B	25	400
HO-PAL25-20	HO-PAL25-20C	HO-PAL25-20B	25	500
HO-PAL50-02	HO-PAL50-02C	HO-PAL50-02B	50	100
HO-PAL50-03	HO-PAL50-03C	HO-PAL50-03B	50	150
HO-PAL50-04	HO-PAL50-04C	HO-PAL50-04B	50	200
HO-PAL50-05	HO-PAL50-05C	HO-PAL50-05B	50	250
HO-PAL50-06	HO-PAL50-06C	HO-PAL50-06B	50	300
HO-PAL50-08	HO-PAL50-08C	HO-PAL50-08B	50	400
HO-PAL50-10	HO-PAL50-10C	HO-PAL50-10B	50	500
HO-PAL50-15	HO-PAL50-15C	HO-PAL50-15B	50	750
HO-PAL50-20	HO-PAL50-20C	HO-PAL50-20B	50	1000

Negative Achromatic Lens

Uncoated	Single Layer MgF ₂	Broadband AR	Diameter D (mm)	Focal Length F (mm)
HO-NAL12.5-02	HO-NAL12.5-02C	HO-NAL12.5-02B	12.5	-25
HO-NAL12.5-04	HO-NAL12.5-04C	HO-NAL12.5-04B	12.5	-50
HO-NAL25-02	HO-NAL25-02C	HO-NAL25-02B	25	-50
HO-NAL25-2.8	HO-NAL25-2.8C	HO-NAL25-2.8B	25	-70
HO-NAL25-04	HO-NAL25-04C	HO-NAL25-04B	25	-100
HO-NAL25-06	HO-NAL25-06C	HO-NAL25-06B	25	-150
HO-NAL50-03	HO-NAL50-03C	HO-NAL50-03B	50	-150



Axicons

Axicons are optical components which can be used to convert a collimated laser beam into a ring shaped non-diffractive Bessel beam. Holmarc's axicons are made from UV grade fused silica substrate and are available as uncoated and broadband AR coated.

The ring thickness of the Bessel beam can be calculated from the following formula;

$t_r = 0.5 * d$ where d is the diameter of the input collimated beam.

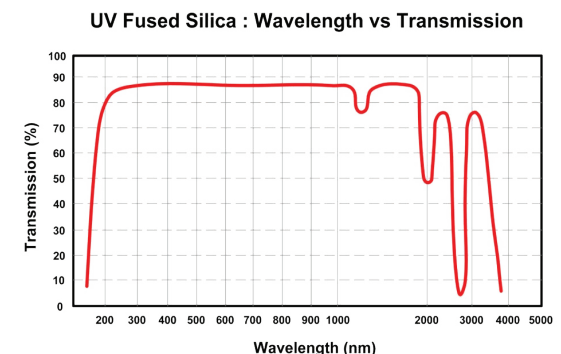
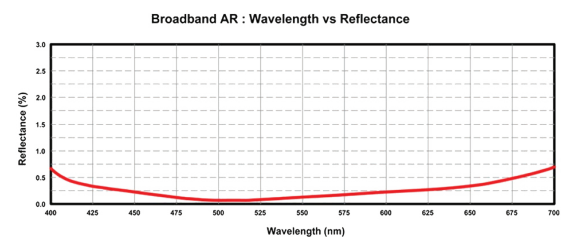
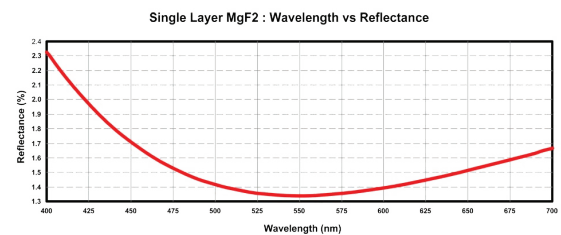
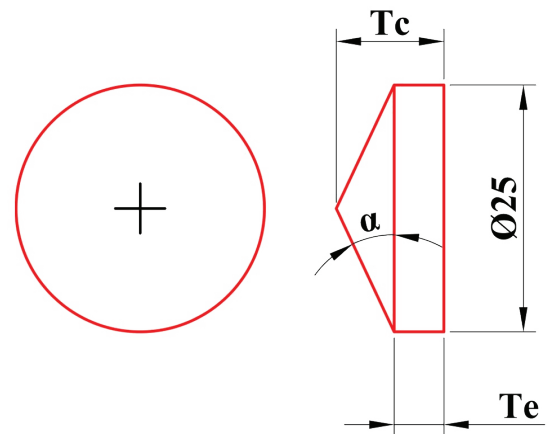
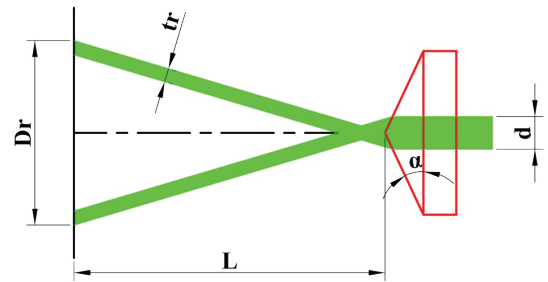
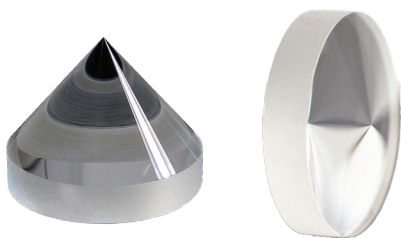
The diameter of the ring at a particular distance can be calculated from the following equation;

$$D_r = 2 L \tan [(n - 1) \alpha]$$

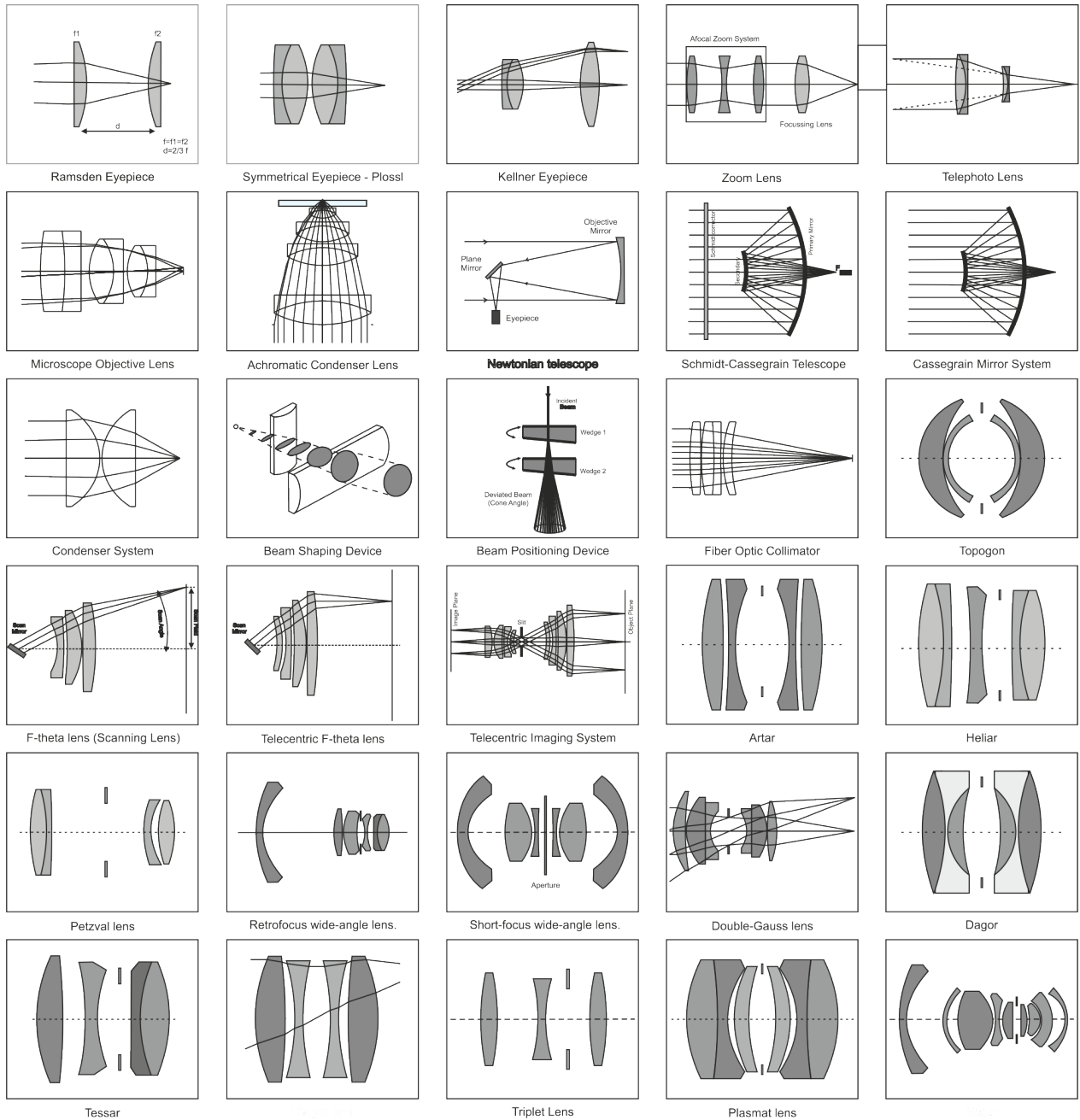
where D is the diameter of the ring at a distance L from the lens, n is the refractive index of the lens material and α is the axicon angle.

Material	UV fused silica
Diameter	25 mm
Diameter tolerance	+ 0.0, -0.2 mm
Edge thickness, te	5 mm
Center thickness tolerance	0.1 mm
Angular tolerance	± 0.01 %
Surface quality	40 - 20 (scratch-dig)
Clear aperture	> 90 % of dimensions
Surface flatness	$\lambda / 4$ @ 632.8 nm
Design wavelengths	486.1 nm, 587.6 nm, & 656.3 nm
Coating	Uncoated / Broadband AR coated (Ravg = < 0.5% @ 400 - 700 nm)

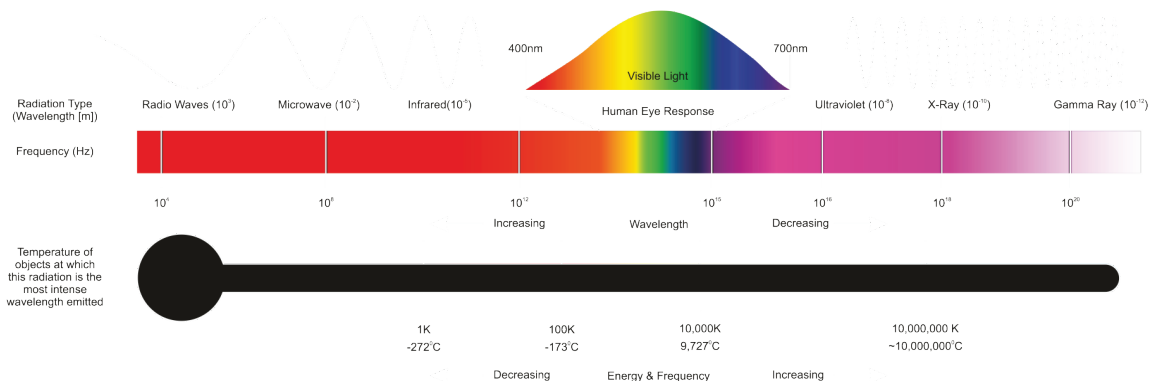
Model No.			
Uncoated	Broadband AR	Axicon angle,	Center Thickness tc (mm)
HO-AX-25-0.5	HO-AX-25B-0.5	0.5°	5.1
HO-AX-25-1.0	HO-AX-25B-1.0	1.0°	5.2
HO-AX-25-2.0	HO-AX-25B-2.0	2.0°	5.4
HO-AX-25-5.0	HO-AX-25B-5.0	5.0°	6.1
HO-AX-25-10.0	HO-AX-25B-10.0	10.0°	7.2
HO-AX-25-20.0	HO-AX-25B-20.0	20.0°	9.5
HO-AX-25-25.0	HO-AX-25B-25.0	25.0°	10.8



OPTIC DESIGN FUNDAMENTAL CHART AVAILABLE ON REQUEST



SPECTRUM

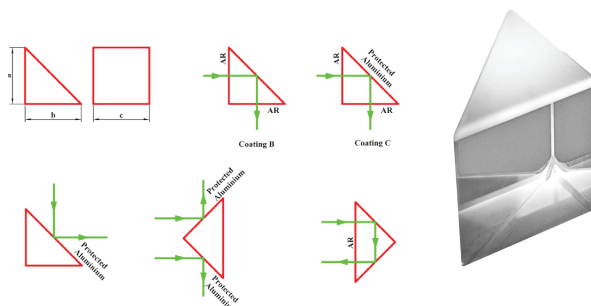


Prisms

- **Beam deviation and redirection**
- **Dispersion of light into components**
- **Optical alignment and calibration**



Holmarc offers different types of Reflective and Dispersive prisms. Dispersive prisms are used to separate the light into its constituent spectral colors, while reflective prisms are used to reflect, invert, rotate, deviate, or displace the light beam. Our prisms are available in different high quality substrates for UV, Visible, and NIR spectral regions. Custom specified prisms are also available.



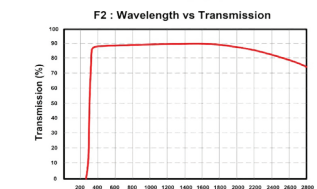
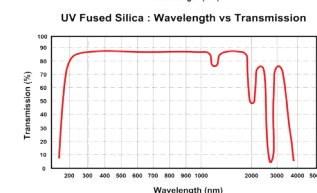
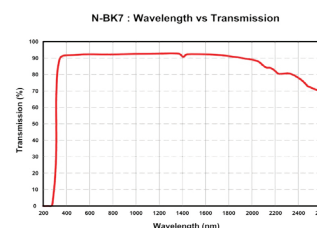
Right Angle Prisms

Right Angle Prisms are used to re-direct a beam of light at 90 degrees from the incident direction or used as 180° beam retroreflector. We offer these prisms uncoated or with five different coating options, namely;

Different coating options possible
Used as 180° beam retroreflector

Single layer anti-reflection coating on legs.
Protected Aluminium on hypotenuse and single layer anti-reflection on legs.
Protected Aluminium on hypotenuse.
Protected Aluminium on legs
Single layer anti-reflection coating on hypotenuse.

Material	BK7 or equivalent, F2 & fused silica
Effective aperture	90 %
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda / 4$ @ 632.8 nm
Perpendicularity	+/- 3 arc min
Protective chamfer	0.2 mm x 45°
Coating	Optional



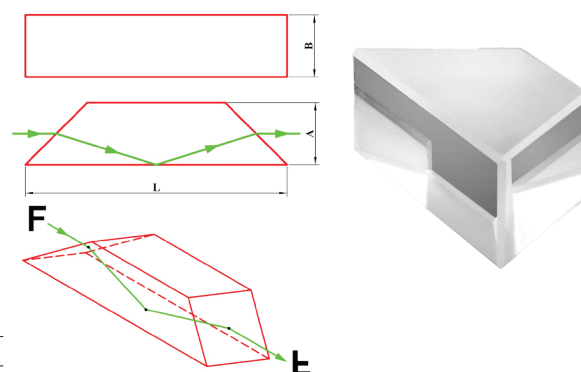
Model No.							Material
A*	B*	C*	D*	E*	E*	a = b = c (mm)	
HO-RPB-A-5	HO-RPB-B-5	HO-RPB-C-5	HO-RPB-D-5	HO-RPB-E-5	HO-RPB-F-5	5	BK7 or equivalent
HO-RPB-A-10	HO-RPB-B-10	HO-RPB-C-10	HO-RPB-D-10	HO-RPB-E-10	HO-RPB-F-10	10	
HO-RPB-A-20	HO-RPB-B-20	HO-RPB-C-20	HO-RPB-D-20	HO-RPB-E-20	HO-RPB-F-20	20	
HO-RPB-A-25	HO-RPB-B-25	HO-RPB-C-25	HO-RPB-D-25	HO-RPB-E-25	HO-RPB-F-25	25	
HO-RPB-A-38	HO-RPB-B-38	HO-RPB-C-38	HO-RPB-D-38	HO-RPB-E-38	HO-RPB-F-38	38	
HO-RPB-A-50	HO-RPB-B-50	HO-RPB-C-50	HO-RPB-D-50	HO-RPB-E-50	HO-RPB-F-50	50	
HO-RPS-A-5	HO-RPS-B-5	HO-RPS-C-5	HO-RPS-D-5	HO-RPS-E-5	HO-RPS-F-5	5	Fused Silica
HO-RPS-A-10	HO-RPS-B-10	HO-RPS-C-10	HO-RPS-D-10	HO-RPS-E-10	HO-RPS-F-10	10	
HO-RPS-A-20	HO-RPS-B-20	HO-RPS-C-20	HO-RPS-D-20	HO-RPS-E-20	HO-RPS-F-20	20	
HO-RPS-A-25	HO-RPS-B-25	HO-RPS-C-25	HO-RPS-D-25	HO-RPS-E-25	HO-RPS-F-25	25	
HO-RPS-A-38	HO-RPS-B-38	HO-RPS-C-38	HO-RPS-D-38	HO-RPS-E-38	HO-RPS-F-38	38	
HO-RPS-A-50	HO-RPS-B-50	HO-RPS-C-50	HO-RPS-D-50	HO-RPS-E-50	HO-RPS-F-50	50	
HO-RPF-A-5	HO-RPF-B-5	HO-RPF-C-5	HO-RPF-D-5	HO-RPF-E-5	HO-RPF-F-5	5	F2
HO-RPF-A-10	HO-RPF-B-10	HO-RPF-C-10	HO-RPF-D-10	HO-RPF-E-10	HO-RPF-F-10	10	F2
HO-RPF-A-20	HO-RPF-B-20	HO-RPF-C-20	HO-RPF-D-20	HO-RPF-E-20	HO-RPF-F-20	20	F2
HO-RPF-A-25	HO-RPF-B-25	HO-RPF-C-25	HO-RPF-D-25	HO-RPF-E-25	HO-RPF-F-25	25	F2
HO-RPF-A-38	HO-RPF-B-38	HO-RPF-C-38	HO-RPF-D-38	HO-RPF-E-38	HO-RPF-F-38	38	F2
HO-RPF-A-50	HO-RPF-B-50	HO-RPF-C-50	HO-RPF-D-50	HO-RPF-E-50	HO-RPF-F-50	50	F2

* A = Uncoated, B = Single layer anti-reflection coating on legs, C = Protected aluminum on hypotenuse and single layer anti-reflection coating on legs, D = Protected aluminum on hypotenuse, E = Protected aluminum on legs, F = Single layer anti-reflection coating on hypotenuse

Dove Prisms

Dove Prisms rotate an image without deviating the beam in such a way that the image rotates at twice the angular rate of the prism. Holmarc offers Dove prisms with single layer anti-reflection coating on end faces. The hypotenuse face has total internal reflection, hence does not require AR coating.

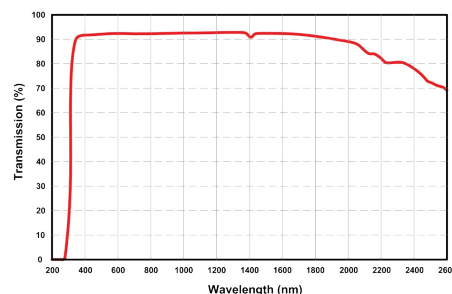
Uncoated prisms are also available. Broadband multi-layer AR coating on faces can be done on custom basis.



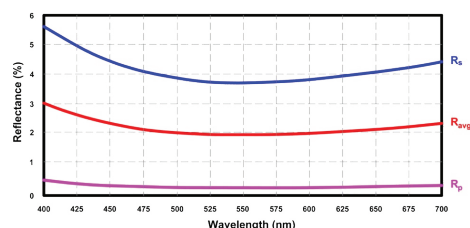
Material	BK7 or equivalent
Effective aperture	90 %
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda / 4$ @ 632.8 nm
Perpendicularity	+/- 3 arc min
Protective chamfer	0.2 mm x 45°
Coating	Optional

Model No.			
Uncoated	Single Layer MgF2	A = B (mm)	L (mm)
HO-DP-5	HO-DPC-5	5	21.1
HO-DP-10	HO-DPC-10	10	42.2
HO-DP-15	HO-DPC-15	15	63.3
HO-DP-20	HO-DPC-20	20	84.4
HO-DP-25	HO-DPC-25	25	105.5

N-BK7 : Wavelength vs Transmission



Single Layer MgF2: Wavelength vs Reflectance (45° AOI)



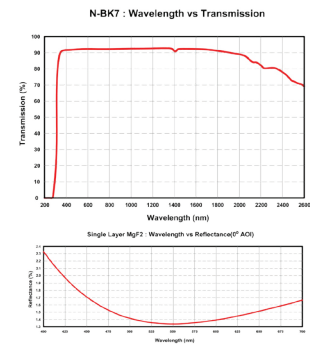
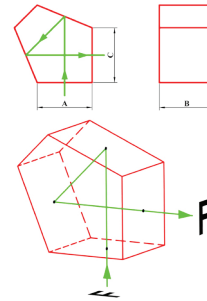
Penta Prisms

Penta Prisms deviate an input beam by precisely 90° . In imaging applications Penta Prism will neither invert nor reverse the image. These prisms deviate a beam through same angle regardless of its orientation to the beam. The reflecting surfaces of our Penta Prisms are coated with protective aluminium. The entrance and exit surfaces are single layer anti-reflection coated in HO-PPC series.

90° Deviation of input beam, Does not invert or reverse the image

Material	BK7 or equivalent
Effective aperture	85 %
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Protective chamfer	0.2 mm x 45°

Model No.		
Uncoated	Single Layer MgF2	A = B = C (mm)
HO-PP-5	HO-PPC-5	5
HO-PP-10	HO-PPC-10	10
HO-PP-20	HO-PPC-20	20
HO-PP-25	HO-PPC-25	25
HO-PP-38	HO-PPC-38	38
HO-PP-40	HO-PPC-40	40



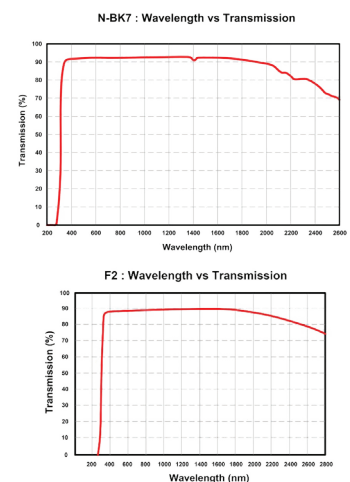
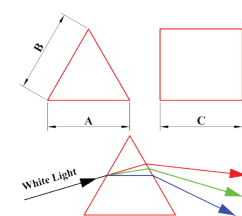
Equilateral Prisms

Applications of equilateral prisms are to disperse or break light into its spectral components. These prisms are available from Holmarc either uncoated or with single layer anti-reflection coating on the faces. AR coating helps to reduce polarization at the surface by increasing total transmittance. Broadband multi-layer anti-reflection coated prisms can be provided on special requests.

Specially for light dispersion, Sizes Ranging from 5 - 50 mm

Material	BK7 or equivalent & F ₂
Effective aperture	85 %
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angle tolerance	+/- 3 arc mi
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Protective chamfer	0.2 mm x 45°
AR coating	Optional, on faces

Model No.			
Uncoated	Single Layer MgF2	A = B = C (mm)	Material
HO-EPB-5	HO-EPBC-5	5	BK7 or equivalent
HO-EPB-10	HO-EPBC-10	10	
HO-EPB-20	HO-EPBC-20	20	
HO-EPB-25	HO-EPBC-25	25	
HO-EPB-38	HO-EPBC-38	38	
HO-EPB-50	HO-EPBC-50	50	F2
HO-EPF-5	HO-EPFC-5	5	
HO-EPF-10	HO-EPFC-10	10	
HO-EPF-20	HO-EPFC-20	20	
HO-EPF-25	HO-EPFC-25	25	
HO-EPF-38	HO-EPFC-38	38	
HO-EPF-50	HO-EPFC-50	50	

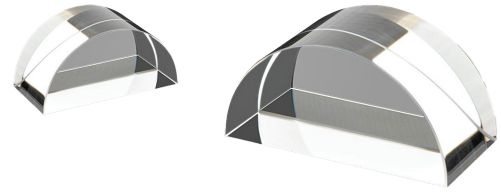


Semi Circular Prism

Holmarc's Semi-Circular Prism is a high-precision optical component designed for refraction experiments, beam deviation, and refractive index measurements. Made from premium optical glass and polished to tight tolerances, it delivers excellent clarity and consistent performance.

Material - BK7
Bevel : 0.2mm x 45degree

Model No.	HO-SCP-B50	HO-SCP-B20
Material	BK7	BK7
Diameter	50 mm	20 mm
Thickness	25 mm	5 mm
Polish	All side polished (top, bottom and edges)	
Bevel	0.2 mm x 45 degree	



Features

- High-quality optical glass (BK7 or equivalent)
- Precision-polished flat and curved surfaces
- Ideal for refraction, TIR, and refractive index studies
- Available in multiple sizes and coating options

Applications

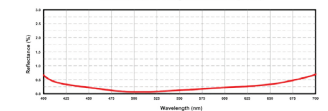
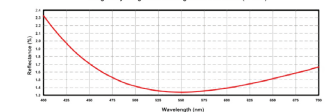
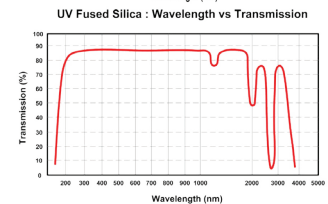
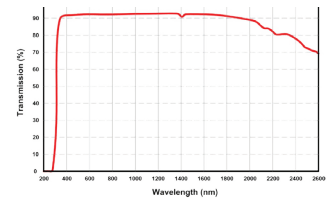
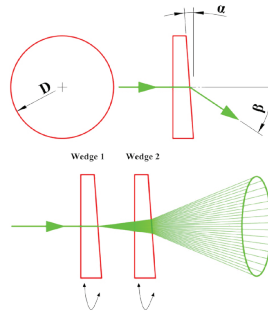
- Educational optics experiments
- Beam steering and conditioning

Wedge Prisms

Wedge prisms find applications in steering light beams. Two wedge prisms of equal power, used together can steer input light beams within a narrow cone. Wedge prism produces a small deviation to the light beam which doesn't allow the light return to the source. Holmarc offers wedge prisms in three options; uncoated, single layer MgF2 coated, and broadband AR coated.

Applicable for Beam Steering
Different coating options possible

Material	BK7 or equivalent & F ₂
Effective aperture	85 %
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Thin edge thickness	3 mm
Bevel	0.2 mm x 45°
AR coating	Optional



Model No.						
Uncoated	Single Layer MgF2	Broadband AR	Diameter D (mm)	Beam Deviation (β)	Wedge Angle (α)	Material
HO-WPB-1	HO-WPBC-1	HO-WPBB-1	25	1°	1°57'	BK7 or equivalent
HO-WPB-2	HO-WPBC-2	HO-WPBB-2	25	2°	3°53'	
HO-WPB-4	HO-WPBC-4	HO-WPBB-4	25	4°	7°41'	
HO-WPB-6	HO-WPBC-6	HO-WPBB-6	25	6°	11°22'	
HO-WPB-8	HO-WPBC-8	HO-WPBB-8	25	8°	14°52'	
HO-WPB-10	HO-WPBC-10	HO-WPBB-10	25	10°	18°09'	
HO-WPS-1	HO-WPSC-1	HO-WPSB-1	25	1°	2°40'	Fused Silica
HO-WPS-2	HO-WPSC-2	HO-WPSB-2	25	2°	4°70'	
HO-WPS-4	HO-WPSC-4	HO-WPSB-4	25	4°	8°14'	
HO-WPS-6	HO-WPSC-6	HO-WPSB-6	25	6°	12°21'	

By combining two wedge prisms each of which can be rotated independently, it is possible to direct the beam anywhere within the cone angle defined by 4x the specified angular deviation of one wedge.

Pellin Broca Prisms

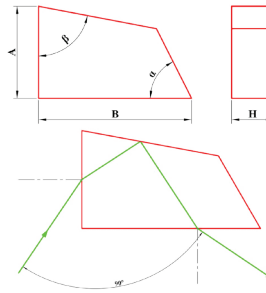
Pellin Broca prism is a constant (90°) deviation dispersive prism. These prisms separate light beam of multiple wavelengths to single wavelength. Pellin Broca prism's incidence angle is Brewster's angle, which minimizes the reflection losses in P-polarized light. Hence, these are known as Brewster's angle prisms as well. Holmarc offers Pellin Broca Prisms in three different substrate materials.

Deviate light wavelength by 90°
Separate light beam of multiple wavelengths to single wavelengths

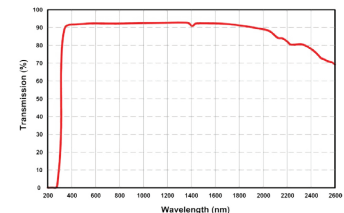
Material	BK7 or equivalent, N-SF1 & UV fused silica
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Clear aperture	80 %
Angle tolerance	$\alpha = 60^\circ \pm 1^\circ, \beta = 79.5^\circ \pm 0.5^\circ$

Model No.	Clear Aperture (mm)	A (mm)	B (mm)	H (mm)	Material
HO-PBB-5	5	11	20	6.4	BK7 or equivalent
HO-PBB-10	10	23.5	40	12.7	BK7 or equivalent
HO-PBS-5	5	11	20	6.4	Fused Silica
HO-PBS-10	10	23.5	40	12.7	Fused Silica
HO-PBF-5	5	11	20	6.4	N - SF1
HO-PBF-10	10	23.5	40	12.7	N - SF1

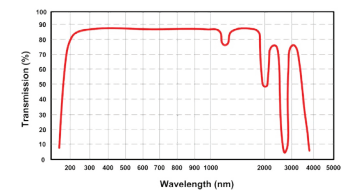
Material other than BK7, NSF1 and Fused silica are available on special request.



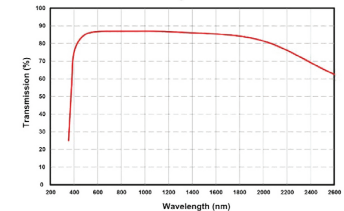
N-BK7 : Wavelength vs Transmission



UV Fused Silica : Wavelength vs Transmission

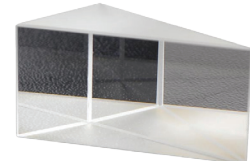
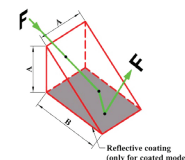
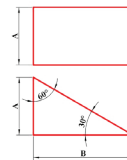


N-SF1: Wavelength vs Transmission



Littrow Prisms

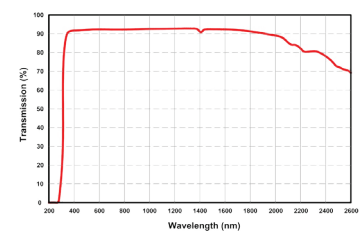
Holmarc's Littrow prisms are $30^\circ - 60^\circ - 90^\circ$ prisms made from N-BK7 material. The uncoated littrow prisms are used to disperse white light into its spectrum. Coated littrow prisms are used to divert the incident beam at 60° . Coated prism divert the incident beam by 60° . Uncoated prism ideal for dispersion of white light into spectrum



Material	BK7 or equivalent
Angle tolerance	$\pm 3 \text{ arc min}$
Surface Quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Coating	Al + SiO @ face opposite to 60° angle (optional)

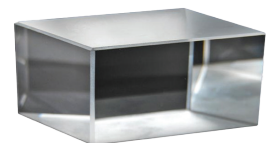
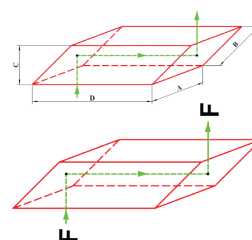
Model No	Uncoated	Coated	A (mm)	B (mm)
HO-LP-12.5	HO-LPC-12.5		12.5	21.65
HO-LP-25	HO-LPC-25		25	43.30

N-BK7 : Wavelength vs Transmission



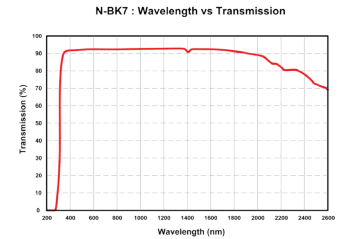
Rhomboid Prisms

Rhomboid prism is used to displace the incident beam without affecting the image orientation. This prism can be used to displace the optical center line and the displacement is equal to the length of the prism. Rhomboid prisms are available uncoated.



Material	BK7 or equivalent
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Angles tolerance	± 5 arc sec
Beam deviation	± 30 arc sec
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$

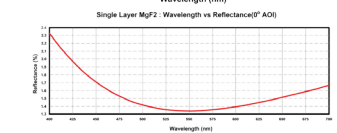
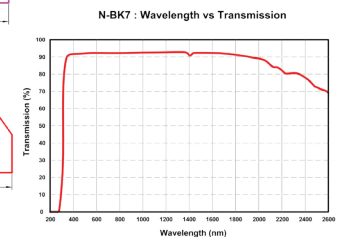
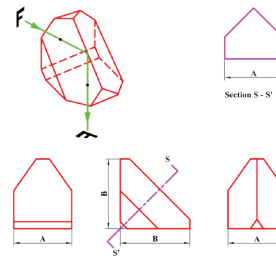
Model No.	A (mm)	B (mm)	C (mm)	D (mm)
HO-RHB-10	10	10	7.1	14.1
HO-RHB-20	20	20	14.2	28.3
HO-RHB-25	25	25	17.7	35.4
HO-RHB-50	50	50	35.4	70.7



Beam deviation ± 30 arc sec
Displace the incident beam
without affecting the image
orientation

Amici Roof Prisms

Amici roof prisms are also known as roof prisms. It consists of a right angle prism whose hypotenuse has been replaced by a 90° TIR Roof. The Amici roof prism will revert and invert the image and at the same time, will deviate the line of sight through an angle of 90° . Holmarc's amici roof prisms are available either uncoated or single layer AR coated on entrance and exit faces. Broadband AR coating ($R < 0.5\% @ 400 - 700 \text{ nm}$) can be done on avg custom basis.



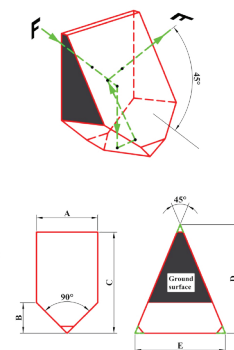
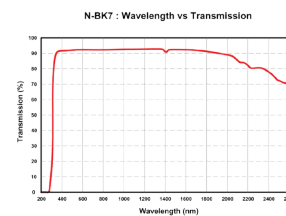
Material	BK7 or equivalent
Angle tolerance	± 3 arc min
Roof angle tolerance	± 5 arc sec
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+ 0.0, -0.2 mm
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Coating	Single layer MgF2 on entrance & exit faces

Model No.				
Uncoated	Coated	Clear Aperture (mm)	A (mm)	B (mm)
HO-ARP-10	HO-ARPC-10	10	13	18
HO-ARP-15	HO-ARPC-15	15	18	23
HO-ARP-20	HO-ARPC-20	20	25	30
HO-ARP-25	HO-ARPC-25	25	32	37

Schmidt Prisms

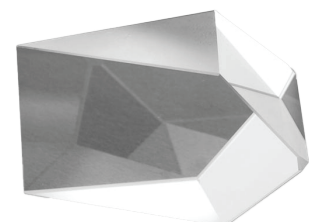
Holmarc's Schmidt prisms are used to invert and revert the image while deviating the line of sight by 45° . The aluminized roof surfaces enhance the overall efficiency of the prism and the high accuracy roof angle tolerance increases the prism resolution.

45° deviation of beam
5 arc min angle tolerance



Material	BK7 or equivalent
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	± 0.1mm
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Angle tolerance	5 arc seconds
Coating	Entrance & exit faces = uncoated Roof = protected aluminium overcoated with Inconel

Model No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
HO-SP-10	10	5	16.5	17.74	14.7
HO-SP-25	25	12.5	41.3	44.4	36.78



Windows

- **Laser set-ups**
- **Emitter/detector protection devices**
- **Imaging systems with ultraviolet wavelengths**

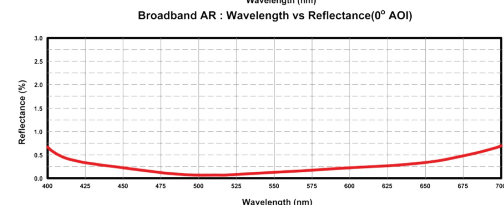
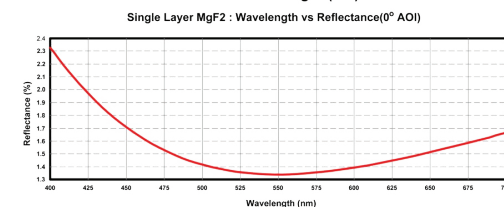
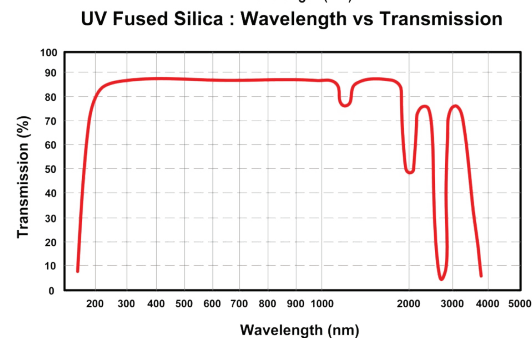
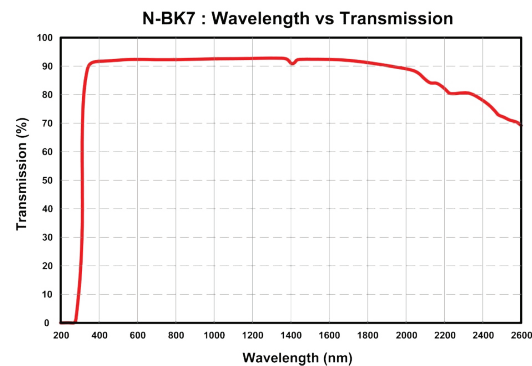


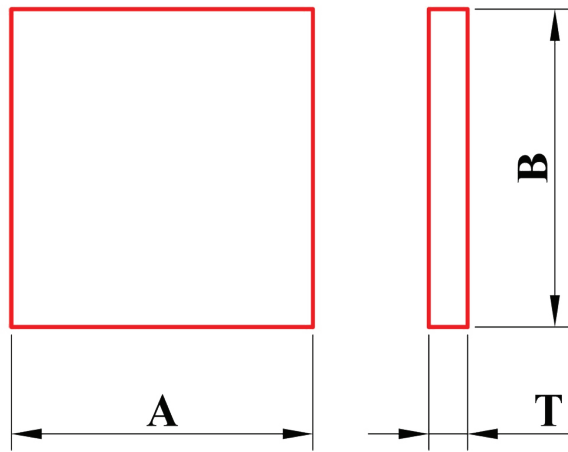
Holmarc provides high precision optical windows with BK7 and UV fused silica substrates. Our optical windows are available in circular, square, or rectangular shapes with or without Anti-reflection coatings. Windows with custom sizes and shapes can be supplied to order. Anti-reflection coatings for custom wavelength regions are also available.

Rectangular and Square Windows

Optical Windows allow light beam to pass from one medium to another without changing the wavelength distribution or the transmitted wave front of the beam. Ideally, optical windows do not scatter light out of the beam. Holmarc offers windows in two different materials; N-BK7 & Fused Silica. Holmarc's windows are available in uncoated, single layer MgF2 coated, and broadband AR coated options.

Material	BK7 or equivalent & UV Fused Silica
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.0, -0.2mm
Thickness tolerance	+0.0, -0.2mm
Surface flatness	$\lambda / 4$ @ 632.8 nm
Bevel	0.2 mm x 45°
Parallelism	≤ 1 arc min or 3 arc min
Coating (Optional)	1. Uncoated 2. Single layer MgF2 3. Broadband AR (Ravg < 0.5% @ 400-700 nm)





BK7 or equivalent

Uncoated	Single Layer MgF2	Broadband AR	Dimensions A x B (mm)	Thickness T (mm)	Parallelism (arc min)	Material
HO-WRB-10-1	HO-WRBC-10-1	HO-WRBB-10-1	10 x 20	5	1	BK7 or equivalent
HO-WRB-10-3	HO-WRBC-10-3	HO-WRBB-10-3	10 x 20	5	3	BK7 or equivalent
HO-WRB-15-1	HO-WRBC-15-1	HO-WRBB-15-1	15 x 30	5	1	BK7 or equivalent
HO-WRB-15-3	HO-WRBC-15-3	HO-WRBB-15-3	15 x 30	5	3	BK7 or equivalent
HO-WRB-20-1	HO-WRBC-20-1	HO-WRBB-20-1	20 x 35	5	1	BK7 or equivalent
HO-WRB-20-3	HO-WRBC-20-3	HO-WRBB-20-3	20 x 35	5	3	BK7 or equivalent
HO-WSB-25-1	HO-WSBC-25-1	HO-WSBB-25-1	25 x 25	6	1	BK7 or equivalent
HO-WSB-25-3	HO-WSBC-25-3	HO-WSBB-25-3	25 x 25	6	3	BK7 or equivalent
HO-WRB-30-1	HO-WRBC-30-1	HO-WRBB-30-1	30 x 50	8	1	BK7 or equivalent
HO-WRB-30-3	HO-WRBC-30-3	HO-WRBB-30-3	30 x 50	8	3	BK7 or equivalent
HO-WSB-50-1	HO-WSBC-50-1	HO-WSBB-50-1	50 x 50	8	1	BK7 or equivalent
HO-WSB-50-3	HO-WSBC-50-3	HO-WSBB-50-3	50 x 50	8	3	BK7 or equivalent

Fused Silica

Uncoated	Single Layer MgF2	Broadband AR	Dimensions A x B (mm)	Thickness T (mm)	Parallelism (arc min)	Material
HO-WRS-10-1	HO-WRSC-10-1	HO-WRSB-10-1	10 x 20	5	1	Fused Silica
HO-WRS-10-3	HO-WRSC-10-3	HO-WRSB-10-3	10 x 20	5	3	Fused Silica
HO-WRS-15-1	HO-WRSC-15-1	HO-WRSB-15-1	15 x 30	5	1	Fused Silica
HO-WRS-15-3	HO-WRSC-15-3	HO-WRSB-15-3	15 x 30	5	3	Fused Silica
HO-WRS-20-1	HO-WRSC-20-1	HO-WRSB-20-1	20 x 35	5	1	Fused Silica
HO-WRS-20-3	HO-WRSC-20-3	HO-WRSB-20-3	20 x 35	5	3	Fused Silica
HO-WSS-25-1	HO-WSSC-25-1	HO-WSSB-25-1	25 x 25	6	1	Fused Silica
HO-WSS-25-3	HO-WSSC-25-3	HO-WSSB-25-3	25 x 25	6	3	Fused Silica
HO-WRS-30-1	HO-WRSC-30-1	HO-WRSB-30-1	30 x 50	8	1	Fused Silica
HO-WRS-30-3	HO-WRSC-30-3	HO-WRSB-30-3	30 x 50	8	3	Fused Silica
HO-WSS-50-1	HO-WSSC-50-1	HO-WSSB-50-1	50 x 50	8	1	Fused Silica
HO-WSS-50-3	HO-WSSC-50-3	HO-WSSB-50-3	50 x 50	8	3	Fused Silica

Circular Windows

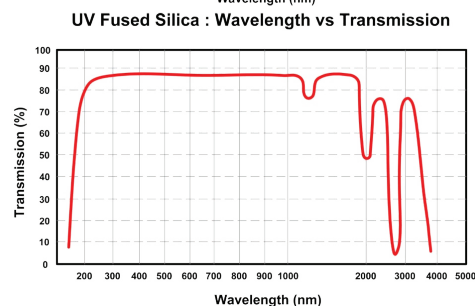
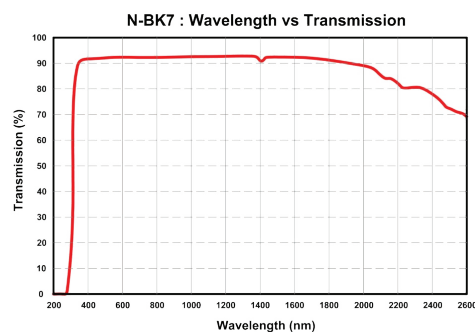
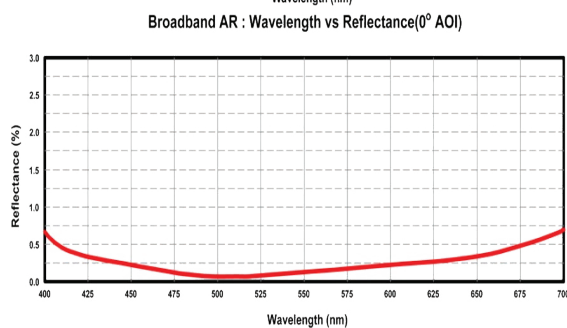
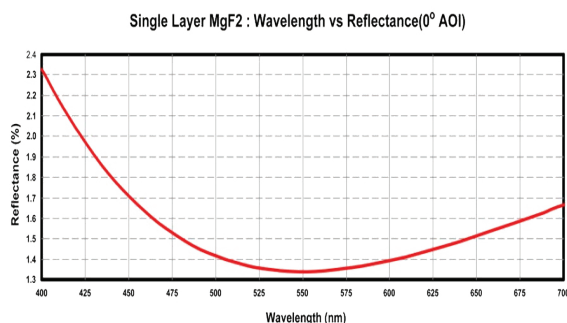
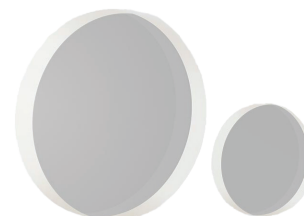
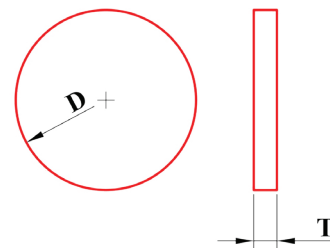
These optical windows are precision manufactured using BK7 or equivalent and Fused silica. We can also work with substrates furnished by the customer.

Windows are designed to be used in optical systems to separate two environments while passing a particular spectral range between them. Applications include laser set-ups, emitter/detector protection devices, and imaging systems involving ultraviolet wavelengths.

Diameter changes from 10 - 50 mm

Different coating options : Uncoated, Single layer MgF₂, Broadband AR

Material	BK7 or equivalent & fused silica
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.0, -0.2mm
Thickness tolerance	+0.0, -0.2mm
Surface flatness	$\lambda / 4$ @ 632.8 nm
Bevel	0.2mm x 45°
Parallelism	≤ 1 arc min or 3 arc min
Coating	(Optional) 1. Uncoated 2. Single layer MgF ₂ 3. Broadband AR (R _{avg} < 0.5% @ 400-700 nm



BK7 or equivalent

Uncoated	Single Layer MgF2	Broadband AR	Diameter D (mm)	Thickness T (mm)	Parallelism (arc min)	Material
HO-WCB-10-1	HO-WCBC-10-1	HO-WCBB-10-1	10	5	1	BK7 or equivalent
HO-WCB-10-3	HO-WCBC-10-3	HO-WCBB-10-3	10	5	3	BK7 or equivalent
HO-WCB-15-1	HO-WCBC-15-1	HO-WCBB-15-1	15	5	1	BK7 or equivalent
HO-WCB-15-3	HO-WCBC-15-3	HO-WCBB-15-3	15	5	3	BK7 or equivalent
HO-WCB-20-1	HO-WCBC-20-1	HO-WCBB-20-1	20	5	1	BK7 or equivalent
HO-WCB-20-3	HO-WCBC-20-3	HO-WCBB-20-3	20	5	3	BK7 or equivalent
HO-WCB-25-1	HO-WCBC-25-1	HO-WCBB-25-1	25	6	1	BK7 or equivalent
HO-WCB-25-3	HO-WCBC-25-3	HO-WCBB-25-3	25	6	3	BK7 or equivalent
HO-WCB-30-1	HO-WCBC-30-1	HO-WCBB-30-1	30	8	1	BK7 or equivalent
HO-WCB-30-3	HO-WCBC-30-3	HO-WCBB-30-3	30	8	3	BK7 or equivalent
HO-WCB-40-1	HO-WCBC-40-1	HO-WCBB-40-1	40	8	1	BK7 or equivalent
HO-WCB-40-3	HO-WCBC-40-3	HO-WCBB-40-3	40	8	3	BK7 or equivalent
HO-WCB-50-1	HO-WCBC-50-1	HO-WCBB-50-1	50	8	1	BK7 or equivalent
HO-WCB-50-3	HO-WCBC-50-3	HO-WCBB-50-3	50	8	3	BK7 or equivalent

Fused Silica

Uncoated	Single Layer MgF2	Broadband AR	Diameter D (mm)	Thickness T (mm)	Parallelism (arc min)	Material
HO-WCS-10-1	HO-WCSC-10-1	HO-WCSB-10-1	10	5	1	Fused Silica
HO-WCS-10-3	HO-WCSC-10-3	HO-WCSB-10-3	10	5	3	Fused Silica
HO-WCS-15-1	HO-WCSC-15-1	HO-WCSB-15-1	15	5	1	Fused Silica
HO-WCS-15-3	HO-WCSC-15-3	HO-WCSB-15-3	15	5	3	Fused Silica
HO-WCS-20-1	HO-WCSC-20-1	HO-WCSB-20-1	20	5	1	Fused Silica
HO-WCS-20-3	HO-WCSC-20-3	HO-WCSB-20-3	20	5	3	Fused Silica
HO-WCS-25-1	HO-WCSC-25-1	HO-WCSB-25-1	25	6	1	Fused Silica
HO-WCS-25-3	HO-WCSC-25-3	HO-WCSB-25-3	25	6	3	Fused Silica
HO-WCS-30-1	HO-WCSC-30-1	HO-WCSB-30-1	30	8	1	Fused Silica
HO-WCS-30-3	HO-WCSC-30-3	HO-WCSB-30-3	30	8	3	Fused Silica
HO-WCS-40-1	HO-WCSC-40-1	HO-WCSB-40-1	40	8	1	Fused Silica
HO-WCS-40-3	HO-WCSC-40-3	HO-WCSB-40-3	40	8	3	Fused Silica
HO-WCS-50-1	HO-WCSC-50-1	HO-WCSB-50-1	50	8	1	Fused Silica
HO-WCS-50-3	HO-WCSC-50-3	HO-WCSB-50-3	50	8	3	Fused Silica

Beamsplitters

- **Splitting a light beam**
- **Re-combining a light beam**
- **Sampling light by Fresnel reflection**



Holmarc provides three types of beamsplitters; Plate Beamsplitters, Cube Beamsplitters, and Variable Beamsplitters. Plate beamsplitters and cube beamsplitters are available with 30 / 70, 50 / 50, or 70 / 30 R/T ratios, while variable beamsplitters provide continuous R/T ratio from 10 / 90 to 90 / 10. In addition to the beamsplitters, Holmarc provides beam samplers to take off a sample of light by Fresnel reflection. All the beamsplitters are coated with Anti-reflection coating to reduce the back reflection. Beamsplitters with custom split ratios and sizes can be supplied to order.

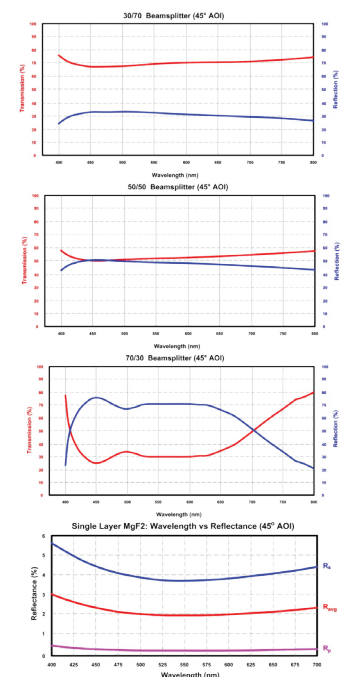
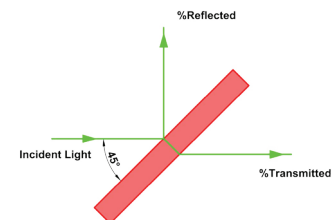
Plate Beamsplitters

Plate beamsplitters find applications in splitting or re-combining a light beam. The front surface of our beamsplitter is coated with metallic or dielectric thin film and the back surface is AR coated. The antireflection coating on the back surface minimizes unwanted secondary reflection. Holmarc offers beamsplitters in three R / T ratios; 30/70, 50/50 and 70/30. Custom R/T ratios and sizes are also available. Though our standard plate beamsplitters are designed for visible region between 400 nm and 700 nm, we can provide these optics for ultraviolet and Infra-red spectral regions.

Material	BK7 or equivalent
Clear aperture	90%
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.0, -0.2 mm
Thickness tolerance	±0.2 mm
Surface flatness	$\lambda / 4 @ 632.8 \text{ nm}$
Parallelism	≤ 1 arc min
Coating (45° both side)	Front - metallic or dielectric Back - anti-reflection
Transmittance tolerance	± 5%
Reflectance tolerance	± 5%

Metallic Plate Beamsplitters - Square Aperture

Model No.	size	Thickness	R % / T %
HO-MPSBS-25A	25 mm	6 mm	30 / 70
HO-MPSBS-25B	25 mm	6 mm	50 / 50
HO-MPSBS-25C	25 mm	6 mm	70 / 30
HO-MPSBS-50A	50 mm	6 mm	30 / 70
HO-MPSBS-50B	50 mm	6 mm	50 / 50
HO-MPSBS-50C	50 mm	6 mm	70 / 30



Metallic Plate Beamsplitters - Circular Aperture

Model No.	size	Thickness	R % / T %
HO-MPCBS-25A	25 mm	6 mm	30 / 70
HO-MPCBS-25B	25 mm	6 mm	50 / 50
HO-MPCBS-25C	25 mm	6 mm	70 / 30
HO-MPCBS-50A	50 mm	6 mm	30 / 70
HO-MPCBS-50B	50 mm	6 mm	50 / 50
HO-MPCBS-50C	50 mm	6 mm	70 / 30

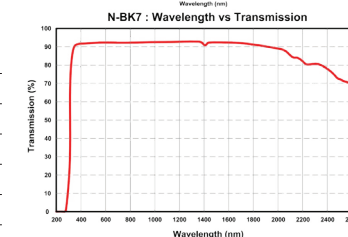
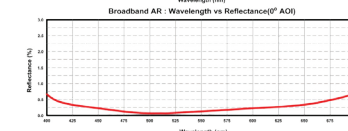
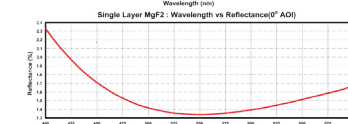
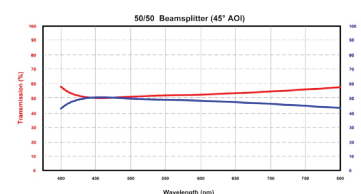
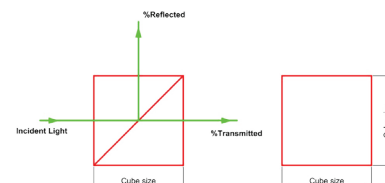


Metallic Cube Beamsplitters

Holmarc's Metallic cube beamsplitters consists of two right angle prisms cemented together. The hypotenuse of the one prism has a combination of metallic-dielectric thin film coating. These are Lowpolarizing beamsplitters; the transmission and reflection for S - and P - polarization components are within $\pm 10\%$. The cube faces of our beamsplitters have anti-reflection coatings for getting maximum transmittance. Beamsplitters with uncoated cube faces are also available. Custom sizes, coatings and split ratios are available as well.

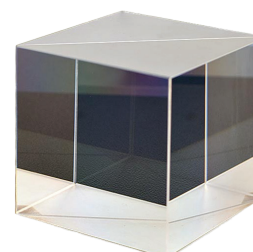
Cube size ranges from 10-50 mm
Beamsplitter Coating for 400 - 700 nm

Material	BK7 or equivalent
Clear aperture	90%
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.0, -0.2 nm
Surface flatness	$\lambda / 4 @ 632.8$ nm
Angle folerance	± 5 arc min
Coating	Hypotenuse :- metallic + dielectric cube faces :
	1. Uncoated
	2. Single layer MgF2
	3. Broadband AR, Ravg < 0.5% (400 -700 nm)
Split ratio (R% / T%)	50 / 50 $\pm 10\%$
Absorption	< 10%
Polarization	< 10%



Model No.	Uncoated	Single Layer MgF2	Broadband AR	Cube size (mm)	Wavelength (nm)
HO-MCBS-10	HO-MCBS-C-10	HO-MCBS-B-10	HO-MCBS-B-10	10	400 - 700
HO-MCBS-15	HO-MCBS-C-15	HO-MCBS-B-15	HO-MCBS-B-15	15	400 - 700
HO-MCBS-20	HO-MCBS-C-20	HO-MCBS-B-20	HO-MCBS-B-20	20	400 - 700
HO-MCBS-25	HO-MCBS-C-25	HO-MCBS-B-25	HO-MCBS-B-25	25	400 - 700
HO-MCBS-50	HO-MCBS-C-50	HO-MCBS-B-50	HO-MCBS-B-50	50	400 - 700

Note: Low-polarizing beamsplitters for custom wavelength regions are available.



Variable Beamsplitters (Mounted)

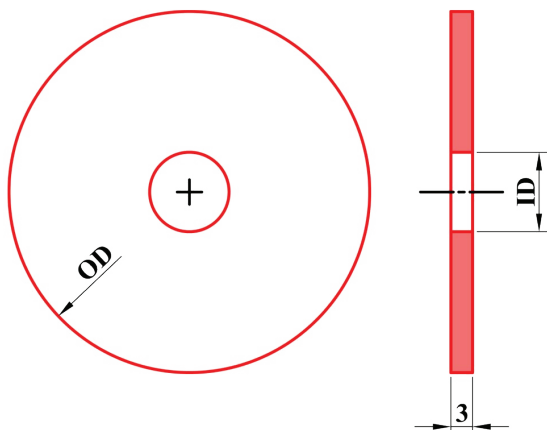
Our Circular Variable Beamsplitters (Mounted) find applications in splitting an incident beam into a transmitted and a reflected beam. The intensity ratio of transmitted and reflected beams can be controlled over a wide range. The front surface of the variable beamsplitter has protected aluminium coating and the back surface has anti-reflection coating to reduce secondary images.

BK7 and Fused silica material of thickness 3 mm

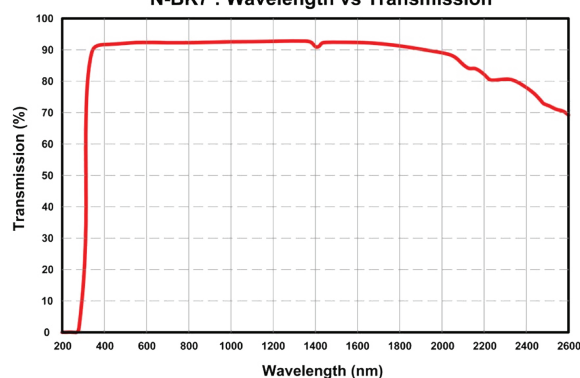
Splits incident beam into a transmitted and a reflected beam

Material	BK7 or equivalent & UV Fused Silica
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.00, -0.2 nm
Thickness	3 ± 0.2 mm
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	± 1 arc min
Coating	Front surface = protective aluminium Back surface = anti-reflection coating

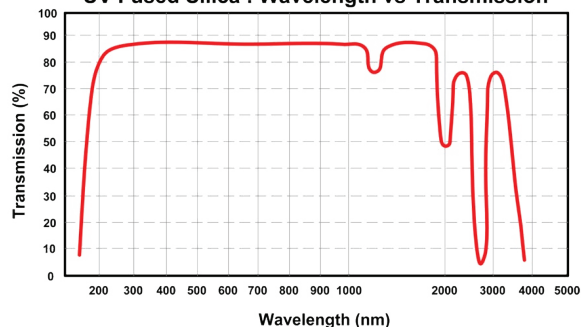
Model No.	OD(mm)	ID (mm)	Material
HO-VBS-N50	50	13	BK7 or equivalent
HO-VBS-F50	50	13	Fused Silica
HO-VBS-N75	75	25	BK7 or equivalent
HO-VBS-F75	75	25	Fused Silica
HO-VBS-N100	100	25	BK7 or equivalent
HO-VBS-F100	100	25	Fused Silica



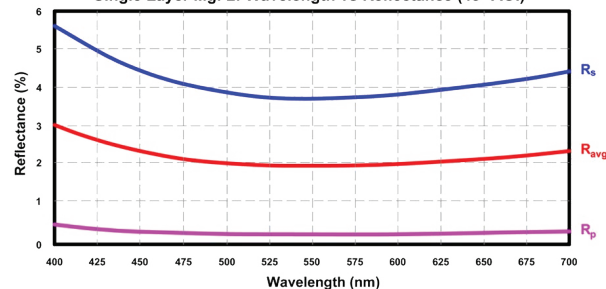
N-BK7 : Wavelength vs Transmission



UV Fused Silica : Wavelength vs Transmission



Single Layer MgF2: Wavelength vs Reflectance (45° AOI)



Beam Samplers

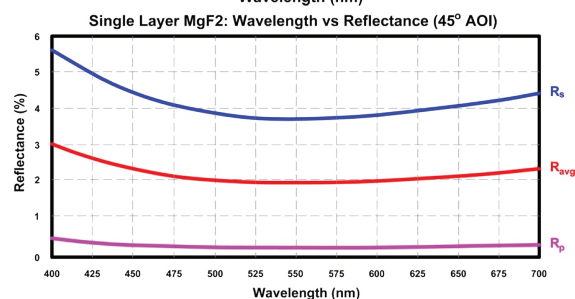
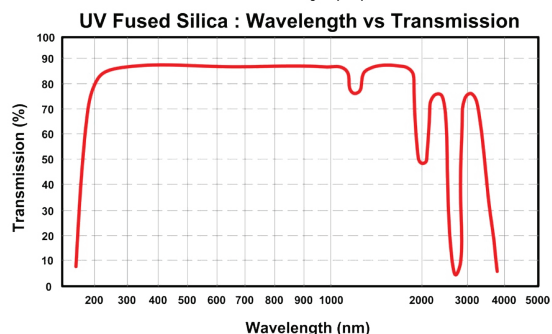
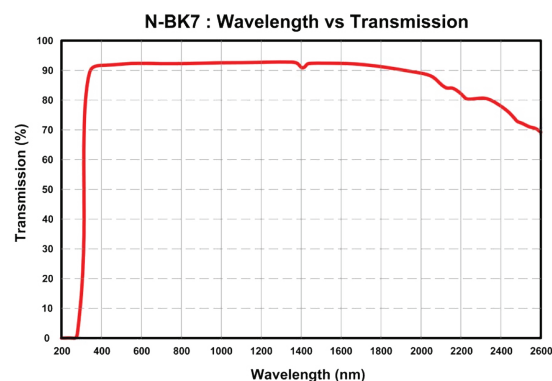
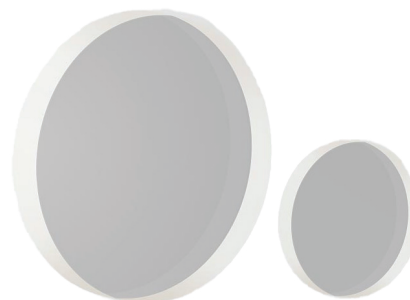
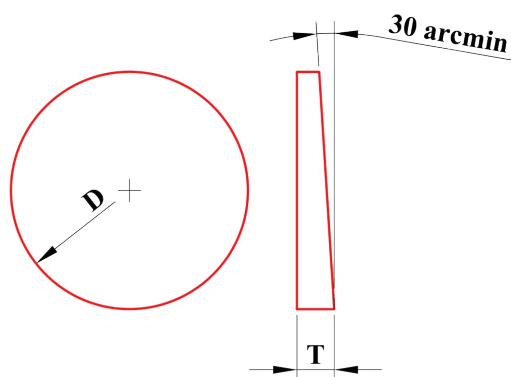
Beam Samplers are used to pick off the sample of a light beam by using the Fresnel reflection from uncoated surfaces (Beam samplers are used for monitoring applications where disturbance of the transmitted beam must be kept minimum) The back surface is wedged to avoid internal fringes and is anti-reflection coated to remove ghost images. Custom Sizes and anti-reflection coatings are available on special request.

AR coating for 400 - 700 nm

Available in different diameters of different thickness

Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.00, -0.2 nm
Thickness	± 0.2 mm
Clear aperture	90 %
Surface flatness	$\lambda / 4$ @ 632.8 nm
Reflectance, Ravg	5% @ 45°
Wedge	30 ± 10 arc min
Coating	Front surface :- uncoated Back surface :- anti-reflection @ 400 - 700nm

Model No.	Diameter (mm)	Thickness (mm)	Material
HO-BS-N-12.5	12.5	3	BK7 or equivalent
HO-BS-F-12.5	12.5	3	Fused Silica
HO-BS-N-25	25	5	BK7 or equivalent
HO-BS-F-25	25	5	Fused Silica
HO-BS-N-50	50	8	BK7 or equivalent
HO-BS-F-50	50	8	Fused Silica



Filters

Absorptive Neutral Density Filters

HO-NDA Series

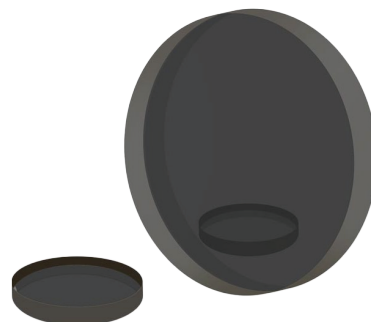
Absorptive Neutral Density Filters attain functions by absorbing light with minimal reflection. Holmarc's absorptive neutral density filters are made by four special filter glass materials from Schott. Each schott filter glass material has a spectrally flat absorption coefficient in the visible region. Since optical density is a function of the type of glass material and thickness, by varying these we are able to produce the entire line of absorptive ND filters. Holmarc offers Absorptive ND filters in unmounted and mounted options. Optical density of the absorptive ND filter is related to the transmission by the following equation;

$$OD = \log_{10} (1 / T), \text{ or } T = 10^{-OD}$$

Specifications

Materials	NG1, NG4, NG9 & NG11
Surface quality	40 - 20 (scratch-dig
Dimensional Tolerance	+0.00, -0.2 nm
Clear aperture	90 %
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	≤ 10 arc sec
Damage threshold	< 500 mJ / cm ² @ 532 nm CW laser

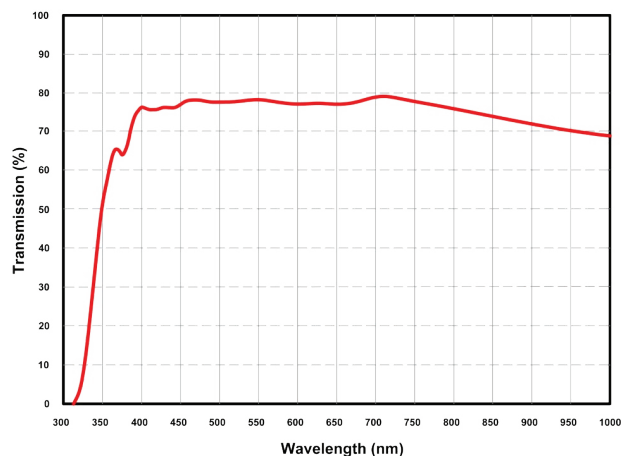
Absorptive Neutral density filters of custom sizes are available. Variety of cells and holders are available from Holmarc. For custom designs, contact at sales@holmarc.com



Optical density ranges from 0.1 to 6.0

Variety of Schott materials Available

Absorptive ND Filter , OD - 0.1



Model No.		Diameter D (mm)	Optical Density (OD)	Material
Unmounted	Mounted			
HO-NDA-12.5-0.1	HO-NDA-12.5M-0.1	12.5	0.1	NG11
HO-NDA-12.5-0.2	HO-NDA-12.5M-0.2	12.5	0.2	NG11
HO-NDA-12.5-0.3	HO-NDA-12.5M-0.3	12.5	0.3	NG11
HO-NDA-12.5-0.4	HO-NDA-12.5M-0.4	12.5	0.4	NG4
HO-NDA-12.5-0.5	HO-NDA-12.5M-0.5	12.5	0.5	NG4
HO-NDA-12.5-0.6	HO-NDA-12.5M-0.6	12.5	0.6	NG4
HO-NDA-12.5-1.0	HO-NDA-12.5M-1.0	12.5	1.0	NG4
HO-NDA-12.5-1.3	HO-NDA-12.5M-1.3	12.5	1.3	NG4
HO-NDA-12.5-2.0	HO-NDA-12.5M-2.0	12.5	2.0	NG9
HO-NDA-12.5-3.0	HO-NDA-12.5M-3.0	12.5	3.0	NG9
HO-NDA-12.5-4.0	HO-NDA-12.5M-4.0	12.5	4.0	NG9
HO-NDA-12.5-5.0	HO-NDA-12.5M-5.0	12.5	5.0	NG9
HO-NDA-12.5-6.0	HO-NDA-12.5M-6.0	12.5	6.0	NG1
HO-NDA-25-0.1	HO-NDA-25M-0.1	25	0.1	NG11
HO-NDA-25-0.2	HO-NDA-25M-0.2	25	0.2	NG11
HO-NDA-25-0.3	HO-NDA-25M-0.3	25	0.3	NG4
HO-NDA-25-0.4	HO-NDA-25M-0.4	25	0.4	NG4
HO-NDA-25-0.5	HO-NDA-25M-0.5	25	0.5	NG4
HO-NDA-25-0.6	HO-NDA-25M-0.6	25	0.6	NG4
HO-NDA-25-1.0	HO-NDA-25M-1.0	25	1.0	NG4
HO-NDA-25-1.3	HO-NDA-25M-1.3	25	1.3	NG4
HO-NDA-25-2.0	HO-NDA-25M-2.0	25	2.0	NG9
HO-NDA-25-3.0	HO-NDA-25M-3.0	25	3.0	NG9
HO-NDA-25-4.0	HO-NDA-25M-4.0	25	4.0	NG9
HO-NDA-25-5.0	HO-NDA-25M-5.0	25	5.0	NG9
HO-NDA-25-6.0	HO-NDA-25M-6.0	25	6.0	NG1

Reflective Neutral Density Filters

HO-NDR Series

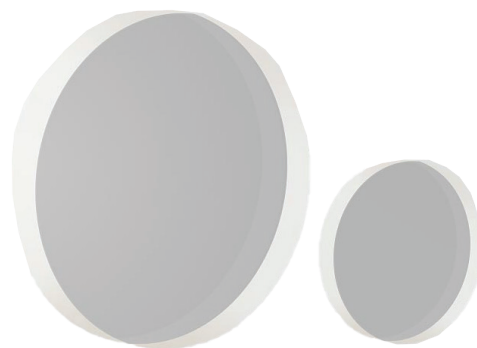
Reflective Neutral Density Filters attenuate the light beam by a combination of reflection and absorption. Holmarc's reflective neutral density filters are made from BK7 or equivalent glass substrate with hard Inconel coating and are used to attenuate the intensity over a broad spectral region (350 - 1100 nm). Holmarc offers reflective neutral density filters in unmounted and mounted options. Optical density of the reflective neutral density filter is related to transmission by the following equation;

$$OD = \log_{10} (1/T), \text{ or } T = 10^{-OD}$$

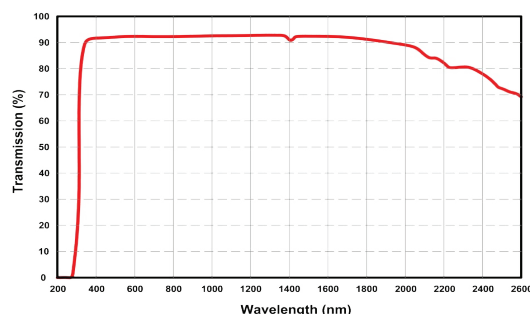
Specifications

Material	Bk7 or equivalent
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.00, -0.2 mm
Thickness	2.0 ± 0.2 mm
Clear aperture	90 %
Surface flatness	λ / 4 @ 632.8 nm
Parallelism	≤ 3 arc sec
Damage threshold	< 200 mJ / cm ² (@ 532 nm CW laser)

Reflective Neutral Density Filters of custom sizes are available. Variety of cells and holders are available from Holmarc. For custom designs, contact at sales@holmarc.com



N-BK7 : Wavelength vs Transmission

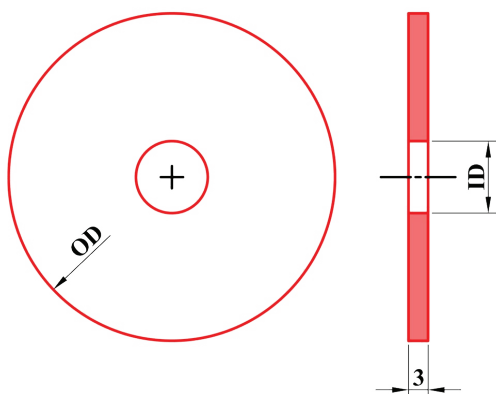


Model No.		Diameter D (mm)	Optical Density (OD)
Unmounted	Mounted		
HO-NDR-12.5-0.1	HO-NDR-12.5M-0.1	12.5	0.1
HO-NDR-12.5-0.2	HO-NDR-12.5M-0.2	12.5	0.2
HO-NDR-12.5-0.3	HO-NDR-12.5M-0.3	12.5	0.3
HO-NDR-12.5-0.4	HO-NDR-12.5M-0.4	12.5	0.4
HO-NDR-12.5-0.5	HO-NDR-12.5M-0.5	12.5	0.5
HO-NDR-12.5-0.6	HO-NDR-12.5M-0.6	12.5	0.6
HO-NDR-12.5-1.0	HO-NDR-12.5M-1.0	12.5	1.0
HO-NDR-12.5-1.3	HO-NDR-12.5M-1.3	12.5	1.3
HO-NDR-12.5-2.0	HO-NDR-12.5M-2.0	12.5	2.0
HO-NDR-12.5-3.0	HO-NDR-12.5M-3.0	12.5	3.0
HO-NDR-12.5-4.0	HO-NDR-12.5M-4.0	12.5	4.0
HO-NDR-12.5-5.0	HO-NDR-12.5M-5.0	12.5	5.0
HO-NDR-12.5-6.0	HO-NDR-12.5M-6.0	12.5	6.0
HO-NDR-25-0.1	HO-NDR-25M-0.1	25	0.1
HO-NDR-25-0.2	HO-NDR-25M-0.2	25	0.2
HO-NDR-25-0.3	HO-NDR-25M-0.3	25	0.3
HO-NDR-25-0.4	HO-NDR-25M-0.4	25	0.4
HO-NDR-25-0.5	HO-NDR-25M-0.5	25	0.5
HO-NDR-25-0.6	HO-NDR-25M-0.6	25	0.6
HO-NDR-25-1.0	HO-NDR-25M-1.0	25	1.0
HO-NDR-25-1.3	HO-NDR-25M-1.3	25	1.3
HO-NDR-25-2.0	HO-NDR-25M-2.0	25	2.0
HO-NDR-25-3.0	HO-NDR-25M-3.0	25	3.0
HO-NDR-25-4.0	HO-NDR-25M-4.0	25	4.0
HO-NDR-25-5.0	HO-NDR-25M-5.0	25	5.0
HO-NDR-25-6.0	HO-NDR-25M-6.0	25	6.0

Variable Neutral Density Filters

Mounted HO-VND Series

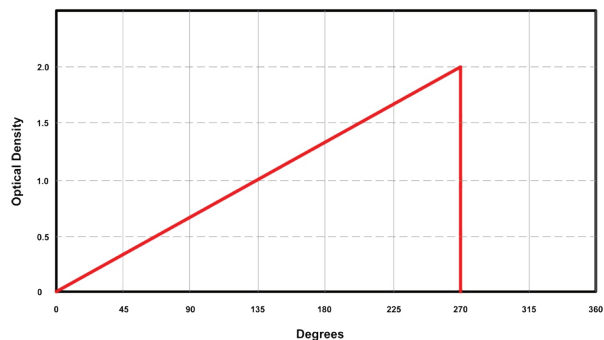
Our Circular Variable ND filters (Mounted) are designed to provide continuous variable attenuation by rotating the filter. Front side of our variable filter is coated with Inconel thin film and back side is antireflection coated to reduce unwanted reflection losses. Holmarc offers variable neutral density filters in two substrates; BK7 or equivalent & Fused Silica.



Specifications

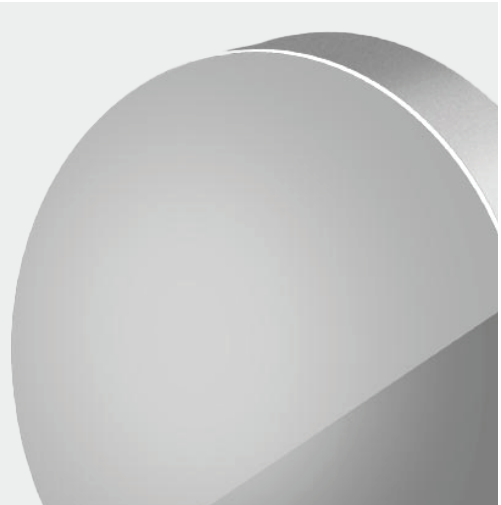
Substrate materials	Bk7 or equivalent & UV fused silica
Surface quality	40 - 20 (scratch-dig)
Dimensional Tolerance	+0.00, -0.2 nm
Thickness	3 ± 0.2 mm
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	≤ 1 arc sec
Coating	Front surface= Inconel Back surface = anti-reflection

Variable Neutral Density Filter



Model No.		Diameter D (mm)	Optical Density (OD)
Unmounted	Mounted		
			
HO-NDR-12.5-0.1	HO-NDR-12.5M-0.1	12.5	0.1
HO-NDR-12.5-0.2	HO-NDR-12.5M-0.2	12.5	0.2
HO-NDR-12.5-0.3	HO-NDR-12.5M-0.3	12.5	0.3
HO-NDR-12.5-0.4	HO-NDR-12.5M-0.4	12.5	0.4
HO-NDR-12.5-0.5	HO-NDR-12.5M-0.5	12.5	0.5
HO-NDR-12.5-0.6	HO-NDR-12.5M-0.6	12.5	0.6

Mirrors



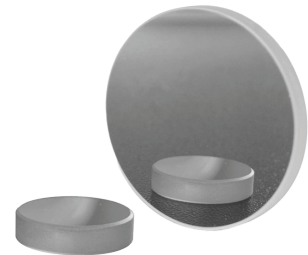
Holmarc offers different types of metallic coated mirrors for different applications in UV to IR wavelength range. Our high quality mirrors includes; Plano Aluminium Mirror, Plano Silver Mirror, Broadband Metallic Mirrors, Concave Mirrors, Cone Mirrors and 45° Rod Mirrors. Telescopic Primary Spherical and Parabolic mirrors are also available and can be supplied to order. Mirrors with custom sizes and shapes are also available.

Plano Aluminium Mirrors

Aluminium Mirrors offer high reflection throughout ultraviolet, visible and NIR region. The mirror coating consists of an Aluminium layer and a very thin protective coating. Custom sizes and flatness are available other than standard models.

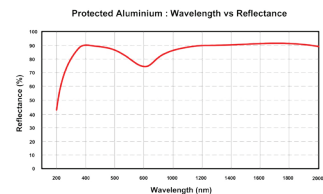
Coating : Protected Aluminum

Circular & square mirrors are available as standard models



Material	Borofloat (schott)
Thickness Tolerance	± 0.2 mm
Dimensional Tolerance	+0.00, -0.2 nm
Clear aperture	90 % of diameter
Surface quality	40 - 20 (scratch-dig)
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	≤ 3 arc min
Coating	Protected aluminium
Reflectivity R_{avg}	> 88% @ 450nm-2 μ m, > 93% @2 μ m - 20 μ m
Damage threshold	< 200 mJ / cm ² (@ 532 nm CW laser)
Bevel	0.2 mm x 45°

Model No.	Diameter (mm)	Thickness (mm)
HO-PCMA-10	ϕ 10	4
HO-PSMA-10	10 x 10	4
HO-PCMA-12.5	ϕ 12.5	6
HO-PSMA-12.5	12.5 x 12.5	6
HO-PCMA-25	ϕ 25	6
HO-PSMA-25	25 x 25	6
HO-PCMA-50	ϕ 50	6
HO-PSMA-50	50 x 50	6
HO-PCMA-75	ϕ 75	10
HO-PCMA-100	ϕ 100	10



Plano Silver Mirrors

Holmarc's silver coated mirror exhibits high reflectance compared to aluminium coated mirrors. Custom sizes and flatness are available other than standard models.

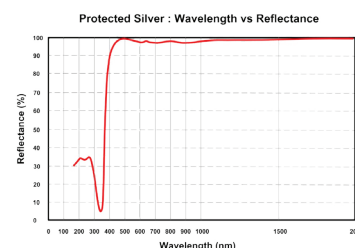
Coating: Protected Silver

Circular & square mirrors are available as standard models

Material	Borofloat (schott)
Thickness Tolerance	± 0.2 mm
Dimensional Tolerance	+0.00, -0.2 nm
Clear aperture	90 % of diameter
Surface quality	40 - 20 (scratch-dig)
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	≤ 3 arc min
Coating	Protected silver
Reflectivity R _{avg}	> 96% @ 450 nm - 2 μ m, > 95% @ 2 μ m - 20 μ m
Damage threshold	< 200 mJ / cm ² (@ 532 nm CW laser)
Bevel	0.2 mm x 45°

Plano silver mirrors of custom sizes are available. Variety of cells and mounts are available from Holmarc. For custom designs, contact at mail@holmarc.com

Model No.	Size (mm)	Thickness (mm)
HO-PCMS-10	ϕ 10	4
HO-PSMS-10	10 x 10	4
HO-PCMS-12.5	ϕ 12.5	6
HO-PSMS-12.5	12.5 x 12.5	6
HO-PCMS-25	ϕ 25	6
HO-PSMS-25	25 x 25	6
HO-PCMS-50	ϕ 50	6
HO-PSMS-50	50 x 50	6
HO-PCMS-75	ϕ 75	10
HO-PCMS-100	ϕ 100	10



Concave Mirrors

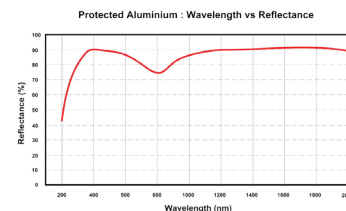
A concave mirror is a spherical mirror with reflective surface curved inwards. Concave mirrors produce real and virtual images. These mirrors find applications in laser beam concentration and quality imaging. Holmarc's concave mirrors have protected aluminium coating and offer high reflection throughout UV, visible and NIR region. Custom sizes and focal lengths are available as well.

Custom Coating Options Available

Focal length ranges from 25 to 1500 mm

Material	Borofloat (schott)
Thickness Tolerance	± 0.2 mm
Dimensional Tolerance	+0.00, -0.2 nm
Clear aperture	90 % of diameter
Surface quality	40 - 20 (scratch-dig)
Surface flatness	$\lambda / 4$ @ 632.8 nm
Parallelism	≤ 3 arc min
Coating	Protected aluminium
Reflectivity R _{avg}	> 88% @ 450 nm - 2 μ m, > 93% @ 2 μ m - 20 μ m
Damage threshold	< 200 mJ / cm ² (@ 532 nm CW laser)

Concave mirrors with protected silver and protected gold coating are available on special requests.



Model No.	Size (mm)	Focal length (mm)
HO-CCMA-12.5-02	12.5	25
HO-CCMA-12.5-04	12.5	50
HO-CCMA-25-01	25	25
HO-CCMA-25-02	25	50
HO-CCMA-25-03	25	75
HO-CCMA-50-01	50	50
HO-CCMA-50-02	50	100
HO-CCMA-50-03	50	150
HO-CCMA-50-04	50	200
HO-CCMA-75-01	75	75
HO-CCMA-75-02	75	150
HO-CCMA-75-2.6	75	200
HO-CCMA-100-05	100	500
HO-CCMA-100-10	100	1000
HO-CCMA-100-15	100	1500
HO-CCMA-150-6.6	150	1000
HO-CCMA-150-10	150	1500

Broadband Metallic Mirrors

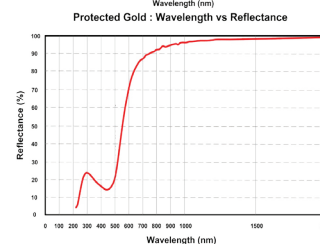
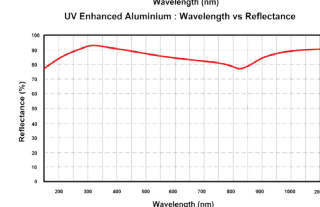
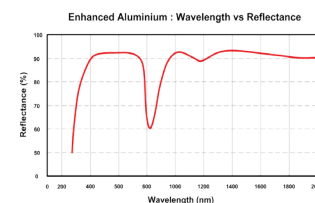
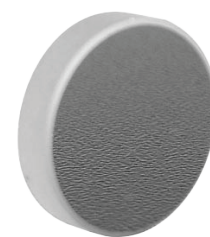
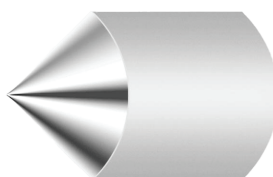
Broadband metallic mirrors provide high reflectance for a particular wavelength region. Holmarc's broadband metallic mirrors make use of dielectric layers along with metallic coating to increase the reflectance for the required wavelength range. We provide mirrors with enhanced aluminium, enhanced silver and protected gold coatings. Custom sizes and flatness are available as well.

Material	Borofloat (schott)
Thickness	6 mm
Thickness Tolerance	± 0.2 mm
Dimensional Tolerance	+ 0.00, - 0.2 mm
Clear aperture	90 % of diameter
Surface quality	40 - 20 (scratch-dig)
Surface flatness	$\lambda / 4$ @ 632.8 nm
Coating	UV enhanced aluminium / Enhanced aluminium / Enhanced silver / protected gold
Damage threshold	< 200 mJ / cm ² (@ 532 nm CW laser)

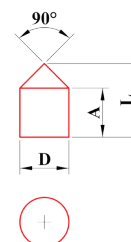
Model No.	Diameter D (mm)	Type	Reflectance	Wavelength Range (nm)
HO-BMM-UEA12.5	12.5	UV Enhanced Aluminium	> 85%	250 - 400
HO-BMM-UEA25	25	UV Enhanced Aluminium	> 85%	250 - 400
HO-BMM-UEA50	50	UV Enhanced Aluminium	> 85%	250 - 400
HO-BMM-EA12.5	12.5	Enhanced Aluminium	> 94%	400 - 700
HO-BMM-EA25	25	Enhanced Aluminium	> 94%	400 - 700
HO-BMM-EA50	50	Enhanced Aluminium	> 94%	400 - 700
HO-BMM-ES12.5	12.5	Enhanced Silver	> 96%	400 - 2000
HO-BMM-ES25	25	Enhanced Silver	> 96%	400 - 2000
HO-BMM-ES50	50	Enhanced Silver	> 96%	400 - 2000
HO-BMM-PG12.5	12.5	Protected Gold	> 96%	650 - IR
HO-BMM-PG25	25	Protected Gold	> 96%	650 - IR
HO-BMM-PG50	50	Protected Gold	> 96%	650 - IR

Cone Mirrors

Holmarc's Cone Mirrors are made from BK7 or equivalent optical glass and are used for 360 degree illumination applications. The cone surface is coated with protective aluminium.



High reflectance
Variety of Sizes and Coating
Options Available



Material	BK7 or equivalent
Clear aperture	90 %
Dimensional Tolerance	+0.00, -0.2 mm
Thickness Tolerance	± 0.2 mm
Length Tolerance	± 0.1 mm, ± 6 arcmin Angle Tolerance
Surface quality	40 - 20 (scratch-dig), Protected aluminum coating
Bevel	0.2 mm x 45°

Model No.	Diameter D (mm)	A (mm)	Length L (mm)
HO-CM-2	2	2	3
HO-CM-3	3	3	4.5
HO-CM-5	5	5	7.5
HO-CM-10	10	10	15

45° Rod Mirrors

Holmarc's 45° Rod mirrors are made from BK7 or equivalent material and are used to bend laser or image path by 90°. Custom mirrors are available on special request. The elliptical surface of the rod mirrors are coated with protected aluminium.

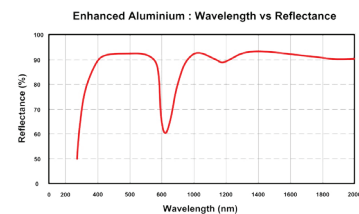
Material	BK7 or equivalent
Clear aperture	90 %
Dimensional Tolerance	+0.00, -0.2 mm
Length Tolerance	± 0.1 mm, ± 10 arcmin Angle Tolerance
Surface quality	40 - 20 (scratch - dig)
Coating	Protected aluminum on elliptical surface
Bevel	0.2 mm x 45°

Model No.	Diameter D (mm)	Length L (mm)
HO-RM45-03	3	6
HO-RM45-04	4	8
HO-RM45-05	5	10
HO-RM45-06	6	12
HO-RM45-08	8	16
HO-RM45-10	10	20
HO-RM45-12	12	24
HO-RM45-15	15	30

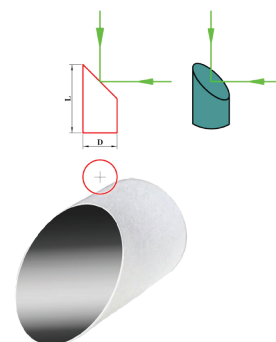
Parabolic Concave Mirrors

Material	Borofloat (schott),
Reflectivity Ravg	> 88% @ 450 - 2000 nm
Dimensional tolerance	+/- 0.5 mm
Focal length tolerance	+/- 1%
Surface quality	40 - 20 (Scratch - dig)
Clear aperture	> 90% of diameter
Edge thickness	24.5 +/-0.5 mm
Coating	Protected aluminium coating

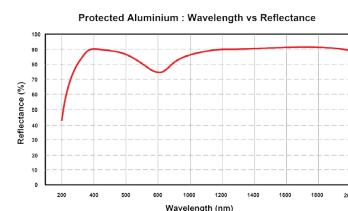
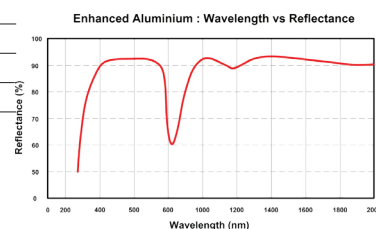
Model No.	Diameter (mm)	Focal Length (mm)
HO-PCCM-150-08	150	1200
HO-PCCM-150-10	150	1500
HO-PCCM-200-06	200	1200
HO-PCCM-200-7.5	200	1500
HO-PCCM-250-4.8	250	1200
HO-PCCM-250-06	250	1500
HO-PCCM-300-05	300	1500
HO-PCCM-300-6.7	300	2000
HO-PCCM-360-8.3	360	3000
HO-PCCM-400-10	400	4000
HO-PCCM-400-12.5	400	5000



360° illumination applications
Cone surface with Protective
Aluminum Coating



Bend laser or image path by
90°
Protected Aluminium on
elliptical surface

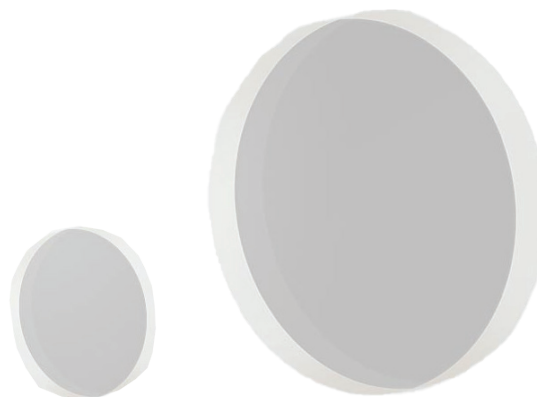


Protected aluminium coating
Borofloat (Schott) Material

Application
Schlieren Imaging System

Diffusers

- **Spreading or scattering light for soft illumination**
- **Screens and illumination applications**
- **UV illuminated diffusion with fused silica diffusers**



Diffusers

Our diffuser spreads out or scatters light to give soft light. Holmarc's ground glass diffusers are available in fine, medium and coarse grade. Typical applications are in screens and illumination. Fused silica ground glass diffusers are also available, size up to 50 mm in diameter, ideal for UV illuminated diffusion.

Material	Borofloat
Dimensional Tolerance	± 0.20 mm (dia.)
Thickness	2 ± 0.20 mm
Parallelism	≤ 3 arc min

Ground glass diffusers are available in custom size. Call or email for a quote. sales@holmarc.com, optics@holmarc.com

Model No.	Diameter (mm)	Grade (μ m)
HO-DF-25-32	25	32
HO-DF-25-22	25	22
HO-DF-25-15	25	15
HO-DF-50-32	50	32
HO-DF-50-22	50	22
HO-DF-50-15	50	15
HO-DF-100-32	100	32
HO-DF-100-22	100	22
HO-DF-100-15	100	15

Model No.	Size (mm)	Grade (μ m)
HO-DF-50S-32	50 x 50	32
HO-DF-50S-22	50 x 50	22
HO-DF-50S-15	50 x 50	15
HO-DF-100S-32	100 x 100	32
HO-DF-100S-22	100 x 100	22
HO-DF-100S-15	100 x 100	15
HO-DF-150S-32	150 x 150	32
HO-DF-150S-22	150 x 150	22
HO-DF-150S-15	150 x 150	15
HO-DF-200S-32	200 x 200	32
HO-DF-200S-22	200 x 200	22
HO-DF-200S-15	200 x 200	15

Polarizing Optics



- **Variable light attenuation**
- **Mounting with opto-mechanical systems**
- **Reducing transmission with crossed sheets**

Polarizers

Linear Film Polarizers

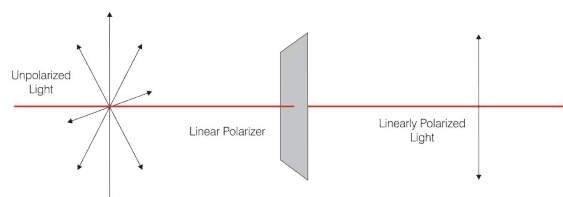
Commercial-quality film polarizers are available. These linear polarizers have 25% transmittance for unpolarized light. Two crossed sheets have an average transmission of 0.04%. The sheets are neutral gray in color. It can be used as a variable attenuator.

Linear film polarizers are available in custom sizes.

Sandwiched type linear film polarizers are also available. In this models, a linear film polarizer is sandwiched between two polished BK7 glass discs and mounted on a black anodized aluminium threaded mount. The mounts are made with standard threads so that it can be mounted to any opto-mechanical mount which has similar thread.



Optical type	Transmissive
Colour	Neutral gray
Polarization	Linear
Polarizing efficiency	99 %
Polarizer sheet Thickness	0.18 mm
Spectral range	400 - 700 nm
Extinction ratio	$\geq 500 : 1$
Transmissiom % (Single)	42%



Model No.	Type	Diameter (mm)	Clear Aperture (mm)	Mount
HO-LFP-12.5	Sheet	12.5	-	Unmounted
HO-LFP-25	Sheet	25		Unmounted
HO-LFP-50	Sheet	50		Unmounted
HO-LFPS-12.5	Sandwiched	12.5	10	SM05
HO-LFPS-25	Sandwiched	25	22	SM1
HO-LFPS-50	Sandwiched	50	46	SM2



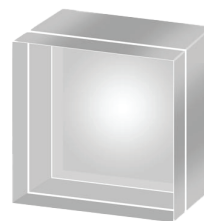
Lyot Depolarizer

Model : HO-LDP-10

These depolarizers are not suitable for Monochromatic light. These are designed for polychromatic light. A bandwidth of more than 100 nm is required for complete depolarization.

Quartz crystal material
Designed for polychromatic light

Size	10 mm x 10 mm x 6 mm
Dimensional tolerance	± 0.2 mm
Material	Quartz crystal
Wavelength range	200 - 2200 nm
Surface quality	40 - 20 (S-D)
Surface flatness	$\lambda/4$ @ 633 nm
Parallelism	< 3 arc minutes



Wave Plates / Retarders

Multiple-Order Wave Plates

Holmarc's Multiple-Order Wave Plates are made from laser grade quartz crystal. These are designed to give retardance of several full waves, plus the required fraction. These wave plates are available as mounted or unmounted and provide either half-wave or quarter-wave retardation at chosen wavelengths. All wave plates are AR coated to increase transmission at design wavelength. The retardance of multiple-order wave plate depends on temperature, wavelength, angle of incidence and degree of collimation.

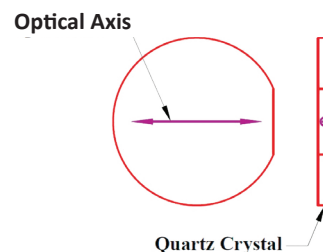
Half-wave plates are used to rotate plane of polarization of linearly polarized light through any angle, while quarter - wave plates are used to convert linearly polarized light into circularly polarized light and viceversa.

Available in Mounted or Unmounted versions
Half-wave or quarter-wave retardation options

Material	Quartz crystal
Diameter tolerance	± 0.2 mm
Surface quality	20 - 10 (scratch - dig)
Surface flatness	$\lambda / 4$ @ 632.8 nm
AR coating	Multilayer, R < 0.5% @ design wavelength
Beam deviation	< 10 arc sec
Retardance accuracy	< $\lambda / 200$

Model No.	Diameter (mm)	Retardation
HO-WMH-12.5	12.5 mm	$\lambda/2$
HO-WMH-25	25 mm	$\lambda/2$
HO-WMQ-12.5	12.5 mm	$\lambda/4$
HO-WMQ-25	25 mm	$\lambda/4$

Mounted Model No.	Mount Diameter	Clear Aperture	Retardation
HO-WMH-12.5M	25 mm	10 mm	$\lambda/2$
HO-WMH-25M	30 mm	22 mm	$\lambda/2$
HO-WMQ-12.5M	25 mm	10 mm	$\lambda/4$
HO-WMQ-25M	30 mm	22 mm	$\lambda/4$



Multiple - Order Half - Wave Plates

Unmounted	Mounted	Wavelength (nm)
HO-WMH-12.5-405	HO-WMH-12.5M-405	405
HO-WMH-12.5-488	HO-WMH-12.5M-488	488
HO-WMH-12.5-514	HO-WMH-12.5M-514	514
HO-WMH-12.5-532	HO-WMH-12.5M-532	532
HO-WMH-12.5-633	HO-WMH-12.5M-633	633
HO-WMH-12.5-670	HO-WMH-12.5M-670	670
HO-WMH-12.5-780	HO-WMH-12.5M-780	780
HO-WMH-12.5-808	HO-WMH-12.5M-808	808
HO-WMH-25-405	HO-WMH-25M-405	405
HO-WMH-25-488	HO-WMH-25M-488	488
HO-WMH-25-514	HO-WMH-25M-514	514
HO-WMH-25-532	HO-WMH-25M-532	532
HO-WMH-25-633	HO-WMH-25M-633	633
HO-WMH-25-670	HO-WMH-25M-670	670
HO-WMH-25-780	HO-WMH-25M-780	780
HO-WMH-25-808	HO-WMH-25M-808	808

Multiple - Order Quarter - Wave Plates

Unmounted	Mounted	Wavelength (nm)
HO-WMQ-12.5-405	HO-WMQ-12.5M-405	405
HO-WMQ-12.5-488	HO-WMQ-12.5M-488	488
HO-WMQ-12.5-514	HO-WMQ-12.5M-514	514
HO-WMQ-12.5-532	HO-WMQ-12.5M-532	532
HO-WMQ-12.5-633	HO-WMQ-12.5M-633	633
HO-WMQ-12.5-670	HO-WMQ-12.5M-670	670
HO-WMQ-12.5-780	HO-WMQ-12.5M-780	780
HO-WMQ-12.5-808	HO-WMQ-12.5M-808	808
HO-WMQ-25-405	HO-WMQ-25M-40	405
HO-WMQ-25-488	HO-WMQ-25M-488	488
HO-WMQ-25-514	HO-WMQ-25M-514	514
HO-WMQ-25-532	HO-WMQ-25M-532	532
HO-WMQ-25-633	HO-WMQ-25M-633	633
HO-WMQ-25-670	HO-WMQ-25M-670	670
HO-WMQ-25-780	HO-WMQ-25M-780	780
HO-WMQ-25-808	HO-WMQ-25M-808	808

Zero - Order Wave Plates

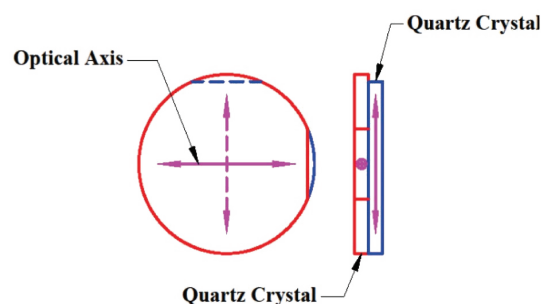
Zero order wave plates are made by combining two multiple-order wave plates with their optical axis aligned perpendicular to each other. The effect of the first plate is cancelled by the second, except for the residual difference between them. Holmarc's mounted zero-order wave plates provide either half-wave or quarter-wave retardation at their design wavelengths and are made by air-spaced design for high damage threshold. Zero order wave plates are much less sensitive to wavelength and temperature changes. All plates are AR coated to increase transmission at their design wavelength.

Material	Quartz crystal
Diameter tolerance	± 0.2 mm
Surface quality	20 - 10 (scratch - dig)
Wavefront distortion	$\lambda / 4$ @ 632.8 nm
AR coating	Multilayer, R < 0.5% @ design wavelength
Retardance accuracy	< $\lambda / 300$



Zero - Order Half - Wave Plates

Model No.	Wavelength (nm)
HO-WZH-10M-405	405
HO-WZH-10M-488	488
HO-WZH-10M-514	514
HO-WZH-10M-532	532
HO-WZH-10M-633	633
HO-WZH-10M-670	670
HO-WZH-10M-780	780
HO-WZH-10M-808	808
HO-WZH-22M-405	405
HO-WZH-22M-488	488
HO-WZH-22M-514	514
HO-WZH-22M-532	532
HO-WZH-22M-633	633
HO-WZH-22M-670	670
HO-WZH-22M-780	780
HO-WZH-22M-808	808



Zero - Order Quarter - Wave Plates

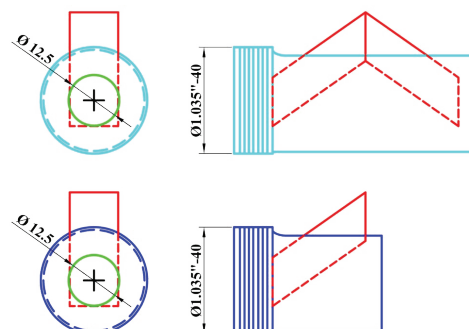
Model No.	Wavelength (nm)
HO-WZQ-10M-405	405
HO-WZQ-10M-488	488
HO-WZQ-10M-514	514
HO-WZQ-10M-532	532
HO-WZQ-10M-633	633
HO-WZQ-10M-670	670
HO-WZQ-10M-780	780
HO-WZQ-10M-808	808
HO-WZQ-22M-405	405
HO-WZQ-22M-488	488
HO-WZQ-22M-514	514
HO-WZQ-22M-532	532
HO-WZQ-22M-633	633
HO-WZQ-22M-670	670
HO-WZQ-22M-780	780
HO-WZQ-22M-808	808

Fresnel Rhomb Retarders

Fresnel Rhomb retarders give half-wave or quarter-wave retardation nearly independent of wavelengths. Holmarc's Fresnel rhombs are designed in such a way that a 22.5° or 45° phase shift occurs at each internal reflection creating a total half-wave or quarter-wave retardance. Holmarc's mounted Fresnel rhombs are manufactured in BK7 or equivalent substrate and are available in 3 different types.

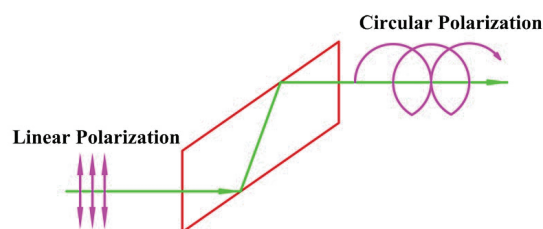


Material	BK7 or equivalent
Surface quality	20 - 10 (scratch - dig)
Clear aperture	10 mm, + 0.00, - 0.2 mm
Retardance variation	2 %
Wavelength range	400 - 900 nm



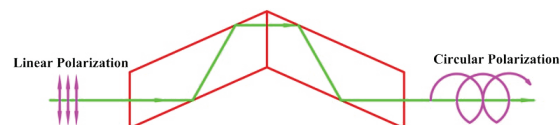
Single Fresnel Rhomb Quarter-wave retarder

A single Fresnel rhomb quarter wave retarder produces a phase shift of 90° ($\lambda/4$) due to internal reflections at two surfaces. This rhomb gives an output parallel to the input, but laterally displaced



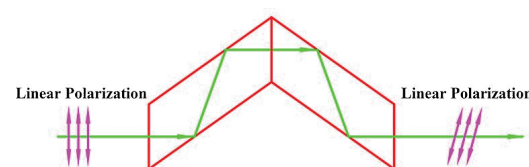
Double Fresnel Rhomb Quarter-Wave Retarder

A Double Fresnel rhomb quarter wave retarder produces a phase shift of 90° ($\lambda/4$) by the internal reflections at four surfaces. This rhomb has co-axial input and output.



Double Fresnel Rhomb Half-wave retarder

A Double Fresnel rhomb Half-wave retarder produces a phase shift of 180° ($\lambda/2$) by the internal reflections at four surfaces. This rhomb has co-axial input and output.



Model No.	Type	Retardation	Mount Diameter (mm)
HO-SFRQ-10	Single Fresnel Rhomb Quarter-wave Retarder	$\lambda/4$	25
HO-DFRQ-10	Double Fresnel Rhomb Quarter-wave Retard	$\lambda/4$	25
HO-DFRH-10	Double Fresnel Rhomb Half-wave Retarder	$\lambda/2$	25

Soleil - Babinet Compensator

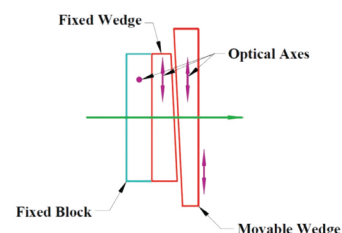
Soleil - Babinet Compensators are zero order wave plates with variable retardation over a wide range of wavelengths. These are used to measure state of polarization or to produce certain retardation for different wavelengths. It consists of a birefringent wedge which is movable and another birefringent wedge which is fixed to a compensator plate. The retardance is adjusted by moving the position of the movable wedge relative to the fixed wedge. Holmarc's Soleil - Babinet compensators are equipped with precision digital micrometer and are made by laser grade quartz crystals. The wedges are AR coated to reduce reflection losses.



Clear Aperture of 10 mm

Available Uncoated or with Broadband AR coating

Material	Quartz crystal
Surface quality	40 - 20 (scratch-dig)
Retardance adjustment	0 - 2π (full wave)
Rotation	360° continuous
Detent Index stops	Every 45 degree
Digital readout resolution	1 microns
Transmitted wavefront error	$\lambda / 4$
AR coating	Uncoated Broadband AR ($R_{avg} \leq 0.5\%$)



Model No.	Coating	Clear Aperture	Wavelength Range
HO-SBC-10	Uncoated	10 mm	400 - 700 nm
HO-SBC-10B	Broadband AR	10 mm	400 - 700 nm

Optical systems

- **Infinity corrected microscope objective compatibility (Tube Lens)**
- **Accurate collimated beam expansion (Beam Expanders)**
- **Concentrating light onto small areas (Condensers)**

10X Eye Loupe

Model No: HO-EL-10X

Magnification	10 X
Field of view	20 mm
Surface quality	40 - 20 (S-D)
AR coating	Broadband AR @ 400 - 700 nm
Working distance	17 mm
Eye relief	11.5 mm

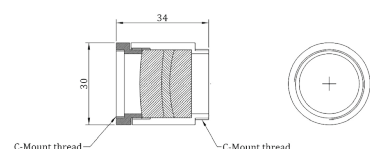


Tube Lens

Model No: HO-TBL-200

Holmarc's HO-TBL-200 has 200 mm focal length and is designed to use with infinity corrected microscope objectives. These objectives are compatible for all type of Nikon and Leica microscopes. Internal and external C-mount threading are provided for mounting. Broadband AR coating provided for high transmission @ 400 - 700 nm.

Focal length	200 mm
Clear aperture	22 mm
Design	Triplet design
Coating	Broadband AR coated
Wavelength	400 - 700 nm
Field size at image place	Φ 20 mm
Working distance	178 mm
Thread	C-mount thread



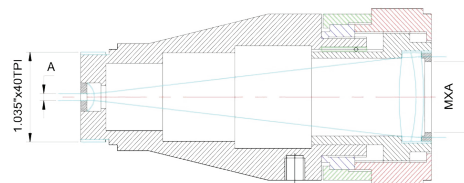
Beam Expanders

Holmarc beam expanders provide accurate, unobstructed and achromatic expansion of any collimated input source and are easy to use. The most common type of beam expander is derived from the Galilean telescope which usually has one negative input lens and one positive output lens. The main advantage of Galilean design is that its overall length is smaller compared to a similar power Keplerian design.

Following Beam expanders are of the Galilean type and comes with M6 mounting holes. These are easy to mount and align using our standard posts and mounts.

Highlights

- Galilean type
- Ideal for laser processing application
- Custom beam expansion ratios available
- User specified AR coating
- Various type of mounting options
- Black anodized aluminium as housing material



Wavefront distortion	$< \lambda / 4$
Transmission	$> 96\%$
Wavelength range	400 - 700nm
Damage threshold	$> 500 \text{ mW} / \text{cm}^2$
Surface quality	40 - 20 (Scratch-dig)
AR coating, ravg	$< 0.5\% @ 400\text{-}700 \text{ nm}$

Model No	Magnification (M)	Aperture (A)
HO - BE2X - A3	2 X	3 mm
HO - BE2X - A5	2 X	5 mm
HO - BE2X - A10	2 X	10 mm
HO - BE2X - A15	2 X	15 mm
HO - BE5X - A2	5 X	2 mm
HO - BE5X - A3	5 X	3 mm
HO - BE5X - A5	5 X	5 mm
HO - BE5X - A10	5 X	10 mm
HO - BE10X - A2	10 X	2 mm
HO - BE10X - A3	10 X	3 mm
HO - BE10X - A4	10 X	4 mm
HO - BE10X - A5	10 X	5 mm
HO - BE10X - A10	10 X	10 mm
HO - BE10X - A2	10 X	2 mm
HO - BE10X - A3	10 X	3 mm
HO - BE10X - A4	10 X	4 mm
HO - BE10X - A5	10 X	5 mm
HO - BE15X - A2	15 X	2 mm
HO - BE15X - A3	15 X	3 mm

Custom Beam Expanders

For automated applications, motorized beam expanders are available. With motorized systems, both expansion ratio and focus can be controlled independently from a remote location using control electronics and software. We also offer custom designed beam expanders for specific requirements. For further information on custom laser beam expanders, please contact us at sales@holmarc.com

Galilean type consists of a positive and a negative focal length lens.



Variable Beam Expanders

Holmarc's variable beam expanders are based on Galilean design. This 5-element diffraction limited design allows continuous beam expansion within the specified range. The expansion ratio can be adjusted by rotating the zoom control. Holmarc's variable beam expanders are equipped with broadband AR coated lenses and aluminium casings.

Galilean type of Beam expansion

Wavelength ranges from 400 to 700 nm



Wavefront distortion	$< \lambda / 4$
Transmission	$> 96\%$
Wavelength range	400 - 700nm
Damage threshold	$> 500 \text{ mW} / \text{cm}^2$
Surface quality	40 - 20 (Scratch-dig)
AR coating, avg	$< 0.5\% @ 400\text{-}700 \text{ nm}$

Variable beam expanders with custom expansion ranges are available upon special requests.

Model No	Expansion Range	Max. Input Beam Diameter (1/e ²)
HO-VBE-01	1x - 3x	5 mm
HO-VBE-02	1x - 6x	5 mm
HO-VBE-03	2x - 5x	4 mm
HO-VBE-04	5x - 10x	4 mm

Cylindrical Beam Expander

Model No: HO-CBE10X-A10

Holmarc's Cylindrical beam expander is used to create parallel light sheet. The length and width of the parallel light sheet is depends on the input collimated beam diameter. All the lenses are AR coated to reduce back reflection losses.

Expansion factor	10 X
Input beam diameter	10 mm (collimated)
Collimated sheet size	~ 100 mm x 10 mm
Collimated output beam length	~ 100 mm (depends on input beam diameter)
Collimated output beam width	~ 10 mm (depends on input beam diameter)
Input lens	Negative cylindrical lens
Output lens	Positive cylindrical lens
Collimation	Manually adjustable
AR coated	Broadband AR coated @ 400-700nm



Condensers

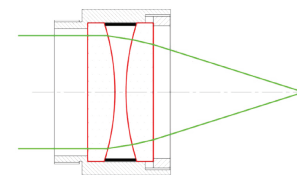
Condenser is a combination of lenses with short focal lengths used for concentrating a light source onto a small area. The lenses are mounted in a black anodized aluminium casing. Condensers with custom sizes and focal lengths are available.

Condenser Lenses concentrate light into a projected beam. They are usually mounted in pairs in projectors, enlargers, spotlights and photo cell systems. We make condenser systems of different focal lengths and apertures.

Two element air spaced design
Ideal for projection illuminator

- Two element air spaced design
- Ideal for projection illuminator
- Black anodized aluminium as housing material
- User specified AR coating
- Various type of mounting options

Model No.	Diameter (mm)	Focal Length (mm)
HO - CS25 - 0.8	25	20
HO - CS25 - 1.6	25	40
HO - CS25 - 2.4	25	60
HO - CS50 - 0.6	50	30
HO - CS50 - 0.8	50	40
HO - CS50 - 1.2	50	60



Fiber Collimator / Focusers

Our Fiber collimators / focusers are designed for laser applications which require pure Gaussian beam. Holmarc Fiber Collimators are available from 5 mm to 40 mm aperture size. The output is very clean with no diffraction patterns or beam distortions. Output stays as Gaussian at any distance. Collimators are provided with FC / SMA connectors. Output is adjustable so that it can be tuned for best collimation at the wavelength and then can be locked down. Broadband anti-reflection coating is provided for visible region.

Gaussian beam at any distance
5 mm, 10 mm, 20 mm and 40 mm apertures

- For single mode fibers
- Gaussian beam at any distance
- 5 mm, 10 mm, 20 mm, and 40 mm apertures
- Adjustable focus / collimation



Model No.	HO-FO-FC5	HO-FO-FC10	HO-FO-FC20	HO-FO-FC40	HO-FO-SMA5	HO-FO-SMA10	HO-FO-SMA20	HO-FO-SMA40
Clear aperture	5 mm	10 mm	20 mm	40 mm	5 mm	10 mm	20 mm	40 mm
Beam Divergence	< 0.5 mrad	< 0.25 mrad	< 0.1 mrad	< 0.05 mrad	< 0.5 mrad	< 0.25 mrad	< 0.1 mrad	< 0.25 mrad
Collimation	Adjustable and lockable							
Wavefront Error	< $\lambda/4$ @ 632.8 nm							
Connector	FC	FC	FC	FC	SMA	SMA	SMA	SMA
N A	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
AR Coating	Broadband AR for visible region							
Housing	Aluminium							

Microscope Objectives

- High quality imaging
- Focusing applications
- Microscopy applications
- Brightfield observation with transmitted illumination



Holmarc offers different types of infinity corrected objectives for high quality imaging and focusing applications. These objectives can also be used in fiber coupling, spatial filtering, and microscopy applications. Plan achromatic objectives are best suited for Brightfield observation with transmitted illumination, while plan achromatic metallurgical objectives and Long working distance plan apochromatic objectives are suitable for both epi-scope (reflected light) and transmitted illumination applications.

Plan Infinity corrected achromatic objectives
Coated with broadband multilayer AR for visible regions

1. Plan Achromatic Objectives - Infinity corrected

Model No.	HO-PA-MO4X	HO-PA-MO10X	HO-PA-MO20X	HO-PA-MO40X	HO-PA-MO60X	HO-PA-MO100X
Magnification	4 X	10 X	20 X	40 X	60 X	100 X (oil)
Numerical Aperture (NA)	0.10	0.25	0.40	0.65	0.85	1.25
Field Number (FN)	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm
Effective Focal Length (EFL)	45 mm	18 mm	9 mm	4.5 mm	3 mm	1.8 mm
Working Distance (WD)	19.3 mm	6.8 mm	1.0 mm	0.67 mm	0.49 mm	0.25 mm
Cover Glass	0.17 mm	0.17 mm	0.17 mm	0.17 mm	0.17 mm	0.17 mm
Wavelength Range	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm
Threading	0.8" x 36 TPI					

2. Plan Apochromatic Long Working Distance objectives - Infinity corrected

Model No.	HO-PAPO-LWD2X	HO-PAPO-LWD5X	HO-PAPO-LWD10X	HO-PAPO-LWD20X	HO-PAPO-LWD50X
Magnification	2 X	5 X	10 X	20 X	50 X
Numerical Aperture (NA)	0.06	0.15	0.30	0.35	0.50
Effective Focal Length (EFL)	100 mm	40 mm	20 mm	10 mm	4 mm
Compatible Tube lens focal length	200 mm	200 mm	200 mm	200 mm	200 mm
Working Distance(WD)	34 mm	44 mm	34 mm	29 mm	17 mm
Wavelength Range	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm
Mounting Thread	M26 x 0.706	M26 x 0.706	M26 x 0.706	M26 x 0.706	M26 x 0.706
Parfocal distance	95 nm	95 nm	95 nm	95 nm	95 nm

3. Plan Achromatic Metallurgical objectives - Infinity corrected

Model No.	HO-PA-EPI 5X	HO-PA-EPI 10X	HO-PA-EPI 20X	HO-PA-EPI 40X	HO-PA-EPI 60X	HO-PA-EPI 80X	HO-PA-EPI 100x
Magnification	5 X	10 X	20 X	40 X	60 X	80 X	100 X
Numerical Aperture (NA)	0.12	0.25	0.40	0.60	0.75	0.8	0.85
Effective Focal Length (EFL)	40 mm	20 mm	109 mm	5 mm	3.3 mm	2.5 mm	2 mm
Compatible Tube lens focal length	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm
Working Distance(WD)	26.4 mm	20.2 mm	8.8 mm	3.98 mm	1.22 mm	1.25 mm	0.45 mm
Wavelength Range	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm	400 - 700 nm
Mounting Thread	0.8" x 36 TPI	0.8" x 36 TPI	0.8" x 36 TPI	0.8" x 36 TPI	0.8" x 36 TPI	0.8" x 36 TPI	0.8" x 36 TPI
Parfocal distance	45 nm	45 nm	45 nm	45 nm	45 nm	45 nm	45 nm



Designed @ HOLMARC Design LAB
Cochin, May 2025



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We have well-developed optic, mechanical & electronics fabrication facilities and thin film coating unit.
Contact us for assistance with your manufacturing needs.

5000+

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