



Photonics for Industrial Solutions: Cylindrical Optic.

BERLINER GLAS manufactures high precision cylindrical optics in a variety of sizes and shapes for applications such as in line projectors, collimators, astigmatism correction units, beam expanders and for homogenization of laser beams.

Cylindrical Optic.

Products:

- ◆ Cylindrical lenses - concave and convex
- ◆ Cylindrical mirror - concave and convex
- ◆ Cylindrical achromats/cemented groups
- ◆ Cylindrical rods
- ◆ Cylindrical tubes
- ◆ Cones
- ◆ Combined biconvex lenses (spherical radii and cylindrical radii)

Specification*:

Material	optical glass, CaF ₂ , MgF ₂ , quartz, glassceramics, ceramic, borosilicate glass and filter glass
Radii	2 - 50,000 mm
Length	up to 850 mm, larger on request
Lens width	up to 300 mm (depending on the focal length)
Fitting error	$\lambda/8$ PV, measured at 632.8 nm
Surface error	5/1 x 0.025
Micro roughness	2 Å rms
Centering	Rotation: 10", offset: 4 µm, wedge: 3 µm

Quality Assurance:

In addition to permanent process and production control there is a precise final inspection for which sophisticated measuring instruments are available.

Notes:

All parts can be coated. Furthermore they can be shaped as listed in product information „CNC-Manufactured Glass Components“.

Metrology:

Wavefront	Interferometer (4-24"), Shack-Hartmann-wavefront sensor (UV, DUV, VIS, NIR)
Form deviation	3D coordinate measuring de- vices, caliper, CCD micrometers, Stitching-interferometer
Angle precision	Goniometer, interferometer, auto- collimators
Transmission/reflection	Spectral photometer
Surface defects	Traveling microscopes
Micro roughness	White light interferometer, atomic force microscope
Imaging performance/ resolution	Computer-supported MTF meas- urement, microscopic image reso- lution
Centering	Objective metrology system, laser centering station
Additional functional measurement	Assembly-specific metrology station
Fine correcting procedure	Ionic beam process, robotic polishing, magnetorheological process

* The following error and tolerance data indicates possible limit values.
Specified and assessed according to ISO/MIL/DIN.