

Cylindrical Optics

Product

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.

The optics are offered as plano convex and plano concave cylindrical lenses, cylindrical achromats, rods, tubes, mirrors or combined biconvex lenses (spherical radii and cylindrical radii). It is even possible to produce special sizes with a range of CNC-produced contours.

Specification

- **Material:** optical glass, quartz, CaF₂, MgF₂, glass ceramics, borosilicate glass and filter glass
- **Radii:** 3 – 50,000 mm @ 0.1% - 5% tolerance (size depending)
- **Lengths:** up to 500 mm, larger lengths on request
- **Lens width:** up to 300 mm (depending on focal length)
- **Surface Fitting:** < $\lambda/8$ @ 632.8 nm (material and size depending)
- **Evaluation:** according to ISO 10110 or DIN 3140
- **Surface defects:** better than 5/1x0.025 (size depending)
- **Micro-roughness:** Ra < 0.4 nm (material depending)
- **Focal length:** 10 - 3,500 mm
- **Symmetry error / axial wedge error:** < 30" for small radii, < 2' for larger radii of up to 1,500 mm
- **Coating:** standard AR, HR and special coatings
- **Geometry:** special lens forms by CNC shaping on request

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“.

Measuring Instruments for Quality Assurance

Wavefront:	Interferometer 4-24", Shack-Hartmann-Wavefront-Sensor (UV and DUV)
Resolution:	Computer-supported MTF measurement
Centering:	Objective metrology station, Laser centering station
Angle Precision:	Goniometer, interferometer
Transmission/ Reflection:	Spectrometer, diode array
Surface defects:	Automatic microscope
Micro-Roughness:	White light interferometer, AFM
Dimension:	3D Coordinate-measurement, caliper, CCD-Micrometer, Stitching interferometer