



Plane and Plane-Parallel Optics.
For the highest optical demands.

Plane and Coplanar Optics.

The BERLINER GLAS GROUP manufactures precision plane and coplanar optics e.g. for applications in the semiconductor industry, laser technology, medical technology, metrology and defense.

Products

- Plane and coplanar plates with any exterior contours
- Wedge-shaped plates with customized shapes and angles
- Laser substrates as windows and mirrors
- Filters according to optical density
- Filter glasses of any shape
- Linear deviation filters
- Retarders

Specification*

| | |
|------------------------|---|
| Material | Optical glass, quartz, glass ceramics, ceramic, borosilicate glass, filter glass and crystals |
| Dimensions | Up to 1,500 mm |
| Flatness | $\lambda/100$ PV, measured at 546 nm |
| Parallelism | 0.2" |
| Angular accuracy | 0.5" |
| Micro roughness | 0.2 nm rms |
| Surface defects | 5/1 x 0.004 |
| Laser damage threshold | 20 J/em ² |

Quality Assurance

In addition to a permanent process inspection we also have a precise final inspection for which we employ sophisticated measurement devices.

Notes

We manufacture monolithic optics (integration of more than one optical function in one glass component) as well as multifunctional optics (integration of mechanical functions in a glass component).

Metrology

| | |
|-----------------------------------|--|
| Wavefront | Interferometer (4 – 24"), Shack-Hartmann-wavefront sensor (UV, DUV, VIS, NIR), radii metrology, multiple area metrology, Stitching-interferometer |
| Form deviation | 2D coordinate measuring devices, caliper, CCD micrometers, interferometer |
| Angle precision | Goniometer, interferometer, auto-collimators |
| Transmission/reflection | Spectral photometer, diode array |
| Surface defects | Various microscopic methods |
| Micro roughness | White light interferometer, atomic force microscope |
| Imaging/performance/resolution | Computer-supported MTF measurement, microscopic image resolution |
| Centering | Objective metrology system, laser centering station |
| Fine correcting procedure | Mechanical fine correction, ion beam process, robotic polishing, magnetorheological finishing |
| Additional functional measurement | Assembly-specific metrology station, environmental/climatic test acc. to ISO and MIL standards, abrasion and adhesion, various chemical and resistance testing, autoclaving, surface measurement, resistance measurement |

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



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