



**Plane and Plane-Parallel Optics.**  
In the Highest Quality and Arbitrary Geometries.

# Plane and Plane-Parallel Optics.

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

## Products

- Plane and coplanar plates with any exterior contours
- Wedge-shaped plates with customized shapes and angles
- Laser substrates as windows and mirrors

## Specifications\*

|                  |   |
|------------------|---|
| Materials        | Optical glass, quartz glass, glass ceramic, ceramic and special materials |
| Dimensions       | 20– 1,500 mm, other dimensions on request                                 |
| Flatness         | $\lambda/100$ PV (@633 nm)  |
| Parallelism      | $\leq 0.2''$  |
| Angular accuracy | $\leq 0.5''$  |
| Roughness        | $\leq 0.2$ nm rms   |
| Surface defects  | From 5/1 x 0.004 (depending on the material)                              |

## Fine Correcting Procedures

- Mechanical fine correction
- Ion beam figuring
- Portal-/robot polishing
- Magnetorheological finishing (MRF)

## Metrology

|                                    |   |
|------------------------------------|---|
| Wavefront                          | Interferometer (4–24"), Shack-Hartmann-wavefront sensor (UV, DUV, VIS, NIR), multiple area metrology, stitching-interferometer  |
| Form deviation                     | 3D coordinate measuring devices, caliper, CCD micrometers, interferometers  |
| Angle precision                    | Goniometer, interferometers, auto-collimators   |
| Roughness                          | White light interferometer, atomic force microscope   |
| Additional functional measurements | Environmental/climatic tests acc. to ISO and MIL standards, abrasion and adhesion tests, various chemical and resistance testings, autoclaving, surface measurements, resistance measurements, assembly-specific metrology stations |

\* The following error and tolerance data indicates possible limit values. Specified and assessed according to ISO/MIL/DIN. Limit values cannot be combined freely.