

**Aspherical Optics and Freeform Surfaces.**  
**High Image Quality, Low Weight, Cost Effective.**

# Aspherical Optics and Freeform Surfaces.

SwissOptic AG – a BERLINER GLAS GROUP company – is your partner for the development and production of customized aspheres and freeform surfaces.

The use of aspheres in optical systems enables better performance using fewer optical elements. This allows for more compact designs, lower weight and exceptional performance.

Four reasons why you should choose aspheres from SwissOptic AG:

1. Extensive finishing competence with regard to the production of high-precision aspherical lenses
2. Innovative measurement technology
3. Speed and flexibility
4. Complete in-house processing chain

## Speed/flexibility

We take a flexible approach to your specific requirements, apply fast process development, precision grinding, computer-controlled polishing, and proprietary fine correction methods. Our flexibility allows us to easily optimize our manufacturing in order to fulfil a wide range of customer requirements, including double-sided aspheres.

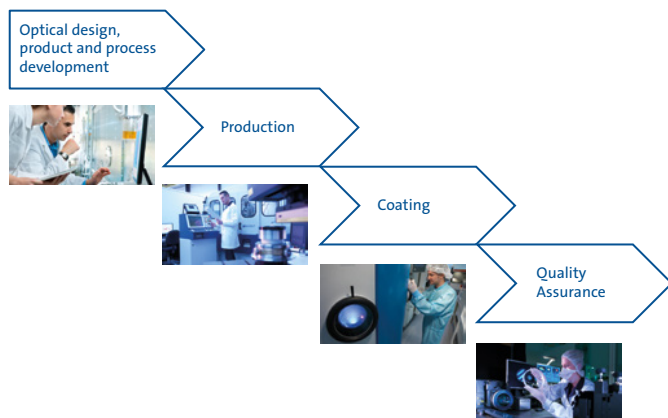
## Innovative measurement technology

The fine correction of high-precision aspheres requires nanometer level characterization of the surface.

Depending on the application we have the capability of measuring the full aperture area using a Verifire interferometer, in-house designed computer-generated holograms, or a newly developed tilted-wave interferometer.

## Complete in-house processing chain

Rare in our industry these days, we have complete in-house manufacturing capability, guaranteeing high quality and precision control of all manufacturing steps from beginning to end.



## Specifications

### Materials

Optical glasses, fused silica, Zerodur®, crystals, metals

### Dimensions and forms

Diameter ( $\pm$ tolerance)	12–350 ( $\pm 0.03$ ) mm
Center thickness tolerance	$\pm 0.01$ mm
Free aperture	up to 100 % of $\varnothing$
Local radius of curvature concave	> 10 mm
Departure from best-fit-sphere	up to several millimeters

### Surface form error

Sagitta deviation (SAG, "Power")	$\pm 0.3$ $\mu$ m
Irregularity (IRR, "PV")	0.1 $\mu$ m
Rotational invariant irregularity (RSI)	0.05 $\mu$ m
RMS irregularity (RMSi)	0.02 $\mu$ m
Slope error, 1 mm integration length	0.06 mrad

### Centration

Edge thickness difference	3 $\mu$ m
Decenter asphere to edge	3 $\mu$ m

### Surface

Surface roughness Rq	1 nm
Surface imperfection tolerances	3 x 0.063 (ISO 10110-7) 20–10 (MIL-Scratch/Dig)
Coatings (UV, DUV, VIS, NIR, IR)	AR, BBAR, HR-mirror, custom coatings

### Measurement technique

Surface form error interferometric	Zygo Verifire Asphere, CGH Technology, Tilted-Wave-Interferometer
Surface form error tactile	MarSurf LD 260 Aspheric, Form Talysurf PGI 1000
Surface roughness	White-light interferometer Zygo NewView 700

[www.swissoptic.com](http://www.swissoptic.com)

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