

# High Precision Aspheres for High Performance Applications

## Product Information

Due to the unique profile, aspherical lenses eliminate monochromatic aberrations (e.g. spherical aberrations) and lead to a better overall image quality. They are increasingly used to replace multi-spherical element assemblies resulting in a weight reduction as well as in a more compact design.

## Applications

- Digital projection, camera, binocular
- High power laser lenses
- Professional lens (Cine)
- Microscopy
- Astro & Space

## Materials

- Optical glass
- Fused silica
- Other materials on request



## Advantages

- Custom designed products at competitive prices
- 1 piece to series production levels
- Coating: all lenses can be coated to specific custom designs
- SCHOTT masters the entire value chain from raw glass to aspherical coated lenses

## Specifications

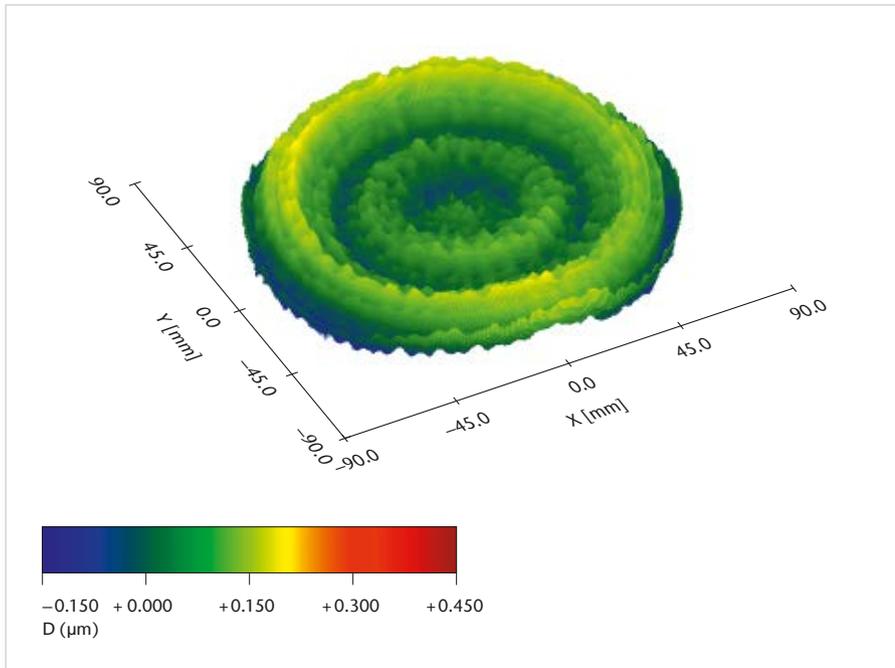
Spec attribute	Parameter	Precision	High Precision
Dimensions	Diameter <sup>1</sup>	10 – 300 mm	10 – 300 mm
	Diameter tolerance	± 0.03 mm	± 0.015 mm
	Center thickness <sup>2</sup>	3 – 40 mm	5 – 40 mm
	Center thickness tolerance	± 0.03 mm	± 0.020 mm
Surface form tolerances and aspheric surfaces	Radius of curvature convex	> 15 mm	> 20 mm
	Radius of curvature concave	on request	on request
	Tolerance on radius of curvature	± 0.1 %	± 0.05 %
	Irregularity (PV) – B <sup>1</sup> [ISO 10110-5]	1 µm	0.2 µm
	Max slope error – F <sup>1</sup> [ISO 10110-5]	0.5 mrad	≤ 0.2 mrad
	RMSi	0.75 µm	0.015 µm
Centering	Tilt of asph. side to other side	3 arc min	1 arc min
Surface texture and imperfections	Surface roughness – Rq [ISO 10110-8]	3 nm	1 nm
	Scratch/Dig [MIL]	60/40	20/10
	Dig – Nx A <sup>2</sup> [ISO 10110-7]	3 x 0.16	3 x 0.04

<sup>1</sup> subject to evaluation of the requested aspherical shape

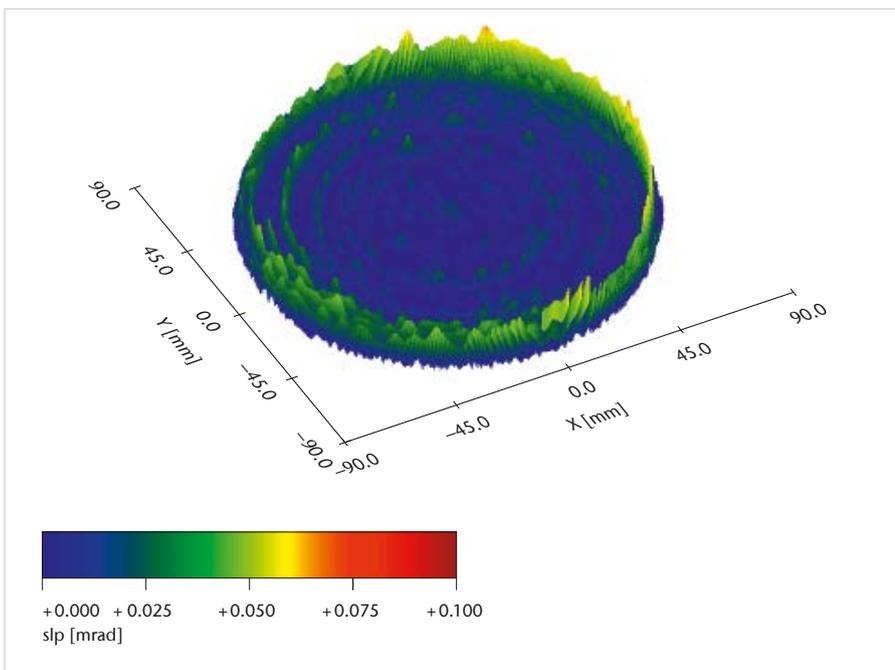
<sup>2</sup> depends on the lens diameter

## 3D Metrology\* / Best-in-class optical lenses with minimal surface form errors and large diameter

Form deviation (irregularity function) for a 170 mm lens diameter



Excellent slope error performances: slope max. error < 0.15 mrad



\* Measurement accuracy of  $\pm 50$  nm ( $3\sigma$ ) up to  $90^\circ$  object slope  
Extremely good reproducibility of measurement results

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SCHOTT AG  
Hattenbergstrasse 10  
55122 Mainz, Germany  
Phone +49 (0)6131/66-1812  
info.optics@schott.com  
schott.com

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glass made of ideas