

# 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
- Endoscopy
- 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

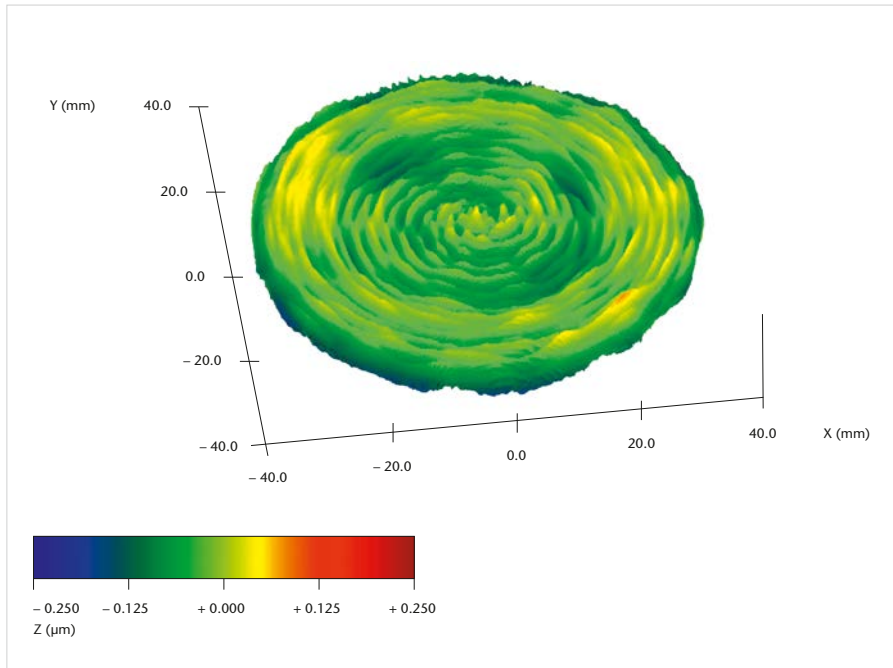
Spec attribute	Parameter	Precision	High Precision
Dimensions	Diameter <sup>1</sup>	10 – 200 mm	10 – 200 mm
	Diameter tolerance	± 0.03 mm	± 0.015 mm
	Center thickness	3 – 40 mm	5 – 40 mm
Surface form tolerances and aspheric surfaces	Radius of curvature convex	> 20 mm	> 30 mm
	Radius of curvature concave	on request	on request
	Tolerance on radius of curvature	± 0.1 %	± 0.05 %
	Irregularity (PV) – B <sup>1</sup> [ISO 10110-5]	0.5 µm	0.3 µm
	Max slope error – F <sup>1</sup> [ISO 10110-5]	0.5 mrad/mm	0.2 mrad/mm
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 <sup>2</sup> [ISO 10110-7]	3 x 0.25	3 x 0.04

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

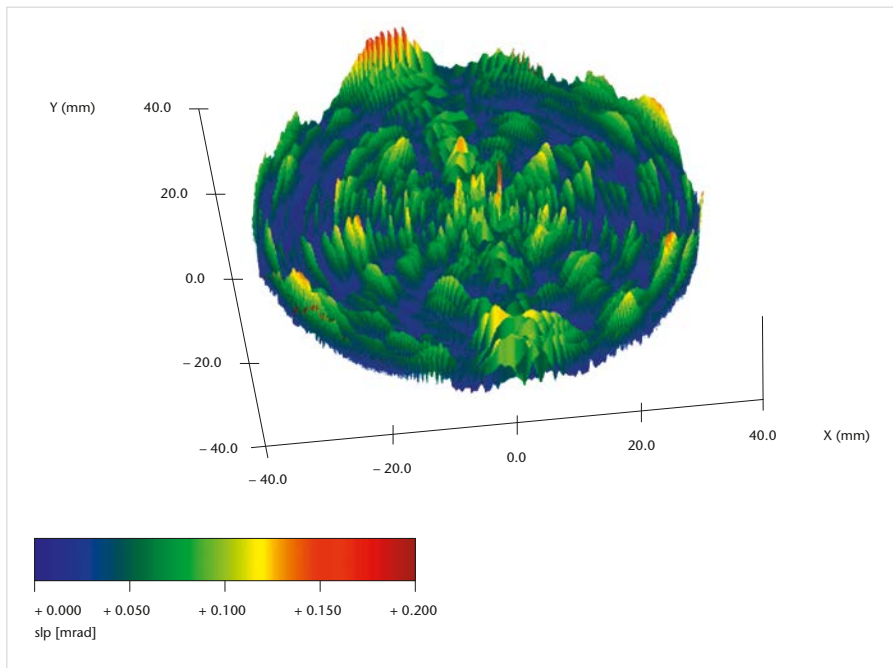
<sup>2</sup>depends on the lens diameter

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

Typical form deviations (irregularity function) for a 80 mm lens diameter



Excellent slope error performances: maximum slope error < 0.15 mrad/mm



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



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