

Precision Molded Glass Optics

For imaging systems and laser beam shaping

Customized double-sided aspheres, off-axis aspheres and acylindrical lens arrays.

Your Benefits

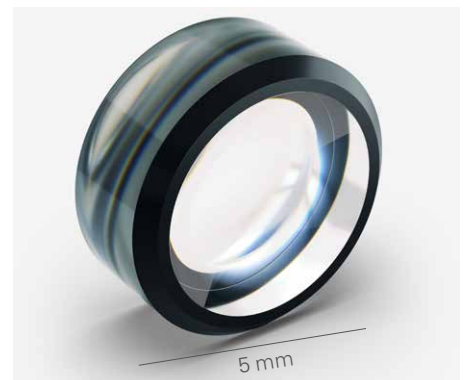
- **Lower Weight & Size:** Precision molded aspheres reduce your end product weight and size
- **Optical Design Support:** Customized optical design to your needs
- **Production setup:** From prototype to volume manufacturing
- **Full services:** Centering, truncating, coating, cementing, blackening, tactile measuring technology, metrology and assembling in-house



PML asphere with customized coating

Technical Data

- Irregularities down to 160 nm PV
- Moldable glass types with refractive indexes from 1.5 – 1.9
- Moldable glass types abbe numbers from 21 to > 80
- Achievable precision suitable for imaging optics and laser beam shaping
- Possible geometries:
 - Aspheres
 - Double-sided aspheres
 - Off-axis aspheres
 - Acylindrical and cylindrical lens arrays



PML with black chrome coating



Applications

- Endoscopy
- Analytics
- Intra-oral Scanners
- Hyperspectral Imaging Optics
- Diode Laser Beam Shaping
- Process Monitoring
- Low Light Imaging (NIR)
- Laser Range Finders

Precision Molded Optics

Design Recommendations

		Standard values	High standard values
Diameters Ø	Range	approx. 3 – 30 mm	approx. 2 – 3 mm approx. 30 – 40 mm
	Tolerance for lens Ø < 5 mm	± 0.01 mm	± 0.005 mm
	Tolerance for lens Ø > 5 mm	± 0.02 mm	± 0.01 mm
Center thickness	Range	approx. 1 – 6 mm	approx. 0.5 – 12 mm
	Tolerance	± 0.04 mm	± 0.01 mm
Edge steepness	Max. edge steepness concave surface	< 40°	< 50°
	Max. edge steepness convex surface	< 50°	< 65°
Free aperture		Ø minus 1 mm	Ø minus 0.5 mm
Shape deviation and irregularity*	Lens Ø < 10 mm	3 / 3 (1)	3 / 3 (0.5)
	Lens Ø 10 – 20 mm	3 / 5 (2)	3 / 3 (1)
	Lens Ø > 20 mm	3 / 5 (2)	3 / 5 (1)
Tilt angle*		4 / 5'	4 / 3'
Decentration (lateral shift)		15 µm	5 µm
Surface roughness		5 – 6 nm rms	approx. 4 nm rms
Cleanliness*	Lens Ø < 3 mm	5 / 3 x 0.063	5 / 2 x 0.025
	Lens Ø < 15 mm	5 / 3 x 0.16	5 / 3 x 0.1
	Lens Ø > 15 mm	5 / 2 x 0.4	5 / 3 x 0.16

*according to ISO 10110

Customized designs available upon request