



MLOPTIC

ASPHERICAL LENSES

■ PROPERTIES

Aspheres from glass and quartz (Typical materials from Schott, Ohara, Hoya, and CDGM) as well as from IR materials (ZnS, ZnSe, Ge, Si, CaF₂, metal mirrors)

- Convex and concave aspheres, bi-aspheres
- Diameters from 5mm to 280mm (IR materials: 2mm to 140mm)
- Minimum concave radius is around 50mm
- Rotational symmetric aspheres

■ DESIGN & PRODUCTION and METROLOGY & QUALITY ASSURANCE

CNC grinding, CNC polishing, MRF

MLOptic offers professional metrology, including surface profilers and interferometers to verify optics meet the form error specification. We inspect 100% of all optics and provide test data for prototype

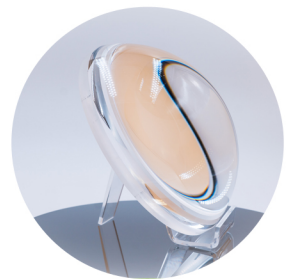
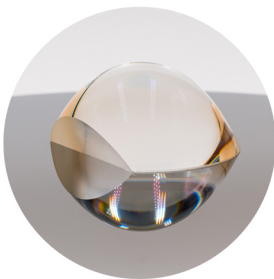
Tactile Measurement: Taylor Hobson PGI1250

Measurement up to 200mm, stitching of high departure lenses possible; highest precision provided for high departure aspheres is P-V 0.15µm

Non-tactile Measurement: Taylor Hobson LUPHO Scan

Fast non-contact 3D interferometric scanning of aspheric optics.

Maximum tested element dimensions: 260mm (Diameter) × 75mm (height); Accuracy (P2V): ±50nm

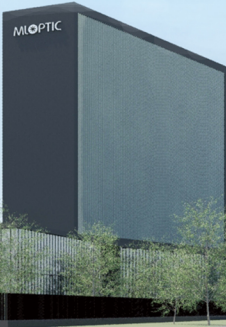


Interferometric Measurement

6 inch Sub-aperture Stitching Interferometer (SSI) for precision optics to measure high numerical aperture and large clear aperture parts up to 300 mm. Moreover, transmitted Wavefront testing. QED SSI is combined with correction on MRF polishing.

■ APPLICATION

Using aspherical lens in your system will reduce the size and weight. MLOptic manufactures high precision aspherical lenses with different types of glass in rotationally symmetrical shape to meet your specific requirements. Our aspherical products are commonly used in various kinds of medical or aerospace lens systems.



		Standard	Precision
Dimensions [ISO 10110 - 1]			
Diameter	mm	15-140	6-230
Tolerance	mm	±0.1	±0.02
Center thickness	mm	2-40	2-40
Tolerance	mm	±0.1	±0.02
Surface form [ISO 10110 - 1;12]		geometry dependent up to	
Radius of curvature-local cc	mm	curvature 5~	concave 50~
Clear aperture	% of ϕ	90	95
Clear aperture surface slope	degree	50	75
Surface form tolerance [ISO 10110 - 5] and Aspheric surfaces [ISO 10110 - 12] 3/A(B,C)RMSx<D; "lambda" = E; slope<F; slope integration length = G; spatial sampling resolution = H; see also ISO 14999 - 4			
Tolerance of radius of curvature	%	±0.10	±0.02
Irregularity ² - B(PV)	μm	0.8	0.2
Rotational invariant irregularity - C	μm	0.3	0.1
RMS irregularity - RMSi - D	μm	0.1	0.03
Slope tolerance ³ - F	arc sec	60	10
Centration [ISO 10110-6] 4/σ (L)			
Edge thickness variation (defines tilt angle)	μm	25	10
Tilt angle of the aspheric surface to the second surface - σ	arc min	2	0.5
Surface imperfections [ISO 10110 - 7; 5/N x A; LN "x A"]			
Dig - N x A ¹		2x0.4	2x0.10
Scratches - LN "x A" ¹		L2x0.1	L2x0.06
MIL - Scratch/Dig		60/40	20/10
Surface texture [ISO 10110 - 8]			
Surface roughness -Ra	nm	3	1.5
Measurement			
Full-surface interferometric measurement		optional	
<p>1. Depends on the diameter. Listed values are for a diameter of 50 mm. Reference wavelength $\lambda=546.07$ nm. 2. Often also called the PV - error of the measured surface. Means the total surface deviation corrected for Sagitta error (power).</p>			

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