toptec

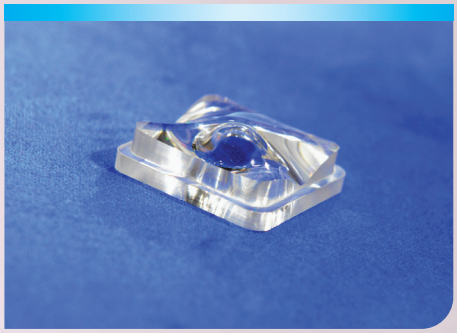
PRECISION OPTICS

Research and development in ultra-precise grinding and polishing of glass and crystalline materials.

Prototype production of unique optical components, including aspheric elements.

Optics with tradition – optical elements for space, astronomy, and cutting-edge scientific research.

SPDT TECHNOLOGY | CONVENTIONAL PROCEDURES | CNC GRINDING
CNC POLISHING | ION BEAM POLISHING | MOLDING



OPTICAL DESIGN

We specialize in custom optical design and advanced tolerancing that deliver results where needed:

- new measurement technology
- upgrade of existing solutions
- cost-effective optical systems using smart tolerancing

Designs and tolerancing are always based on specific technological capabilities, enabling us to work efficiently and precisely define the characteristics of each optical element. The result? Faster processing, lower costs, and optics that meets all your requirements.

www.toptec.eu

IPP INSTITUTE OF PLASMA PHYSICS OF THE CZECH ACADEMY OF SCIENCES

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PRECISION OPTICS

Expert know-how and state-of-the-art technological equipment allow us to achieve the highest tolerance limits.

Our technological processes are developed for various materials – crystalline, glass, and metallic.

		spherical limits (0)	aspherical limits (0)	freeform limits (0)
Lens size and shape (1)				
diameter	mm	2-350 (+0 / - 0,005)	20 - 220	20 - 100
center to thickness ratio		<1:1 to 10:1	<1:1 to 10:1	<1:1 to 10:1
center thickness tolerance	mm	+/- 0,05	+/- 0,03	+/- 0,05
clear aperture		up to 100%	up to 100%	up to 95%
aperture surface slope	degree	up to 85°	up to 70°	
Surface form tolerances (2)				
radius of curvature	fringes	1	2	-
ilrregularity PV	fringes	1/4	1/2	2
irregularity RMSi	fringes	1/20	1/8	1/4
Slope tolerance (3)	arc min		0,7	1
Centering tolerance (4)				
lateral displacement	µm	2	5	-
surface tilt angle	arc min	-	1	-
Surface imperfections (5)				
digs		1 x 0,1	2 x 0,1	2 x 0,1
scratches		L1 x 0,002	L2 x 0,04	L2 x 0,04
scratch-Dig (MIL-PRF-13830B)		< 10 - 5	< 20 - 10	< 20 - 10
Surface roughness (6)	nm	< 0,3	< 0,6	< 1,0

0 Some tolerances influence each other and cannot be achieved simultaneously
1 In compliance with ISO 10110-1
2 In compliance with ISO 10110-5 and ISO 10110-12
3 Sampling length 1 mm
4 In compliance with ISO 10110-6
5 In compliance with ISO 10110-7
6 In compliance with ISO 10110-8