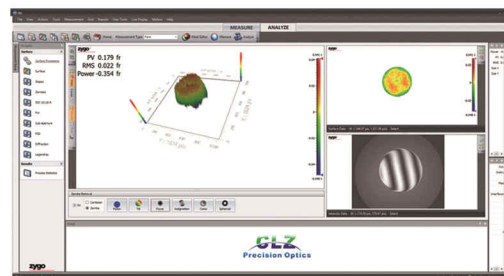




LEADER IN PRECISION  
OPTICAL COMPONENTS  
[www.clzoptics.com](http://www.clzoptics.com)

zygo®



Monday, October 22, 2018

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**CLZ Precision Optics Co., Ltd.**

Custom optical lenses, optical domes  
Optical windows and blank material  
That improve your end product

# Our Company

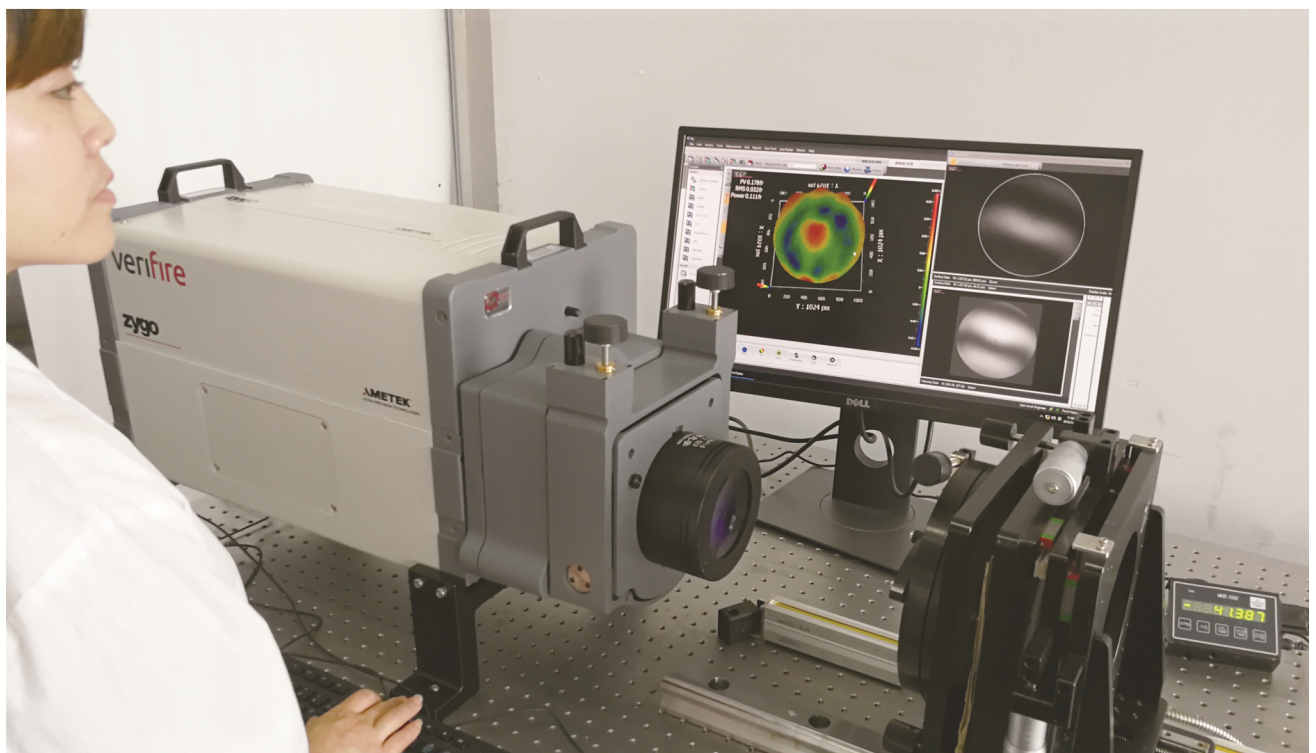
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CLZ Precision Optics is one of China's leading optical manufacturing companies. We manufacture a wide range of optical components for many different fields like Medical, Life Sciences, Defense and Aerospace and R&D. We were established in early 2012 in China's Optical Manufacturing hub of Changchun.

CLZ was founded by 4 people who have a combined 60 years of optical experience and training at Qioptiq in Singapore. After returning to their homeland, they employed their technical knowledge into optical processing. With the principles of an innovative spirit, scientific attitude, team work and honesty, the founders of CLZ have been able to grow their business quickly and successfully.

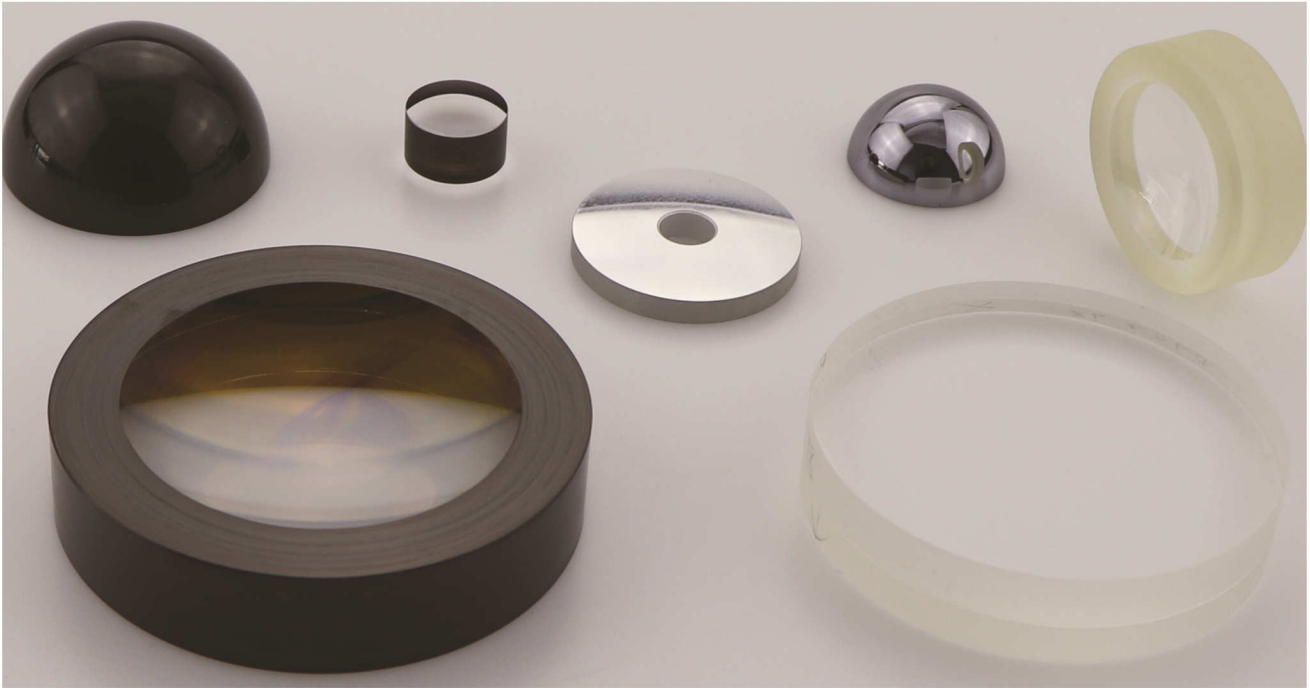
In 2018 CLZ improved our capabilities with the purchase of ZYGO Verifire Interferometer - 4", it is a full-featured interferometer that can provide non-contact measurements of flat or spherical surfaces of optical components, and more staffed join our dedicated team, whose passion and drive for supplying the highest quality optical components has allowed our company to flourish into the respected organization we are today. We like to think that the initial order is just the first step in a long and successful partnership, and look forward to hearing from you with developing an extensive cooperation in the future.

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## Products Introduction

CLZ Precision Optics manufactures custom optical components with or without coating. Our main product line is spherical lenses, optical windows, optical blank material and optical dome lenses. We use standard optical glass mainly from CDGM but can get Ohara or Schott Glass on request. We also work with Fused Silica and Silicon. Our products are widely used in display systems, projection systems, laser measurement, optical imaging, etc.

Spherical lenses – including Plano Convex Lenses, Plano Concave Lenses, Bi-convex Lenses, Bi-Concave Lenses, Meniscus Lenses, Spherical Mirrors and Achromatic Doublets.

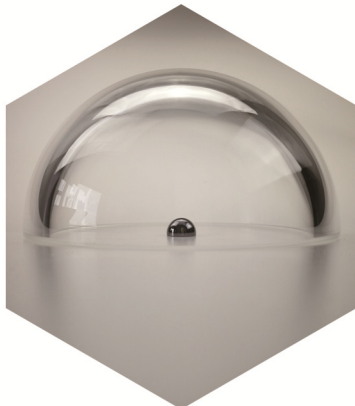
Optical windows – including optical glass windows, such as N-BK7, H-K9L. UV Fused Silica windows, Silicon (Si) windows and many are available either with or without AR coatings.

Optical dome lenses – including Optical Glass Domes, Fused Silica Domes, Silicon Domes and Small size sapphire domes(Diameter less than 50mm). We use the material according to customer design, Our domes are widely used in Solar Instruments and underwater optical imaging.

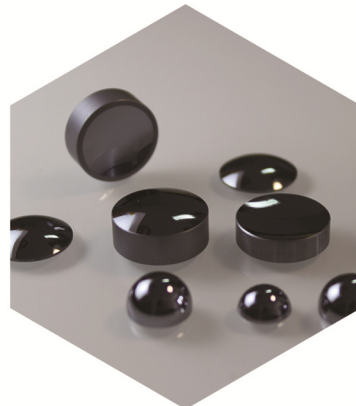
Optical blank material made of CDGM optical glass – including cutting blank material and pressing blank material.



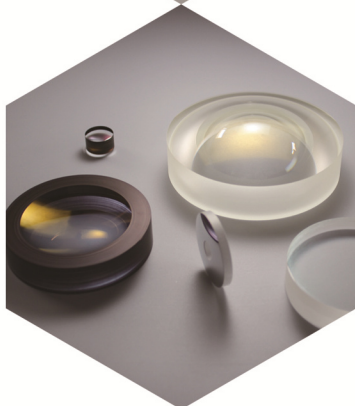
# Main products



← Optical Domes



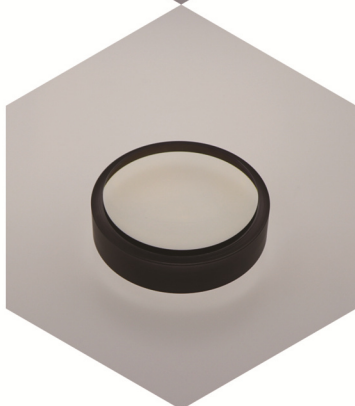
Silicon Lens →



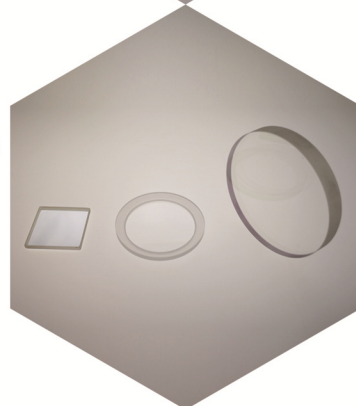
← Optical Lens



Custom Lens →



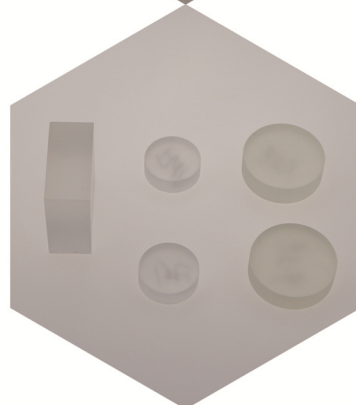
← Achromatic Doublets (Blackening)



Windows →



← Pressing Blank Material



Cutting Blank Material →

# Spherical Lenses

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CLZ Precision Optics offers a wide range of high quality Spherical lenses for a variety of applications, including Plano Convex Lenses, Plano Concave Lenses, Bi-convex Lenses, Bi-Concave Lenses, Meniscus Lenses, Spherical Mirrors and Achromatic Doublets. We are good at supply custom lenses from your design, our manufacturing capacity from diameter 10mm up to diameter 200 in a full range of optical glass materials to meet most applications, and we are also offered in a wide variety of coatings to meet your needs and specifications.

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## Manufacturing Equipment

- 6 Curve Generator Machines
- 6 High-Speed Grinding Machines
- 4 High-Speed Lapping Machines
- 7 Conventional Polishing Machines
- 12 High-Speed Polishing Machines
- 4 Centering Machines

## Metrology

- Zygo® Verifire Interferometer - 4", includes 1kx1k @100Hz camera, 1-6X continuous optical zoom, PMR, Mx software, QPSI vibration robust acquisition.
- Opticentric Centering Machines.
- Edmund Optics Scratch-Dig Sets.
- Spherometers , Calipers, Dial IndicatorsDial indicators accurately measure small distances and angles and are used for dimensional measurements of optics.

Spherical Lenses Manufacturing Specifications			
	Commercial	Precision	High Precision
<b>Diameter</b>	10 – 200mm	10 – 200mm	10-150mm
<b>Diameter Tolerance</b>	+0/-0.100mm	+0/-0.025mm	+0/-0.018mm
<b>Thickness</b>	±0.100mm	±0.050mm	±0.020mm
<b>Sag Height</b>	±0.050mm	±0.025mm	±0.010mm
<b>Clear Aperture</b>	80%	90%	90%
<b>Radius</b>	±0.3%	±0.1%	Fix to Test Plate
<b>Power (PV)</b>	3.0λ	1.5λ	λ/2
<b>Irregularity (PV)</b>	1.0λ	λ/4	λ/20
<b>Centering (Beam Deviation)</b>	3 arcmin	1 arcmin	0.5 arcmin
<b>Surface Quality</b>	80-50	40-20	10-5



# Optical Dome

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Optical dome are lenses with two concentric spherical surfaces. Sometimes they are being referred to as bent plan parallel plates. Consequently it is customary to define parallelism between two surfaces as the maximum thickness variation between the two surfaces. In perfect domes the convex radius is equal to the sum of the dome thickness and concave radius. Optical domes are used in IR missiles, for underwater photography as part of protective case and as a part of sun tracking solar collectors.

At CLZ Precision Optics , we specialize in manufacturing glass optical Domes from customer supplied designs. Capable of creating sizes from 15mm to 124mm in Diameter. We are among the very few manufacturers in the world who possess this technology.

CLZ Precision Optics manufacture domes are fabricated from quartz, optical glass, silicon, etc. in sizes up to 124mm diameter with included angles to 180 degrees and dimensional tolerances to +/-20 microns. Manufactured on a highly repeatable 4-axis spherical machining center, they exhibit less than 20 microns wall thickness variation.

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Optical Dome Manufacturing Specifications			
	Commercial	Precision	High Precision
<b>Diameter</b>	15 – 125mm		
<b>Radius</b>	Diameter/2		
<b>Height</b>	Hemisphere or 2mm over the hemisphere		
<b>Radius Tolerance</b>	±0.10mm	±0.05mm	±0.02mm
<b>Height Tolerance</b>	±0.20mm	±0.10mm	±0.05mm
<b>Parallelism(TIR)</b>	0.20mm	0.05mm	0.02mm
<b>Clear Aperture</b>	180°	180°	180°
<b>Surface Quality</b>	80-50	60-40	40-20 or better



# Type of Stock Domes

Stock quantity will be changing according to the actual situation, sometimes there will be no stock, but we have tooling, it will be save tooling cost and delivery time.

Type No.	Diameter		Height of DOME		Thickness of Edge		Material
	inch	mm	inch	mm	inch	mm	
CLZ-Dome-16	0.64		0.32		0.05		Fused silica
CLZ-Dome-24		24		13		2	H-K9L
CLZ-Dome-25		25		12.5		2	H-K9L
CLZ-Dome-28		28		14		1.5	H-K9L
CLZ-Dome-30A		30		15		2	Silicon
CLZ-Dome-30B		30		15		1	WB300
CLZ-Dome-30C		30		15		1	N-BK10
CLZ-Dome-30D		30		16		2	H-K9L
CLZ-Dome-30E		30		15		2	H-K9L
CLZ-Dome-30F		30		16.5		4	H-K9L
CLZ-Dome-30G		30		16.5		2	Fused silica
CLZ-Dome-30S		30		16.5		2	Sapphire
CLZ-Dome-32		32		17		4	H-K9L
CLZ-Dome-36		36		17		2	H-K9L
CLZ-Dome-40		40		21		2	H-K9L
CLZ-Dome-41		41		20.5		1.5	H-K9L
CLZ-Dome-50A		50		25		2	H-K9L
CLZ-Dome-50B		50		24		3	H-K9L
CLZ-Dome-50C		50		26		2	RG715
CLZ-Dome-50D		50		28		2	WB300
CLZ-Dome-50E		50		26		2	N-BK10
CLZ-Dome-50F		50		26.5		2	Fused silica
CLZ-Dome-60A		60		29.4		5.15	H-K9L
CLZ-Dome-60B		30		30		5	H-K9L
CLZ-Dome-63.5	2.5		1.25			0.375	H-K9L
CLZ-Dome-75		75		37.5		3	H-K9L
CLZ-Dome-81.5		81.5		40.75		9.7	H-K9L
CLZ-Dome-84.88		84.88		39.44		2.4	H-K9L
CLZ-Dome-85		85		42.5		5	H-K9L
CLZ-Dome-100A		100		53		3	H-K9L
CLZ-Dome-100B		100		50		4	H-K9L
CLZ-Dome-101	3.98		1.99		0.47		H-K9L
CLZ-Dome-110		110		50		10	Fused silica

# Optical Windows and Optical Filters

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Optical Windows are flat, plane-parallel plates that are often used as protective barriers for electronic sensors or detectors from outside environments. Optical Windows should be selected based on the material transmission or mechanical properties of the substrate. Optical Windows do not cause change in the magnification of a system.

CLZ Precision Optics' Optical Windows are offered in a variety of substrates, such as N-BK7, H-K9L, B270, Borofloat, Silicon (Si), UV Fused Silica, Sapphire. Multiple anti-reflection coating options are available for the Ultraviolet (UV), visible, or Infrared (IR).

Optical Filters are used to selectively transmit or reject a wavelength or range of wavelengths. Optical Filters are used in applications such as fluorescence microscopy, spectroscopy, clinical chemistry, or machine vision inspection. Optical Filters are ideal for life science, imaging, industrial, or defense industries.

CLZ Precision Optics offers a variety of Optical Filters for many applications, our Optical Filters use colored glass materials from China. They have excellent performance and good price.

Optical Windows and Optical Filters Manufacturing Specifications:

- Diameters ranging from 5mm to 150mm with precision tolerances
  - Thickness tolerances ranging from  $\pm 0.20\text{mm}$  to  $\pm 0.020\text{mm}$  (specific tolerances determined by customer)
  - Parallelism of  $< 10$  arc seconds
  - Surface accuracy of  $2\lambda$ ,  $\lambda/4$ , or  $\lambda/20$  (depending on part geometry)
  - Surface quality (scratch and dig) of 10/5
-

# Blank Material

CLZ Precision Optics provide optical blank materials made of CDGM optical glass which is a leading professional optoelectronic materials supplier in China and has a certain influence in the world.

We can provide cutting blank material and pressing blank material.

For the cutting blank material, we purchase strips optical glass from CDGM, convert them into near net-shaped blanks to our customers specifications. Our full range of machining capabilities, our overall machine capacity, and our cost effective purchasing allows us to provide competitive pricing and lead times.

For the pressing blank material, In the range of our supply, there are of sorts the blanks of lenses and prisms formed either by reheat pressing.

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# Custom Coating Design & Fabrication

Coatings can dramatically change the performance of your finished optical assembly.

CLZ Precision Optics can offer a full range of coatings down to 220 nm. Our coating machines supply the best quality coating in terms of film hardness, laser damage threshold, and optical performance.

Coating Capabilities:

- Single layer magnesium fluoride coating
- Broadband anti-reflection (BBAR)
- Single wavelength AR coating (V-coating)
- Dual-band AR coating (W-coating)
- Band pass filters
- High reflection all-dielectric coating
- Metallic mirrors (aluminum, silver, gold; protected; enhanced)
- Wavelength range from UV, visible, mid-IR to far IR Infrared coating services between 2 and 12 microns.

Available Substrate Materials:

- Optical glass
- Sapphire
- Fused silica
- Quartz
- Silicon
- and more



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A decorative horizontal band at the bottom of the page features a light beige background with several optical lenses and spheres of various sizes and colors (black, clear, blue, green) scattered across it. A semi-transparent blue horizontal bar is overlaid on the bottom portion of this band, containing the text.

Whether you need 10 units, 100 units, 1000 units, or more, CLZ Precision Optics can get you exactly what you require.