

## Grin Lenses

Grin lens (also named Gradient Index Rod Lens) refers to one kind of cylindrical optical Lens whose index of refraction varies gradually along the radial. It has the ability to focus and form real image with plane surface.

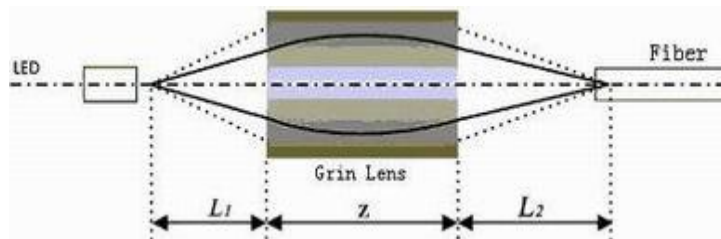
When encountering different material in the air, light ray will change its direction due to the different refractive index of the material. The conventional Lens redirects light towards a point of focus by controlling the abrupt change in the index of refraction.

The difference between Grin Lens and conventional lens is that the material of Grin Lens can refract light that spreads along the axis and gradually reduces the index of refraction. In this way imaging light can be smoothly and continually redirected towards a point of focus.



### Specifications:

- Material: **Optical Glass**
- Diameter:  $\Phi 1.0\text{mm} \sim \Phi 9.0\text{mm}$
- Diameter Tolerance:  $\pm 0.05\text{mm}$
- Clear Aperture:  $>90\%$
- Surface Quality: 20/10  $\sim$  40/20
- Surface Accuracy:  $\lambda/4 \sim 2\lambda$



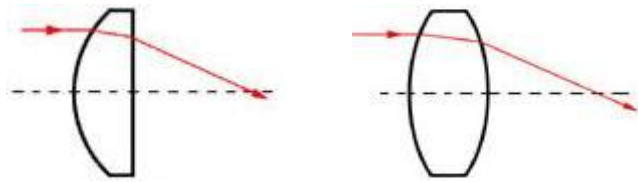
## Micro Lenses

These lenses are very small, and their diameter varies from 1.5mm to 4mm. They are made of precise components. The high refractive index of some these components allow shorter focal lengths to be achieved. This makes these lenses ideal for use in compact applications. They are widely used for fiber coupling or hybrid systems



**Specifications:**

- Material: **Optical Glass**
- Diameter:  $\Phi 1.5\text{mm} \sim \Phi 4.0\text{mm}$
- Diameter Tolerance:  $\pm 0.05\text{mm} \sim \pm 0.005\text{mm}$
- Focal Length:  $\pm 2\%$  mm
- Clear Aperture:  $>90\%$
- Surface Quality: 20/10  $\sim$  40/20
- Surface Accuracy:  $\lambda/2 \sim 2\lambda$



## Ball Lenses

We put out these ball lenses from optical glasses to provide a high coupling efficiency when used with fiber optics. They are simple to use as they can be put in contact with the end of the fiber. These lenses are available uncoated or with single layer antireflection coatings for three different wavelength regions. There is an uncoated around the center of the ball indicating the axis if the coating.

**Specifications:**

- Material: **Optical Glass**
- Diameter:  $\Phi 1.0\text{mm} \sim \Phi 6.0\text{mm}$
- Diameter Tolerance:  $\pm 0.005\text{mm}$
- Surface Quality: 20/10  $\sim$  60/40
- Sphericity: 0.0006mm, 0.001mm, 0.005mm, 0.01mm, 0.02mm

