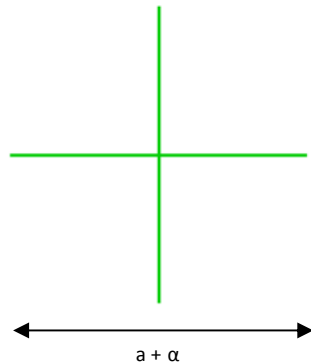


# DE-R 342 Diffractive Optical Element



- **Element Number:** DE-R 342
- **Current Product Revision:** A
- **Description:** Cross – 52 @ 515
- **Number of Spots on Line:** 2005
- **Substrate Material:** Polycarbonate (PC)
- **Size (Ø x Thickness):** 8 x 1.2 mm
- **Design Wavelengths:** 515 nm
- **Recommended Wavelength Range:** 440-540 nm
- **Minimum Recommended Beam Diameter:** 2-3 mm

Within the recommended wavelength range, the zeroth order is not brighter than the rest of the cross. Pattern size and pattern angles and the intensity in the undiffracted central spot ('zero order intensity', see reverse page) will vary most with the wavelength.

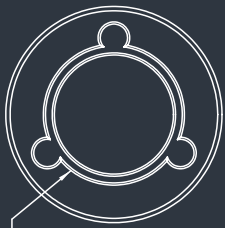
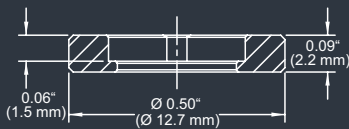
Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

## Pattern Geometry and Diffraction Angles

| Wavelength | Pattern Size @ 100 mm Distance | Pattern Angle |
|------------|--------------------------------|---------------|
|            | <b>a</b>                       | <b>α</b>      |
| 405 nm     | 74 mm                          | 40°           |
| 450 nm     | 83 mm                          | 45°           |
| 488 nm     | 91 mm                          | 49°           |
| 515 nm     | 98 mm                          | 52°           |
| 532 nm     | 102 mm                         | 54°           |
| 594 nm     | 117 mm                         | 61°           |
| 635 nm     | 129 mm                         | 65°           |
| 650 nm     | 133 mm                         | 67°           |

### MOUNTED VERSION

For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.



Ø 0.32" (Ø 8.0 mm)

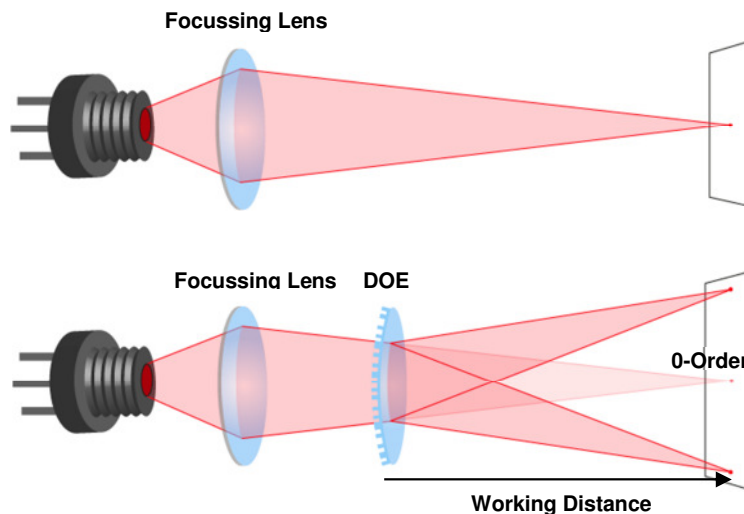
Thorlabs 8 mm steel lens adapter

### COLLIMATED / CONVERGING LASER

The laser can be collimated for long range use or converging for a fixed working distance.

Please note that the size/thickness of each spot or line depends on the focusing of the laser.

## Setup



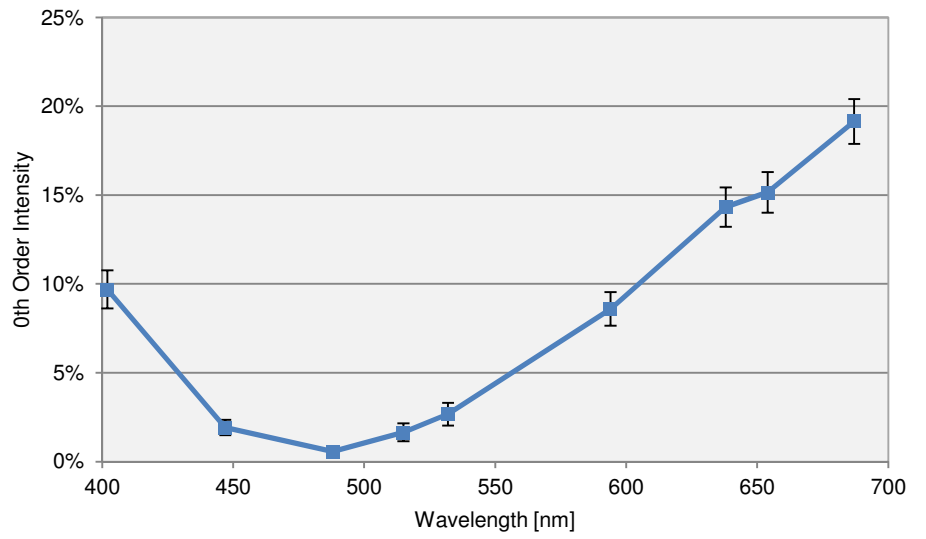
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

The 0-order spot is equivalent in size and shape to the original beam, but its power is attenuated.

## Diffraction Zero Order Intensity:

| Wavelength | 0-Order Intensity |
|------------|-------------------|
| 402        | 9.7%              |
| 447        | 1.9%              |
| 488        | 0.6%              |
| 515        | 1.6%              |
| 532        | 2.7%              |
| 594        | 8.6%              |
| 638        | 14.3%             |
| 654        | 15.2%             |



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