

## ACL5040-DG15-B - July 15, 2015

Item # ACL5040-DG15-B was discontinued on July 15, 2015. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

- ▶ High Transmittance with Uniform Illumination in Far Field
- ▶ 600 Grit and 1500 Grit Versions Available
- ▶ Uncoated or AR Coated
- ▶ Focal Lengths of 20 mm or 40 mm Available



**ACL5040-DG15-A**  
(Ø50 mm)



**ACL2520-DG15**  
(Ø25 mm)



**ACL5040-DG6-B**  
(Ø50 mm)



Plano Surface of  
**ACL5040-DG15**

[Hide Overview](#)

### OVERVIEW

#### Features

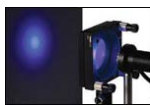
- Combines a Condenser and a Diffuser into a Single, Compact Optic
- 25 mm and 50 mm Diameters Available
- 600 or 1500 Grit Polished Versions Available
- 20 mm or 40 mm Focal Length Versions Available
- Available Uncoated or with One of Two AR Coatings on Aspheric Surface
- Offers Higher NA and Less Spherical Aberration than Spherical Lenses

Thorlabs' Aspheric Condenser Lenses with Diffusers are designed for collimating light from lamps, LEDs, or similar sources into a highly uniform illumination pattern. We offer two sizes (Ø25 mm and Ø50 mm) to accommodate varying application needs. These lenses are available in either 600 grit or 1500 grit polished versions. A finer grind (e.g., 1500 grit) provides a higher transmittance, while a more coarse grind (e.g., 600 grit) creates a greater amount of diffusion at the expense of transmission. These aspheric condenser lenses are available uncoated for use in the 380 - 2100 nm range or with an AR coating for the 350 to 700 nm (-A Coating) or 650 to 1050 nm (-B Coating) range.

When collimating high-power LEDs, the structure of the source can ultimately be imaged and shows a highly non-uniform illumination pattern (see the top image on the right). For many applications, this is not desired. Adding a diffuser on the plano surface ensures a



Click to Enlarge  
Light from an LED  
Collimated by a Non-  
Diffuse Condenser  
Lens



Click to Enlarge  
Light from an LED  
Collimated by a  
Condenser Lens with  
a Diffuser Surface

#### General Specifications

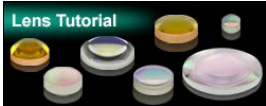
Substrate	B270 Optical Crown Glass
Wavelength Range	380 - 2100 nm (Uncoated) 350 - 700 nm (-A Coating) 650 - 1050 nm (-B Coating)
Focal Length Tolerance	±5%
Design Wavelength	Visible
Surface Quality	60-40 (Scratch-Dig)
Diameter Tolerance	+0.0 mm / -0.5 mm
Center Thickness Tolerance	±0.3 mm
Edge Thickness Tolerance	±0.3 mm
Centering Tolerance (Wedge)	30 arcmin
Temperature (Max)	250 °C
RoHS	Compliant

Item # <sup>a</sup>	Diameter	f	f/# <sup>b</sup>	Grit	NA
<b>ACL2520-DG6</b>	25 mm	20 mm	0.80	600	0.543
<b>ACL2520-DG15</b>	25 mm	20 mm	0.80	1500	0.543
<b>ACL5040-DG6</b>	50 mm	40 mm	0.80	600	0.554
<b>ACL5040-DG15</b>	50 mm	40 mm	0.80	1500	0.554

uniform illumination of the light source in the far field (see the bottom image on the right).

The aspheric surface is precision molded on the aspheric side and polished with 600 or 1500 grit on the plano side. Polished diffusers are advantageous over sand blasted diffusers as the surface has greater uniformity.

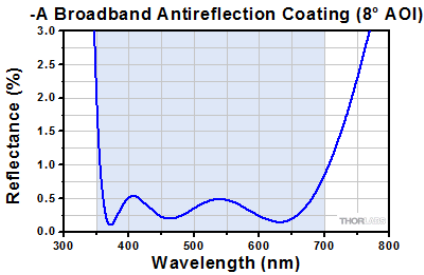
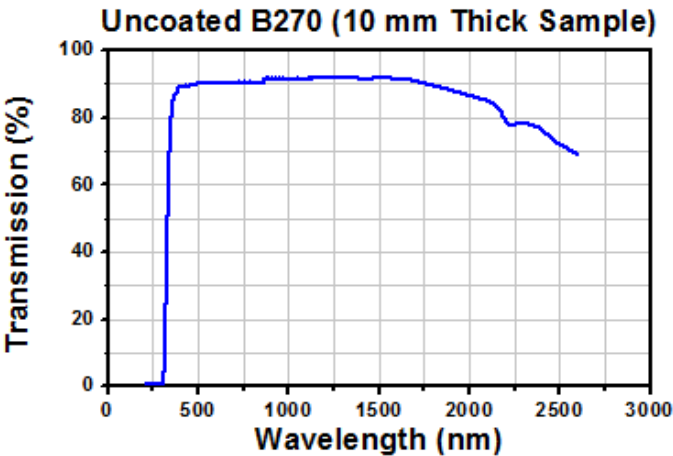
Thorlabs offers many types of mounting solutions for these lenses. Please visit our Fixed Optic Mounts Guide and Mirror Mounts Guide for possible mouting options available.



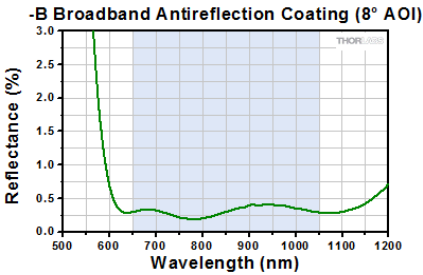
- A and -B coated items share the same specifications shown in the table.
- Approximate f/# for the lens obtained by dividing the focal length of the lens by its diameter. Note that this will be an underestimate of the true f/# since the condenser lens cannot be used over its entire diameter.

[Hide Graphs](#)

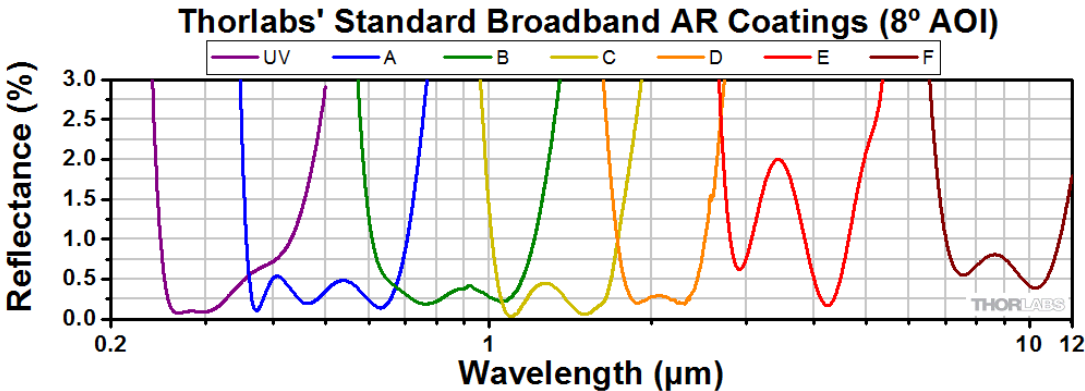
GRAPHS



The blue shaded region indicates the specified 350 - 700 nm wavelength range for optimum performance.




The blue shaded region indicates the specified 650 - 1050 nm wavelength range for optimum performance.



[Hide Aspheric Condensers with Diffusers on Plano Surface, 600 Grit](#)

Aspheric Condensers with Diffusers on Plano Surface, 600 Grit


Item # <sup>a</sup>	Diameter (mm)	Focal Length (mm)	f/# <sup>b</sup>	Clear Aperture (mm)	Back Focal Length (mm)	Numerical Aperture (NA)	Center Thickness (mm)	Edge Thickness (mm)	Non-Aspheric Surface	Reference Drawing
ACL2520-DG6	25	20	0.80	>90%	12.10	0.543	12	2.76	Plano	
ACL5040-DG6	50	40	0.80	>90%	26.20	0.554	21	2.62	Plano	

- A and -B coated items share the same specifications shown in the table.
- Approximate f/# for the lens obtained by dividing the focal length of the lens by its diameter. Note that this will be an underestimate of the true f/# since the condenser lens cannot be used over its entire diameter.

Part Number	Description	Price	Availability
ACL2520-DG6	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 600 Grit, Uncoated	\$17.70	Today
ACL2520-DG6-A	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 600 Grit, ARC: 350 nm - 700 nm	\$27.70	Today
ACL2520-DG6-B	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 600 Grit, ARC: 650 nm - 1050 nm	\$27.70	Today
ACL5040-DG6	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 600 Grit, Uncoated	\$43.30	Today
ACL5040-DG6-A	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 600 Grit, ARC: 350 nm - 700 nm	\$53.20	Today
ACL5040-DG6-B	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 600 Grit, ARC: 650 nm - 1050 nm	\$53.20	Today

Hide Aspheric Condensers with Diffusers on Plano Surface, 1500 Grit

Aspheric Condensers with Diffusers on Plano Surface, 1500 Grit

Item # <sup>a</sup>	Diameter (mm)	Focal Length (mm)	f/# <sup>b</sup>	Clear Aperture (mm)	Back Focal Length (mm)	Numerical Aperture (NA)	Center Thickness (mm)	Edge Thickness (mm)	Non-Aspheric Surface	Reference Drawing
ACL2520-DG15	25	20	0.80	>90%	12.10	0.543	12	2.76	Plano	
ACL5040-DG15	50	40	0.80	>90%	26.20	0.554	21	2.62	Plano	

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Part Number	Description	Price	Availability
ACL2520-DG15	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 1500 Grit, Uncoated	\$17.70	Today
ACL2520-DG15-A	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 1500 Grit, ARC: 350 nm - 700 nm	\$27.70	Today
ACL2520-DG15-B	Aspheric Condenser Lens w/ Diffuser, Ø25 mm, f=20 mm, NA=0.543, 1500 Grit, ARC: 650 nm - 1050 nm	\$27.70	Today
ACL5040-DG15	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 1500 Grit, Uncoated	\$43.30	Today
ACL5040-DG15-A	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 1500 Grit, ARC: 350 nm - 700 nm	\$53.20	Today
ACL5040-DG15-B	Aspheric Condenser Lens w/ Diffuser, Ø50 mm, f=40 mm, NA=0.554, 1500 Grit, ARC: 650 nm - 1050 nm	\$53.20	Today