POLYMER ASPHERES

Fresnel Technologies, Inc. now offers a line of polymer aspheric lenses that, because they are designed to fit standard 1/2″ and 1″ lens mounts, are very suitable for prototyping and development work. Of course, the lenses can easily and effectively be used in production systems as well. The lenses are designed for use at conjugates of infinity and the focal length, and with a relatively narrow field of view.

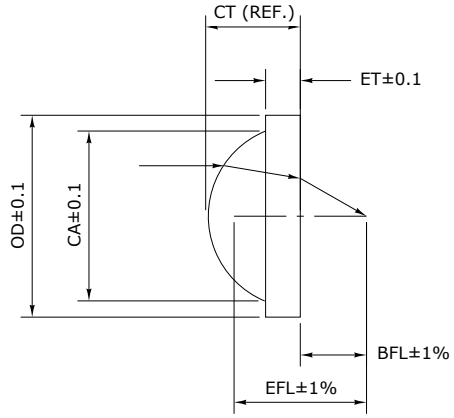
The lenses are available uncoated and with broadband visible or near infrared antireflection (AR) coatings from stock. Other coatings are available for specific wavelengths or ranges. To order a given lens with the broadband coating for the visible, append -BBAR to its part number; for the broadband near infrared coating, append -BBNIR.

The lenses are designed to fit a variety of stock lens mounts. Examples include Edmund Optics' Metric Optics Mounts, parts 56-761 and 54-981, and ThorLabs' Ø0.5″ and Ø1.0″ lens mounts, parts LMR05 and LMR1. As with any optic, the available clear aperture may vary according to the mount chosen, and it is possible that the retaining ring for some mounts may contact and damage the lens' surface.

The lenses are named as follows:
ASP [asphere] - PCX [plano-convex] - 0.5 [inch mount size] - 0.5P [inch focal length, positive] -PMMA [material]
DCX instead of PCX in the name indicates a double-convex, though not necessarily symmetrically so, lens.

Current (April 2013) catalog of polymer aspheric lenses

Part number	Effective focal length	Back focal length	f/#	Center thickness	Edge thickness
ASP-DCX-0.5-0.25P-PMMA	0.25″ (6.4mm)	0.16″ (4.0mm)	0.5	0.269″ (6.83mm)	0.079″ (2.0mm)
ASP-DCX-0.5-0.375P-PMMA	0.375″ (9.5mm)	0.25″ (6.4mm)	0.75	0.240″ (6.10mm)	0.079″ (2.0mm)
ASP-PCX-0.5-0.5P-PMMA	0.5″ (12.7mm)	0.37″ (9.4mm)	1	0.194″ (4.92mm)	0.079″ (2.0mm)
ASP-PCX-0.5-1.0P-PMMA	1.0″ (25.4mm)	0.91″ (23.2mm)	2	0.131″ (3.34mm)	0.079″ (2.0mm)
ASP-PCX-0.5-2.0P-PMMA	2.0″ (50.8mm)	1.93″ (49.0mm)	4	0.105″ (2.66mm)	0.079″ (2.0mm)
ASP-PCX-0.5-3.0P-PMMA	3.0″ (76.2mm)	2.94″ (74.6mm)	6	0.096″ (2.44mm)	0.079″ (2.0mm)
ASP-PCX-0.5-4.0P-PMMA	4.0″ (102mm)	3.94″ (100.1mm)	8	0.092″ (2.33mm)	0.079″ (2.0mm)
ASP-PCX-0.5-5.0P-PMMA	5.0″ (127mm)	4.94″ (125.5mm)	10	0.089″ (2.26mm)	0.079″ (2.0mm)
ASP-DCX-1.0-0.5P-PMMA	0.5″ (12.7mm)	0.316″ (8.0mm)	0.5	0.538″ (13.67mm)	0.157″ (4.0mm)
ASP-DCX-1.0-0.75P-PMMA	0.75″ (19.1mm)	0.50″ (12.7mm)	0.75	0.481″ (12.22mm)	0.157″ (4.0mm)
ASP-PCX-1.0-1.0P-PMMA	1.0″ (25.4mm)	0.72″ (18.4mm)	1	0.413″ (10.48mm)	0.157″ (4.0mm)
ASP-PCX-1.0-2.0P-PMMA	2.0″ (50.8mm)	1.82″ (46.2mm)	2	0.274″ (6.95mm)	0.157″ (4.0mm)
ASP-PCX-1.0-4.0P-PMMA	4.0″ (102mm)	3.86″ (98.0mm)	4	0.215″ (5.45mm)	0.157″ (4.0mm)
ASP-PCX-1.0-6.0P-PMMA	6.0″ (152mm)	5.87″ (149.1mm)	6	0.195″ (4.96mm)	0.157″ (4.0mm)
ASP-PCX-1.0-8.0P-PMMA	8.0″ (203mm)	7.88″ (200.1mm)	8	0.186″ (4.72mm)	0.157″ (4.0mm)
ASP-PCX-1.0-10.0P-PMMA	10.0″ (254mm)	9.88″ (251.0mm)	10	0.180″ (4.58mm)	0.157″ (4.0mm)



1/2″ (12.7mm) outer diameter (OD) lenses all have a clear aperture (CA) of 0.450″ (11.4mm). 1″ (25.4mm) outer diameter (OD) lenses all have a clear aperture (CA) of 0.940″ (23.9mm). Lenses are made from acrylic (PMMA), with index n=1.49 and Abbe number=61.4, and exhibit low birefringence. Typical surface figure tolerance is <3 μm P-V, mostly power. Typical surface finish is <5 nm RMS. Centering is held to <50 μm.

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