

## BICONCAVE LENSES

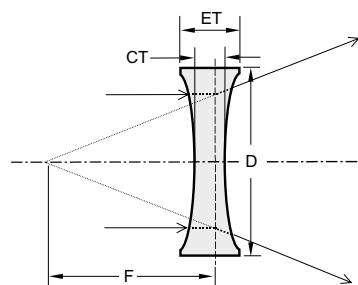
### Features

- Have negative focal lengths, diverge collimated incident light
- Form only virtual images which are seen through the lens
- Minimise spherical aberration, coma and distortion at unit conjugate ratio

These lenses are symmetrical, having equal radii on both sides. Biconcave lenses are often used to expand light beams or to increase focal lengths in optical systems, and are normally used in combination with other lenses. Among the many devices utilising biconcave lenses are laser beam expanders, optical character readers, viewers and projection systems.

A variety of anti-reflection coatings is available for these lenses. For appropriate coating, please refer to the *Coatings Section*.

Most of the Lenses are available for fast off-the-shelf delivery. Check the availability at [www.eksmaoptics.com](http://www.eksmaoptics.com)



### Specifications

Material	BK7, UV FS	
Surface quality	40 – 20 scratch & dig (MIL-PRF-13830B)	
Clear aperture	90% of the diameter	
Diameter tolerance	+0.00 / -0.12 mm	
Thickness tolerance	±0.5 mm	
Surface irregularity	λ/8 @ 633 nm	
Concentricity	3 arcmin	
Paraxial focal length	BK7	±2% @ 546 nm
	UV FS	±2% @ 355 nm

Please contact us if you can not find the lens that you need. We can provide a wide range of special focal lengths, diameters and coatings.

### BK7 BICONCAVE LENSES

Focal length F, mm	Diameter D, mm	Centre thickness CT, mm	Edge thickness ET, mm	Radius, mm	Catalogue number	Price, EUR
-12.7	12.7	3.2	5.5	-13.7	<a href="#">114-0104E</a>	15
-25.0	12.7	2.2	3.2	-26.3	<a href="#">114-0106E</a>	15
-40.0	12.7	2.4	3.1	-41.9	<a href="#">114-0108E</a>	15
-50.0	12.7	2.6	3.1	-52.3	<a href="#">114-0110E</a>	15
-60.0	12.7	2.6	3.0	-62.7	<a href="#">114-0112E</a>	15
-75.0	12.7	2.7	3.0	-78.3	<a href="#">114-0114E</a>	15
-100.0	12.7	2.8	3.0	-104.2	<a href="#">114-0118E</a>	15
-125.0	12.7	1.7	2.0	-130.0	<a href="#">114-0120E</a>	14
-150.0	12.7	1.8	2.0	-155.9	<a href="#">114-0124E</a>	14
-200.0	12.7	1.8	2.0	-207.8	<a href="#">114-0128E</a>	14
-250.0	12.7	1.8	2.0	-259.7	<a href="#">114-0132E</a>	14

Focal length F, mm	Diameter D, mm	Centre thickness CT, mm	Edge thickness ET, mm	Radius, mm	Catalogue number	Price, EUR
-25.0	25.4	4.8	10.2	-26.7	<a href="#">114-0204E</a>	19
-40.0	25.4	2.7	6.2	-42.0	<a href="#">114-0206E</a>	19
-50.0	25.4	4.5	7.5	-52.6	<a href="#">114-0208E</a>	19
-60.0	25.4	2.6	5.2	-62.7	<a href="#">114-0210E</a>	19
-75.0	25.4	3.7	5.5	-78.4	<a href="#">114-0212E</a>	18
-100.0	25.4	3.2	4.6	-104.3	<a href="#">114-0214E</a>	17
-125.0	25.4	3.1	4.3	-130.2	<a href="#">114-0218E</a>	17
-150.0	25.4	3.0	4.0	-156.1	<a href="#">114-0220E</a>	17
-200.0	25.4	2.8	3.6	-208.0	<a href="#">114-0224E</a>	17
-250.0	25.4	2.9	3.5	-259.9	<a href="#">114-0228E</a>	17
-400.0	25.4	3.2	3.6	-415.5	<a href="#">114-0234E</a>	17
-500.0	25.4	3.2	3.5	-519.3	<a href="#">114-0238E</a>	17

### Housing accessories

Variable Lens Holder 830-0040  
Find more at [EksmaOptics.com](http://EksmaOptics.com)



### Ordering of Coated Lenses

Please choose relevant coating from anti-reflection coatings section (*pages 1.5 - 1.6*). The coating code and price should be added to the lens code and price.

#### Example:

BK7 bi/cv lens Ø12.7 mm, F=-250 mm, coated AR/AR@400-700 nm, AOI=0°  
Code: **114-0132E + ARB550**, Price: 14 + 67 EUR= 81 EUR/pc.



## UV FS BICONCAVE LENSES

Focal length F, mm	Diameter D, mm	Centre thickness CT, mm	Edge thickness ET, mm	Radius, mm	Catalogue number	Price, EUR
-12.7	12.7	3.7	6.7	-12.6	114-1104E	49
-25.0	12.7	2.8	4.0	-24.2	114-1108E	49
-30.0	12.7	3.0	4.0	-29.0	114-1110E	49
-50.0	12.7	2.6	3.2	-48.0	114-1114E	49
-75.0	12.7	2.7	3.1	-71.8	114-1118E	49
-100.0	12.7	2.8	3.0	-95.5	114-1122E	47
-25.0	25.4	5.3	12.0	-24.6	114-1204E	71
-30.0	25.4	3.0	7.5	-29.0	114-1205E	71
-50.0	25.4	2.6	6.0	-48.0	114-1208E	71
-75.0	25.4	3.8	6.1	-71.9	114-1212E	71
-100.0	25.4	3.6	5.3	-95.7	114-1216E	71
-150.0	25.4	4.4	5.3	-143.4	114-1220E	71
-200.0	25.4	3.0	3.8	-190.7	114-1224E	70

Please contact us for other size, focus or precision requirements.

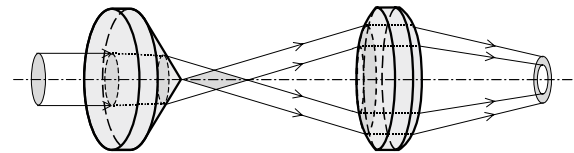
## CONICAL LENSES (AXICONS)

### Features

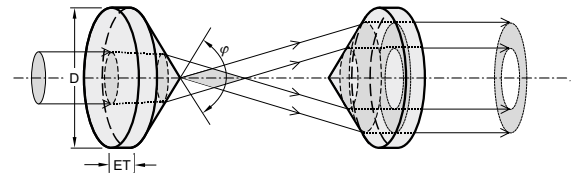
- Precision and standard grade axicons
- Can be made from most optical materials
- Can be supplied with AR and BBAR coatings

We can supply custom cutting, edging, coating or complete fabrication if required. If you cannot find your axicons needed, please send your specification or drawings for a custom quotation.

An axicon with a spherical lens produces an annular focus.



Two axicons together produce a thick-walled hollow "pipe" of light.



## PRECISION GRADE PLANO-CONVEX AXICONS

Apex angle $\phi$ , deg	Diameter D, mm	Edge thickness ET, mm	Centre thickness CT, mm	Catalogue number	Price, EUR
90	25.4	3.5	16.2	131-1290	360
130	25.4	3.5	9.4	131-1230	360
140	25.4	3.5	8.1	131-1240	360
160	25.4	3.5	5.7	131-1260	360
165	25.4	3.5	5.2	131-1265	360
170	25.4	3.5	4.6	131-1270	360
175	25.4	3.5	4.1	131-1275	360
176	25.4	3.5	3.9	131-1276	360
177	25.4	3.5	3.8	131-1277	360
178	25.4	3.5	3.7	131-1278	360
179	25.4	3.5	3.6	131-1279	360
160	50.8	5	9.4	131-1560	685
170	50.8	5	7.2	131-1570	685
176	50.8	5	5.9	131-1576	685
178	50.8	5	5.4	131-1578	685
179	50.8	5	5.2	131-1579	685

### Specifications

Material	UVFS
Surface quality	40 – 20 scratch & dig (MIL-PRF-13830B)
Clear aperture	90% of the diameter
Diameter tolerance	+0.00 / -0.1 mm
Angle tolerance	$\pm 0.05^\circ$ ( $\pm 3$ arcmin)
Surface irregularity	S1 (conical): $\pm 0.5\mu\text{m}$ S2 (flat): $\lambda/4$ @ 633 nm
Apex rounding	$< \varnothing 1$ mm

### Housing accessories

Universal Adjustable Lens/Optics Mount 830-0035

Find more at [EksmaOptics.com](http://EksmaOptics.com)

