

BICONVEX AND ASYMMETRIC LENSES BCX - ABL

Biconvex lenses (BCX) and **asymmetric lenses (ABL)**, similar to PCX ones, have **positive focal lengths combined with convex surfaces**. The surfaces of BCX lenses have equal and symmetrical radius of curvature, while ABL ones have both convex surfaces but with different radius of curvature. In the latter case there is a special relationship between the two surfaces, called form factor, which identifies the best shape that an asymmetric lens can have as a function of the distances between the lens and its conjugate points.

In cases where you have equal object and image distances, i.e. when an unitary magnification is required, BCX lenses are a viable solution that can completely cancel some aberrations such as distortion, lateral chromatic aberration and coma, while ensuring low residuals of spherical aberration. These types of lenses can be used as a magnifying lenses when the object is located, from the lens, at a distance less than the focal length and observed from the opposite side. For a BCX or an ABL lens with a focal length less than 250 mm, it can be also defined as the apparent magnification the ratio $I_x = 1 / (4f)$, where f is the focal length expressed in meters. For lenses with focal length greater than 250 mm, instead, the previously expressed formula can be expressed as $I_x = [1 / (4f)] + 1$.

Tecnottica Consonni makes available the realization of BCX and ABL lenses in different optical glasses with **several Anti-Reflection coating** optimized for ultraviolet (**UV**), visible (**VIS**), near infrared (**NIR** and **SWIR**) and **other bands of your choice**.

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