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## TECHSPEC® 4.5mm Dia. x 9mm FL VIS-EXT Coated, Double-Convex Lens



Stock **#89-123** **5 In Stock**

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1  €74.<sup>00</sup>

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| Qty 1-9        | €74,00 each                   |
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**!** Prices shown are exclusive of VAT/local taxes

### Product Downloads

### General

Double-Convex Lens **Type:**

### Physical & Mechanical Properties

|                      |   |
|----------------------|---|
| 4.50 +0.000/-0.025   | <b>Diameter (mm):</b>                   |
| <3                   | <b>Centering (arcmin):</b>              |
| Protective as needed | <b>Bevel:</b>                           |
| 2.38                 | <b>Center Thickness CT (mm):</b>        |
| ±0.05                | <b>Center Thickness Tolerance (mm):</b> |
| 1.8                  | <b>Edge Thickness ET (mm):</b>          |
| 4.05                 | <b>Clear Aperture CA (mm):</b>          |

## Optical Properties

|                                      |  |
|--------------------------------------|--|
| 8.16                                 | <b>Back Focal Length BFL (mm):</b>                 |
| 9.00                                 | <b>Effective Focal Length EFL (mm):</b>            |
| VIS-EXT (350-700nm)                  | <b>Coating:</b>                                    |
| R <sub>avg</sub> <0.5% @ 350 - 700nm | <b>Coating Specification:</b>                      |
| <a href="#">N-BK7</a>                | <b>Substrate:</b> <input type="checkbox"/>         |
| 40-20                                | <b>Surface Quality:</b>                            |
| 1.5λ                                 | <b>Power (P-V) @ 632.8nm:</b>                      |
| λ/4                                  | <b>Irregularity (P-V) @ 632.8nm:</b>               |
| 8.88                                 | <b>Radius R<sub>1</sub>=R<sub>2</sub> (mm):</b>    |
| 2.00                                 | <b>f#:</b>   |
| 587.6                                | <b>Focal Length Specification Wavelength (nm):</b> |
| ±1                                   | <b>Focal Length Tolerance (%):</b>                 |
| 0.25                                 | <b>Numerical Aperture NA:</b>                      |
| 350 - 700                            | <b>Wavelength Range (nm):</b>                      |

## Regulatory Compliance

|                           |                                    |
|---------------------------|------------------------------------|
| <a href="#">Compliant</a> | <b>RoHS 2015:</b>                  |
| <a href="#">View</a>      | <b>Certificate of Conformance:</b> |
| <a href="#">Compliant</a> | <b>Reach 235:</b>                  |

## Product Details

- AR Coated to Provide <0.5% Reflectance per Surface for 350 - 700nm
  - Minimize Aberrations Including Spherical and Coma
  - [UV Fused Silica DCX Lenses](#) Available
  - Other Coating Options Available: [Uncoated](#), [MgF<sub>2</sub>](#), [VIS 0°](#), [NIR I](#), [NIR II](#), [VIS-NIR](#), and [YAG-BBAR](#)
- TECHSPEC® VIS-EXT Coated Double-Convex (DCX) Lenses, also referred to as bi-convex lenses, have two positive, symmetrical faces with equal radii on both sides. These lenses are generally recommended for finite imaging applications with a conjugate ratio (ratio between object distance and image distance) between 0.2 and 5. At a conjugate ratio of 1, aberrations such as spherical aberration, chromatic aberration, coma, and distortion are minimized or cancelled due to the symmetric lens design. TECHSPEC VIS-EXT Coated Double-Convex Lenses are available in a variety of substrates and coating options for the visible and NIR spectra.

## Technical Information





Typical transmission of a 3mm thick, uncoated N-BK7 window across the UV - NIR spectra.

[Click Here to Download Data](#)

**N-BK7 with MgF<sub>2</sub> Coating  
Typical Transmission**



Typical transmission of a 3mm thick N-BK7 window with MgF<sub>2</sub> (400-700nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{avg} \leq 1.75\% @ 400 - 700\text{nm (N-BK7)}$$

Data outside this range is not guaranteed and is for reference only.

[Click Here to Download Data](#)

**N-BK7 with VIS-EXT Coating  
Typical Transmission**



Typical transmission of a 3mm thick N-BK7 window with VIS-EXT (350-700nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{avg} \leq 0.5\% @ 350 - 700\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

[Click Here to Download Data](#)

**N-BK7 with VIS-NIR Coating  
Typical Transmission**



Typical transmission of a 3mm thick N-BK7 window with VIS-NIR (400-1000nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{abs} \leq 0.25\% @ 880\text{nm}$$

$$R_{avg} \leq 1.25\% @ 400 - 870\text{nm}$$

$$R_{avg} \leq 1.25\% @ 890 - 1000\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

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**N-BK7 with VIS 0° Coating  
Typical Transmission**



Typical transmission of a 3mm thick N-BK7 window with VIS 0° (425-675nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{avg} \leq 0.4\% @ 425 - 675\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

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### N-BK7 with YAG-BBAR Coating Typical Transmission



Typical transmission of a 3mm thick N-BK7 window with YAG-BBAR (500-1100nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{abs} \leq 0.25\% \text{ @ } 532\text{nm}$$

$$R_{abs} \leq 0.25\% \text{ @ } 1064\text{nm}$$

$$R_{avg} \leq 1.0\% \text{ @ } 500 - 1100\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

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### N-BK7 with NIR I Coating Typical Transmission



Typical transmission of a 3mm thick N-BK7 window with NIR I (600 - 1050nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{avg} \leq 0.5\% \text{ @ } 600 - 1050\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

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### N-BK7 with NIR II Coating Typical Transmission



Typical transmission of a 3mm thick N-BK7 window with NIR II (750 - 1550nm) coating at 0° AOI.

The blue shaded region indicates the coating design wavelength range, with the following specification:

$$R_{abs} \leq 1.5\% \text{ @ } 750 - 800\text{nm}$$

$$R_{abs} \leq 1.0\% \text{ @ } 800 - 1550\text{nm}$$

$$R_{avg} \leq 0.7\% \text{ @ } 750 - 1550\text{nm}$$

Data outside this range is not guaranteed and is for reference only.

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