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TECHSPEC<sup>®</sup> 4.5mm Dia. x 4.5mm FL, VIS-NIR Coated, Double-Convex Lens



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+

S\$103<sup>.60</sup>

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General

Type:

Double-Convex Lens

Physical & Mechanical Properties

Diameter (mm):

4.50 +0.0/-0.025

|                                                                                                                     |                                             |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 30-45, typical                                                                                                      | Centering (arcmin):                         |
| Protective as needed                                                                                                | Bevel:                                      |
| 2.60                                                                                                                | Center Thickness CT (mm):                   |
| ±0.05                                                                                                               | Center Thickness Tolerance (mm):            |
| 1.80                                                                                                                | Edge Thickness ET (mm):                     |
| 4.05                                                                                                                | Clear Aperture CA (mm):                     |
| Optical Properties                                                                                                  |                                             |
| 3.70                                                                                                                | Back Focal Length BFL (mm):                 |
| 4.50                                                                                                                | Effective Focal Length EFL (mm):            |
| VIS-NIR (400-1000nm)                                                                                                | Coating:                                    |
| R <sub>abs</sub> ≤0.25% @ 880nm<br>R <sub>avg</sub> ≤1.25% @ 400 - 870 nm<br>R <sub>avg</sub> ≤1.25% @ 890 - 1000nm | Coating Specification:                      |
| N-LASF44                                                                                                            | Substrate: □                                |
| 40-20                                                                                                               | Surface Quality:                            |
| 1.5λ                                                                                                                | Power (P-V) @ 632.8nm:                      |
| λ/4                                                                                                                 | Irregularity (P-V) @ 632.8nm:               |
| 6.58                                                                                                                | Radius R <sub>1</sub> =R <sub>2</sub> (mm): |
| 1.00                                                                                                                | f/#:                                        |
| 587.6                                                                                                               | Focal Length Specification Wavelength (nm): |
| ±1                                                                                                                  | Focal Length Tolerance (%):                 |
| 0.50                                                                                                                | Numerical Aperture NA:                      |
| 400 - 1000                                                                                                          | Wavelength Range (nm):                      |
| 5 J/cm <sup>2</sup> @ 532nm, 10ns                                                                                   | Damage Threshold, By Design: □              |
| Regulatory Compliance                                                                                               |                                             |
| Compliant                                                                                                           | RoHS 2015:                                  |
| View                                                                                                                | Certificate of Conformance:                 |
| Compliant                                                                                                           | Reach 235:                                  |

## Need different specs or modifications?

Edmund Optics offers comprehensive custom manufacturing services for optical and imaging components tailored to your specific application requirements. Whether in the prototyping phase or preparing for full-scale production, we provide flexible solutions to meet your needs. Our experienced engineers are here to assist—from concept to completion.

Our capabilities include:

- Custom dimensions, materials, coatings, and more
- High-precision surface quality and flatness
- Tight tolerances and complex geometries
- Scalable production—from prototype to volume

Learn more about our [custom manufacturing capabilities](#) or submit an inquiry [here](#).

## Product Details

- AR Coated to Provide <1.25% Reflectance per Surface for 400 - 1000nm
- 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-EXT](#), and [YAG-BBAR](#)

TECHSPEC® VIS-NIR 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

Technical Information



| N-BK7                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Uncoated N-BK7 Typical Transmission</div>                     | <p>Typical transmission of a 3mm thick, uncoated N-BK7 window across the UV - NIR spectra.</p> <p><a href="#">Click Here to Download Data</a></p>                                                                                                                                                                                                                                                                   |
| <div>N-BK7 with MgF<sub>2</sub> Coating Typical Transmission</div> | <p>Typical transmission of a 3mm thick N-BK7 window with MgF2 (400-700nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{avg} \leq 1.75\% @ 400 - 700\text{nm}</math> (N-BK7)</p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p> |
| <div>N-BK7 with VIS-EXT Coating Typical Transmission</div>         | <p>Typical transmission of a 3mm thick N-BK7 window with VIS-EXT (350-700nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{avg} \leq 0.5\% @ 350 - 700\text{nm}</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p>       |
| <div>N-BK7 with VIS-NIR Coating Typical Transmission</div>         | <p>Typical transmission of a 3mm thick N-BK7 window with VIS-NIR (400-1000nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{abs} \leq 0.25\% @ 880\text{nm}</math><br/><math>R_{avg} \leq 1.25\% @ 400 - 870\text{nm}</math><br/><math>R_{avg} \leq 1.25\% @ 890 - 1000\text{nm}</math></p>                     |

|                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Wavelength (nm)</p>                                                                                           | <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>N-BK7 with VIS 0° Coating</b><br/><b>Typical Transmission</b></p>  <p>T (%)</p> <p>Wavelength (nm)</p>     | <p>Typical transmission of a 3mm thick N-BK7 window with VIS 0° (425-675nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{avg} \leq 0.4\% @ 425 - 675\text{nm}</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p>                                                                                                                        |
| <p><b>N-BK7 with YAG-BBAR Coating</b><br/><b>Typical Transmission</b></p>  <p>T (%)</p> <p>Wavelength (nm)</p> | <p>Typical transmission of a 3mm thick N-BK7 window with YAG-BBAR (500-1100nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{abs} \leq 0.25\% @ 532\text{nm}</math><br/><math>R_{abs} \leq 0.25\% @ 1064\text{nm}</math><br/><math>R_{avg} \leq 1.0\% @ 500 - 1100\text{nm}</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p>           |
| <p><b>N-BK7 with NIR I Coating</b><br/><b>Typical Transmission</b></p>  <p>T (%)</p> <p>Wavelength (nm)</p>    | <p>Typical transmission of a 3mm thick N-BK7 window with NIR I (600 - 1050nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{avg} \leq 0.5\% @ 600 - 1050\text{nm}</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p>                                                                                                                     |
| <p><b>N-BK7 with NIR II Coating</b><br/><b>Typical Transmission</b></p>  <p>T (%)</p> <p>Wavelength (nm)</p>   | <p>Typical transmission of a 3mm thick N-BK7 window with NIR II (750 - 1550nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{abs} \leq 1.5\% @ 750 - 800\text{nm}</math><br/><math>R_{abs} \leq 1.0\% @ 800 - 1550\text{nm}</math><br/><math>R_{avg} \leq 0.7\% @ 750 - 1550\text{nm}</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p><a href="#">Click Here to Download Data</a></p> |

# Coating Curves

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