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TECHSPEC<sup>®</sup> 9mm Dia. x 13.5mm FL, NIR I Coated, UV Double-Convex Lens



UV Fused Silica Double-Convex (DCX) Lenses



Stock #22-157 4 In Stock

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-

1

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£119<sup>20</sup>

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| Qty 1-5        | £119.20 each                  |
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General

Type:Double-Convex Lens

Physical & Mechanical Properties

|                      |                           |
|----------------------|---------------------------|
| 9.00 +0.0/-0.025     | Diameter (mm):            |
| <1                   | Centering (arcmin):       |
| Protective as needed | Bevel:                    |
| 3.30 ±0.05           | Center Thickness CT (mm): |
| 1.52                 | Edge Thickness ET (mm):   |
| 8.1                  | Clear Aperture CA (mm):   |

|                                       |                                                       |
|---------------------------------------|-------------------------------------------------------|
| Optical Properties                    |                                                       |
| 12.32                                 | Back Focal Length BFL (mm):                           |
| 13.50                                 | Effective Focal Length EFL (mm):                      |
| NIR I (600-1050nm)                    | Coating:                                              |
| R <sub>avg</sub> ≤0.5% @ 600 - 1050nm | Coating Specification:                                |
| Fused Silica (Corning 7980)           | Substrate: <input type="checkbox"/>                   |
| 40-20                                 | Surface Quality:                                      |
| 1.5λ                                  | Power (P-V) @ 632.8nm:                                |
| λ/4                                   | Irregularity (P-V) @ 632.8nm:                         |
| 11.84                                 | Radius R <sub>1</sub> =R <sub>2</sub> (mm):           |
| 1.5                                   | f/#:                                                  |
| 587.6                                 | Focal Length Specification Wavelength (nm):           |
| ±1                                    | Focal Length Tolerance (%):                           |
| 0.33                                  | Numerical Aperture NA:                                |
| 600 - 1050                            | Wavelength Range (nm):                                |
| 7 J/cm² @ 1064nm, 10ns                | Damage Threshold, Reference: <input type="checkbox"/> |

|                       |                             |
|-----------------------|-----------------------------|
| Regulatory Compliance |                             |
| Compliant             | RoHS 2015:                  |
| View                  | Certificate of Conformance: |
| Compliant             | Reach 235:                  |

## Product Details

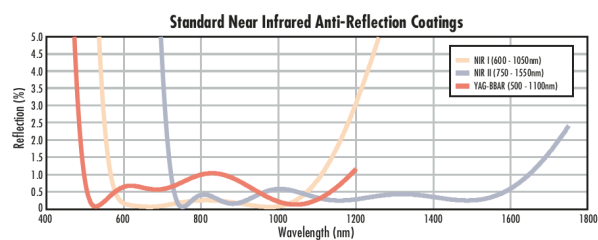
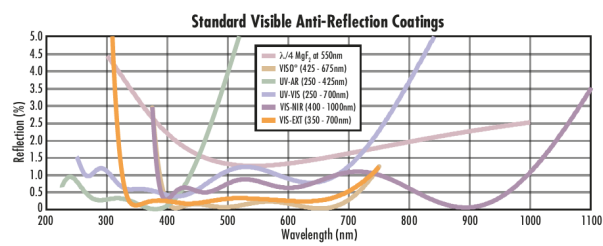
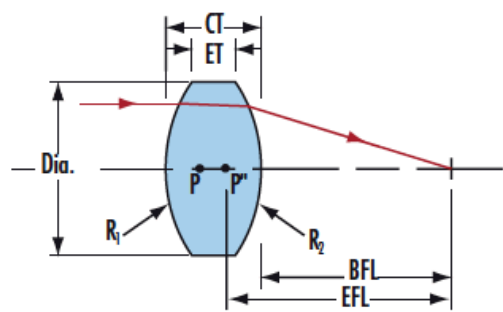
- Ideal for Imaging Applications
- Minimize Aberrations Including Spherical and Coma
- Precision Fused Silica Substrate

TECHSPEC® UV Fused Silica 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 canceled due to the symmetric lens design. TECHSPEC® UV Fused Silica Double-Convex (DCX) Lenses have a precision fused silica substrate. These lenses are available uncoated or with UV-AR, UV-VIS, VIS-EXT, VIS-NIR, VIS 0°, NIR I, or NIR II coatings.

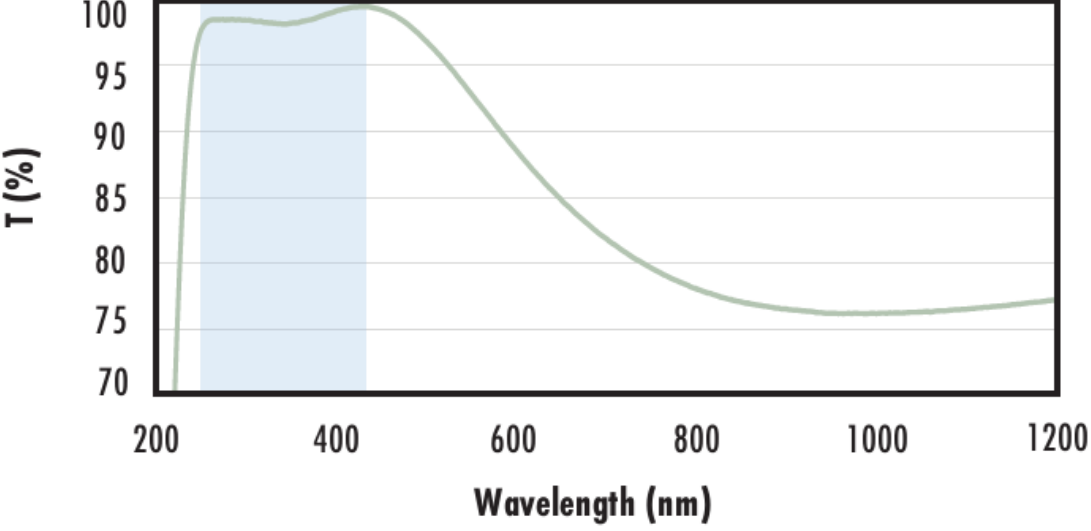
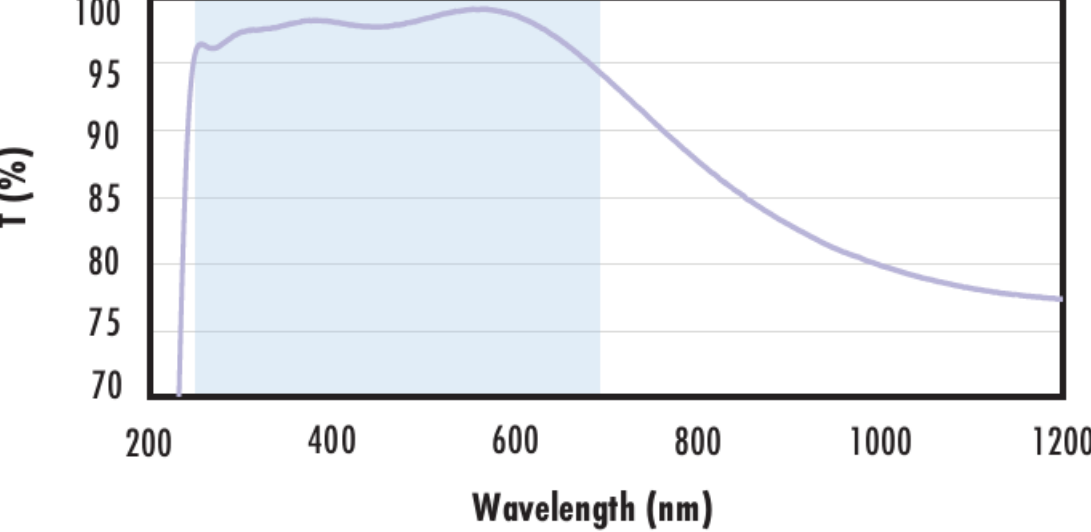
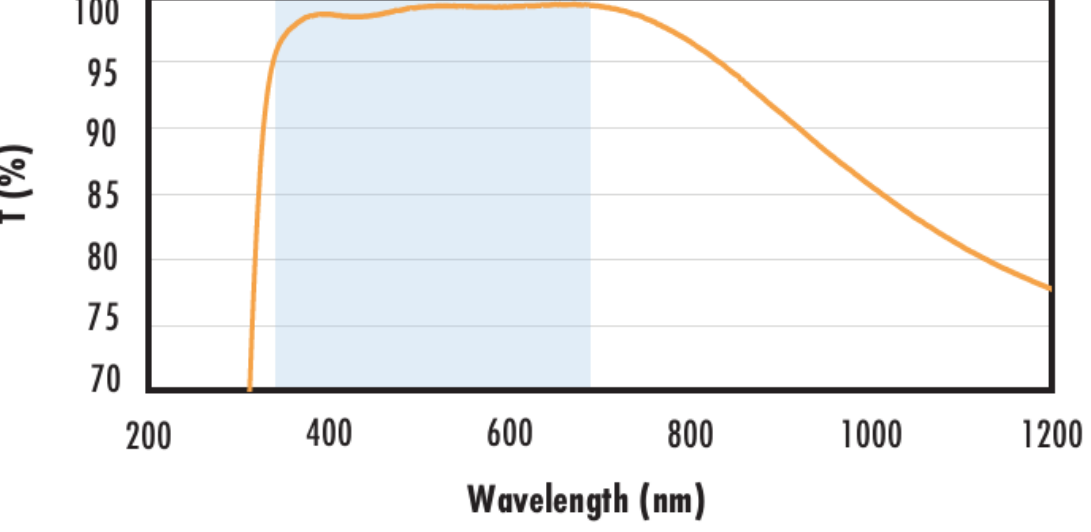
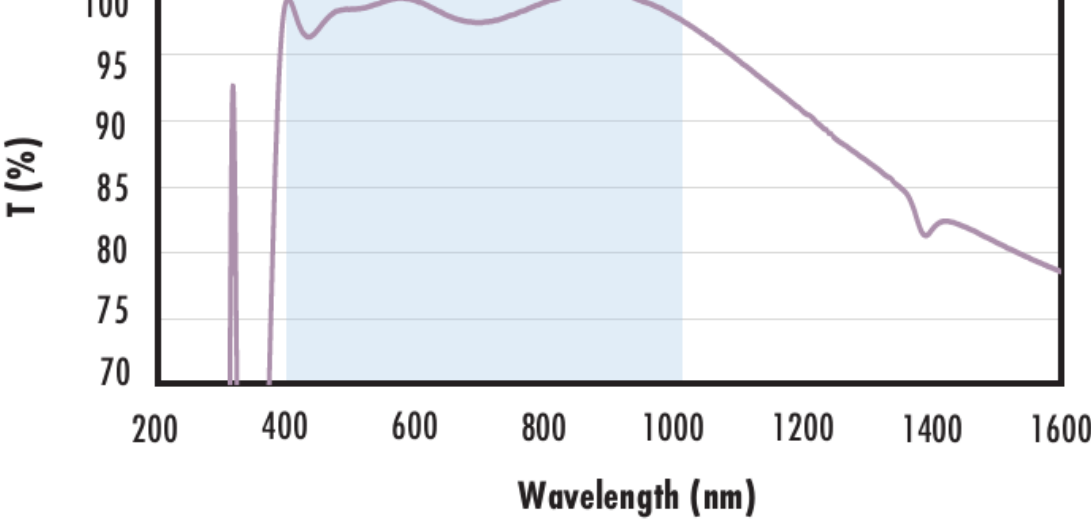
## Technical Information

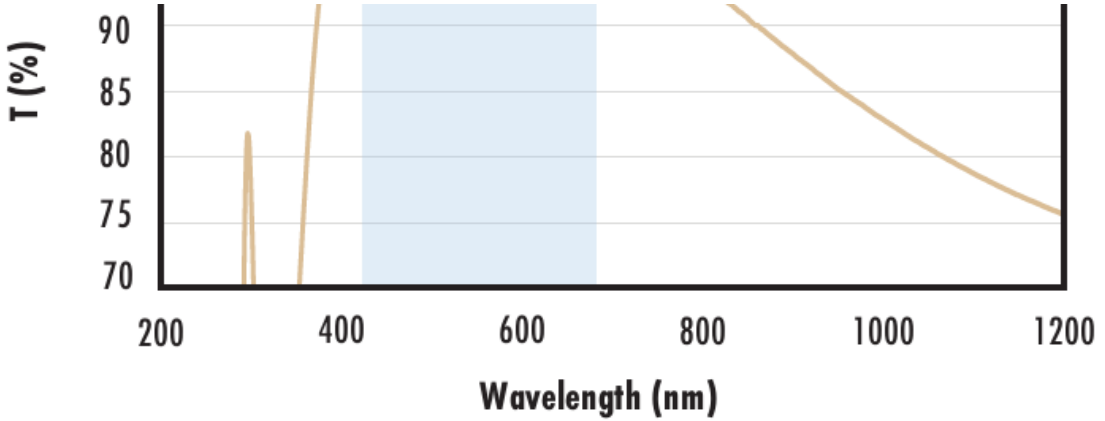
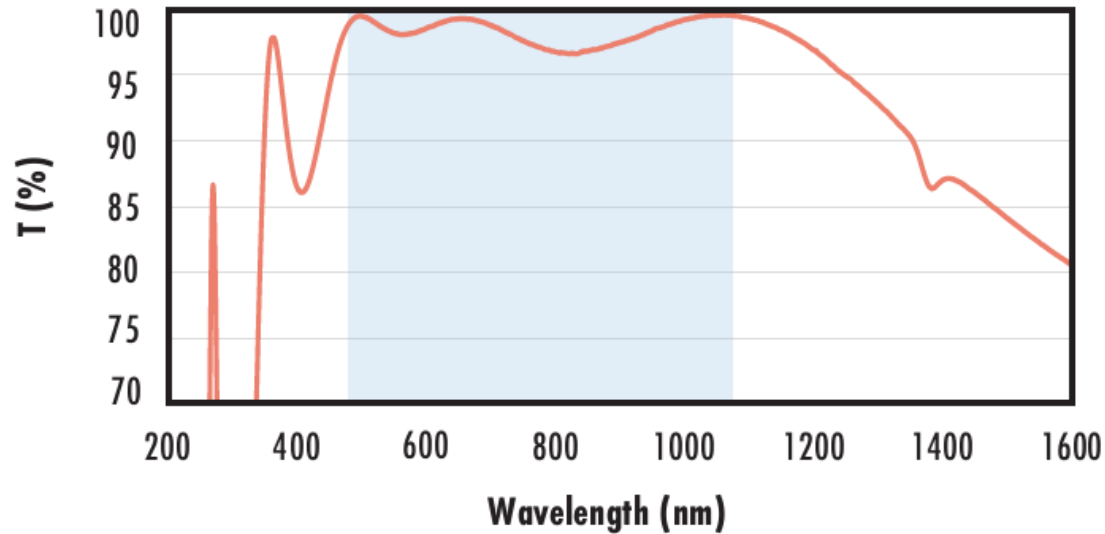
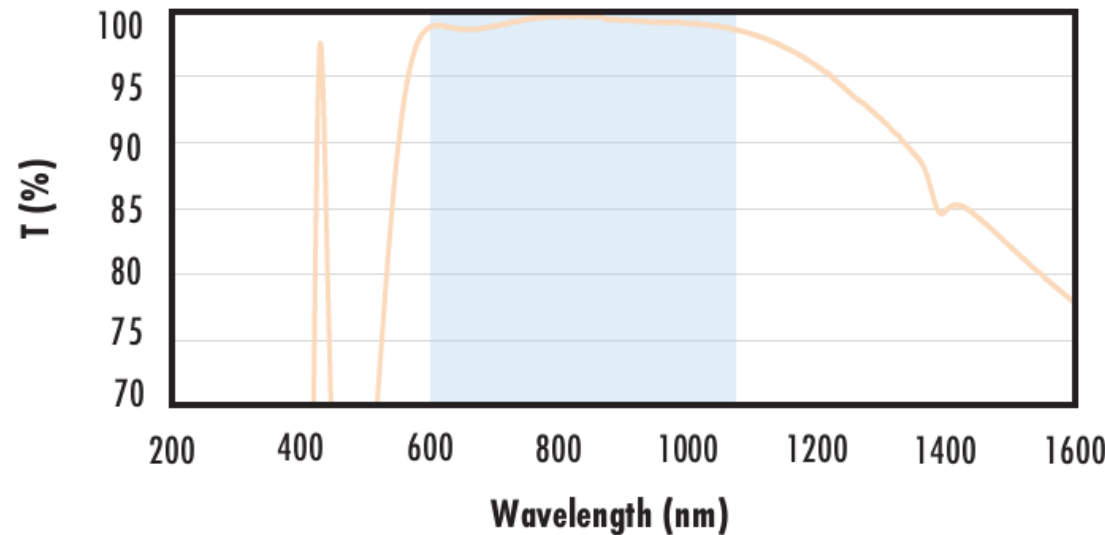
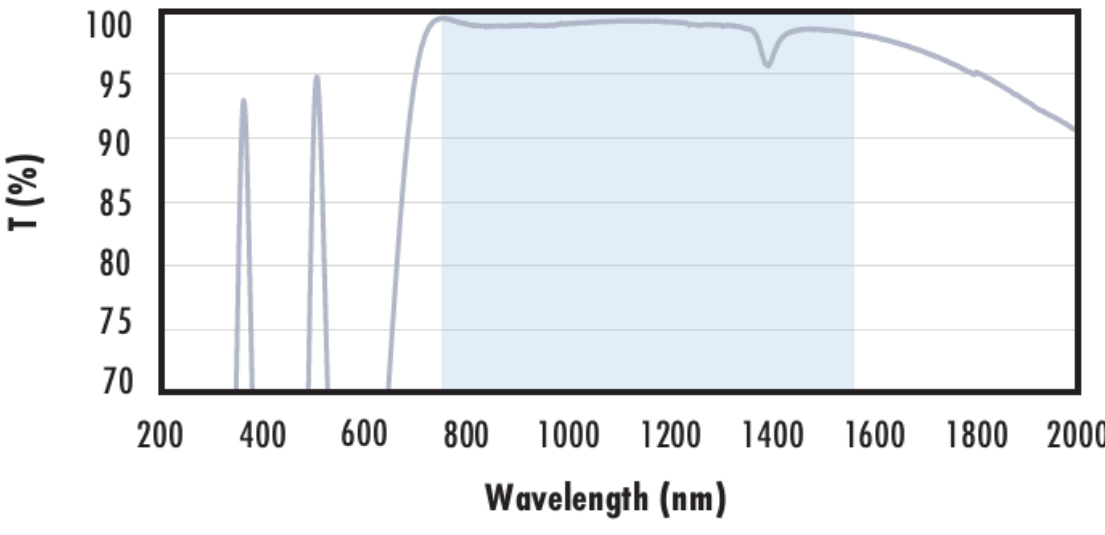


UV FS Transmission Curve



| FUSED SILICA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|-----|----|-----|----|-----|----|-----|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div>Uncoated Fused Silica<br/>Typical Transmission</div><div><table border="1"><caption>Approximate data for Uncoated Fused Silica Transmission</caption><thead><tr><th>Wavelength (nm)</th><th>Transmission T (%)</th></tr></thead><tbody><tr><td>200</td><td>92</td></tr><tr><td>400</td><td>94</td></tr><tr><td>600</td><td>94</td></tr><tr><td>800</td><td>94</td></tr><tr><td>1000</td><td>94</td></tr><tr><td>1200</td><td>94</td></tr><tr><td>1400</td><td>92</td></tr><tr><td>1600</td><td>94</td></tr><tr><td>1800</td><td>94</td></tr><tr><td>2000</td><td>94</td></tr><tr><td>2200</td><td>90</td></tr></tbody></table></div></div>                                         | Wavelength (nm)    | Transmission T (%) | 200 | 92 | 400 | 94 | 600 | 94 | 800 | 94 | 1000 | 94 | 1200 | 94 | 1400 | 92 | 1600 | 94 | 1800 | 94 | 2000 | 94 | 2200 | 90 | <div>Typical transmission of a 3mm thick, uncoated fused silica window across the UV - NIR spectra.</div> <div><a href="#">Click Here to Download Data</a></div>                                                                                                                                                                                                                                                                                                   |
| Wavelength (nm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Transmission T (%) |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 92                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 92                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 90                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <div><div>Fused Silica with MgF<sub>2</sub> Coating<br/>Typical Transmission</div><div><table border="1"><caption>Approximate data for Fused Silica with MgF<sub>2</sub> Coating Transmission</caption><thead><tr><th>Wavelength (nm)</th><th>Transmission T (%)</th></tr></thead><tbody><tr><td>200</td><td>94</td></tr><tr><td>400</td><td>97</td></tr><tr><td>600</td><td>97</td></tr><tr><td>800</td><td>96</td></tr><tr><td>1000</td><td>96</td></tr><tr><td>1200</td><td>96</td></tr><tr><td>1400</td><td>93</td></tr><tr><td>1600</td><td>95</td></tr><tr><td>1800</td><td>95</td></tr><tr><td>2000</td><td>95</td></tr><tr><td>2200</td><td>90</td></tr></tbody></table></div></div> | Wavelength (nm)    | Transmission T (%) | 200 | 94 | 400 | 97 | 600 | 97 | 800 | 96 | 1000 | 96 | 1200 | 96 | 1400 | 93 | 1600 | 95 | 1800 | 95 | 2000 | 95 | 2200 | 90 | <div>Typical transmission of a 3mm thick fused silica window with MgF<sub>2</sub> (400-700nm) coating at 0° AOI.</div> <div>The blue shaded region indicates the coating design wavelength range, with the following specification:</div> <div><math>R_{avg} \leq 1.75\% \text{ @ } 400 - 700\text{nm (N-BK7)}</math></div> <div>Data outside this range is not guaranteed and is for reference only.</div> <div><a href="#">Click Here to Download Data</a></div> |
| Wavelength (nm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Transmission T (%) |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 94                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 97                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 97                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 96                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 96                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 96                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 93                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 95                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 95                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 95                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 90                 |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <div><div>Fused Silica with UV-AR Coating<br/>Typical Transmission</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                    |     |    |     |    |     |    |     |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p>Typical transmission of a 3mm thick fused silica window with UV-AR (250-425nm) 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 1.0\% \text{ @ } 250 - 425\text{nm}</math><br/><math>R_{avg} \leq 0.75\% \text{ @ } 250 - 425\text{nm}</math><br/><math>R_{avg} \leq 0.5\% \text{ @ } 370 - 420\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>Fused Silica with UV-VIS Coating</b><br/><b>Typical Transmission</b></p>    | <p>Typical transmission of a 3mm thick fused silica window with UV-VIS (250-700nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p><math>R_{abs} \leq 1.0\% \text{ @ } 350 - 450\text{nm}</math><br/><math>R_{avg} \leq 1.5\% \text{ @ } 250 - 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>                                                                   |
| <p><b>Fused Silica with VIS-EXT Coating</b><br/><b>Typical Transmission</b></p>  | <p>Typical transmission of a 3mm thick fused silica 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\% \text{ @ } 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>                                                                                                                                    |
| <p><b>Fused Silica with VIS-NIR Coating</b><br/><b>Typical Transmission</b></p>  | <p>Typical transmission of a 3mm thick fused silica 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\% \text{ @ } 880\text{nm}</math><br/><math>R_{avg} \leq 1.25\% \text{ @ } 400 - 870\text{nm}</math><br/><math>R_{avg} \leq 1.25\% \text{ @ } 890 - 1000\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>Fused Silica with VIS 0° Coating</b><br/><b>Typical Transmission</b></p>   | <p>Typical transmission of a 3mm thick fused silica 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>Fused Silica with YAG-BBAR Coating</b><br/><b>Typical Transmission</b></p>  | <p>Typical transmission of a 3mm thick fused silica 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>Fused Silica with NIR I Coating</b><br/><b>Typical Transmission</b></p>    | <p>Typical transmission of a 3mm thick fused silica 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>Fused Silica with NIR II Coating</b><br/><b>Typical Transmission</b></p>   | <p>Typical transmission of a 3mm thick fused silica 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> |

## Custom

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

