

**FB1590-12 - December 28, 2023**

Item # FB1590-12 was discontinued on December 28, 2023. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

**NIR SOFT-COATED BANDPASS FILTERS: 700 - 1610 NM CENTER WAVELENGTH**

- ▶ Pass Regions Between 10 nm and 70 nm FWHM
- ▶ Ø1/2" and Ø1" Mounted Filters
- ▶ <0.01% Transmission in Blocking Region



FB720-10  
(Ø1")



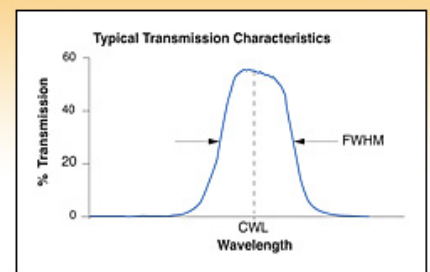
Transmission Direction Indicator



FL905-10  
(Ø1")



FL05850-10  
(Ø1/2")



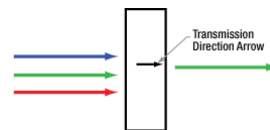
## OVERVIEW

### Features

- Central Wavelengths from 700 nm to 1610 nm
- 10, 12, 25, 40, or 70 nm Bandpass Regions
- Ø1/2" or Ø1" Mounted Filters
- Edge-Scribed for Superb Long-Term Stability
- Typical Transmission Plots Available for Every Filter
- Laser Line Filters for Popular Diode Laser Lines

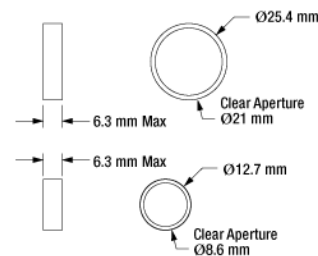


Click to Enlarge  
Filter Mounted in a  
TRF90 Flip Mount  
Using a Retaining Ring



Please see the *Tutorial* tab for more information about the structure of the filter and the transmission direction arrow.

The bandpass and laser line filters shown on this page feature center wavelengths of 700 nm to 1610 nm. Transmission and optical density curves for individual filters are available by clicking on the blue info icon (i) for each individual filter below. Each filter is mounted in a black anodized aluminum ring with an outer diameter of Ø1/2" or Ø1" and a maximum edge thickness of 6.3 mm. Please note that Ø1/2" filter options are highlighted in green in the tables below.



Thorlabs' bandpass filters provide one of the simplest ways to transmit a well-defined wavelength band of light, while rejecting other unwanted radiation. Their design is essentially that of a thin film Fabry-Perot Interferometer formed by vacuum deposition techniques and consists of two reflecting stacks, separated by an even-order spacer layer. These reflecting stacks are constructed from alternating layers of high and low refractive index materials, which can have a reflectance in excess of 99.99%. By varying the thickness of the spacer layer and/or the number of reflecting layers, the central wavelength and bandwidth of the filter can be altered. Because of the Fabry-Perot design, these filters are designed for use at a 0° angle of incidence (AOI). The transmission band will be shifted in wavelength and may be reduced when used with other AOIs. For more details on the properties and construction of our bandpass filters, please see the *Tutorial* tab.

These types of filters display very high transmission in the bandpass region, but the spectral range of blocked light on either side of the bandpass region is narrow. To compensate for this, an additional blocking component is added, which is either an all dielectric or a metal-dielectric depending on the requirements of the filter. Although this additional blocking component will eliminate any unwanted out-of-band radiation, it also reduces the filters' overall transmission throughput.

**Please note:** Please see our full selection of UV/VIS/NIR hard-coated bandpass filters for more options as well as for use in applications with demanding wavefront applications, such as imaging.

Each filter is housed in a black anodized aluminum ring that is labeled with an arrow indicating the design propagation direction. The ring makes handling easier and enhances the blocking OD by limiting scattering. These filters can be mounted in our extensive line of filter mounts and wheels. As the mounts are not threaded, retaining rings will be required to mount the filters in one of our internally-threaded lens tubes.

We do not recommend removing the filter from its mount, as the filter consists of several layers of glass that are held together with epoxy and the mounting ring. These glass layers are necessary to protect the dielectric coating from the atmosphere; exposure would significantly reduce the filter's transmission efficiency over time.

Our NIR Soft-Coated Bandpass Filters will be retired without replacement when stock is depleted. If you require this part for line production, please contact our OEM Team.

**Limited  
STOCK**

Please note that due to the gradual breakdown of the dielectric coatings (primarily due to water vapor), our soft-coated bandpass filters have a typical lifetime of two years. Older filters will experience a decrease of overall transmission in the passband.

#### Additional Bandpass Filters

| UV/VIS Hard-Coated Bandpass Filters<br>300 - 694 nm CWLs | NIR Hard-Coated Bandpass Filters<br>700 - 2000 nm CWLs | IR Bandpass Filters<br>1750 - 12000 nm CWLs | UV/Visible Soft-Coated Bandpass Filters<br>340 - 694.3 nm CWLs | NIR Soft-Coated Bandpass Filters<br>700 - 1610 nm CWLs | Bandpass Filter Kits |
|--|--|---|--|--|----------------------|
|--|--|---|--|--|----------------------|

We also offer custom bandpass filters with other central wavelengths or FWHM. To request a quote, contact Tech Sales.

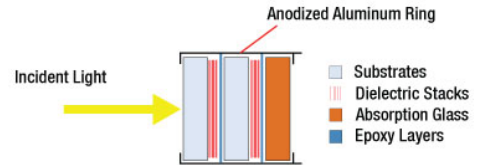
**SPECS**

| <b>Common Specifications</b>         |  |
|--------------------------------------|--|
| <b>Out of Band Transmission</b>      | <0.01%   |
| <b>Housing Diameter</b>              | 1/2" (Laser Line)<br>1" (Bandpass)   |
| <b>Housing Diameter Tolerance</b>    | +0.0 / -0.2 mm   |
| <b>Clear Aperture</b>                | Ø8.6 mm (Min) for Ø1/2"<br>Ø21 mm (Min) for Ø1"                                    |
| <b>Thickness</b>                     | <6.3 mm  |
| <b>Surface/Coating Quality</b>       | 80-50 Scratch-Dig  |
| <b>Edge Treatment</b>                | Mounted in Black Anodized Aluminum Ring  |
| <b>Edge Markings</b>                 | CWL-FWHM ↑ Lot Number; The Arrow Points in the Direction of the light transmission |
| <b>Substrates</b>                    | Schott Borofloat and Soda Lime   |
| <b>Optimum Operating Temperature</b> | 23 °C  |
| <b>Operating Temperature</b>         | -50 to 80 °C   |

## TUTORIAL

### Soft-Coated Bandpass Filter Structure

A bandpass filter is created by depositing layers of material on the surface of the substrate. Typically, there are several dielectric stacks separated by spacer layers. The dielectric stack is composed of a large number of alternating layers of low-index and high-index dielectric material. The thickness of each layer in the dielectric stack is  $\lambda/4$ , where  $\lambda$  is the central wavelength of the bandpass filter (i.e. the wavelength with the highest transmittance through the filter). The spacer layers are placed in between the dielectric stacks and have a thickness of  $(n\lambda)/2$ , where  $n$  is an integer. The spacer layers can be formed from colored glass, epoxy, dyes, metallic, or dielectric layers. A Fabry-Perot cavity is formed by each spacer layer sandwiched between dielectric stacks. The filter is mounted in an engraved metal ring for protection and ease of handling.



Click to Enlarge

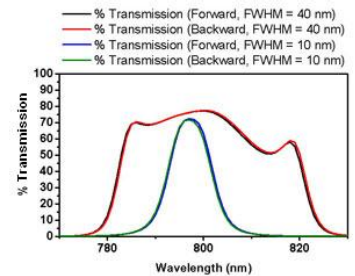
The number of layers shown in this schematic is not indicative of the number of layers in an actual bandpass filter. Also the drawing is not to scale.

### Filter Operation Overview

The constructive interference conditions of a Fabry-Perot cavity allow light at the central wavelength, and a small band of wavelengths to either side, to be transmitted efficiently, while destructive interference prevents the light outside the passband from being transmitted. However, the band of blocked wavelengths on either side of the central wavelength is small. In order to increase the blocking range of the filter, materials with broad blocking ranges are used for or coated onto the spacer layers and the substrate. Although these materials effectively block out-of-band transmission of incident radiation they also decrease the transmission through the filter in the passband.

### Filter Orientation

An engraved arrow on the edge of the filter is used to indicate the recommended direction for the transmission of light through the filter. Although the filter will function with either side facing the source, it is better to place the coated side toward the source. This will minimize any thermal effects or possible thermal damage that blocking intense out-of-band radiation might cause due to the absorption of the out-of-band radiation by the substrate or colored glass filter layers. The plot to the right was made by illuminating the filter with a low intensity broadband light and measuring the transmission as a function of wavelength. The plot shows that the transmission direction through the filter has very little effect on the intensity and the spectrum of the light transmitted through the filter. The minimal variation between the forward and backward traces is most likely due to a small shift in the incident angle of the light on the filter introduced when the filter was removed, flipped over, and replaced in the jig.











Previous-generation FB800-10 and FB800-40 filters were used to make the measurement that resulted in the plot above.

The filter is intended to be used with collimated light normally incident on the surface of the filter. For uncollimated light or light striking the surface at an angle not normally incident to the surface the central wavelength (wavelength corresponding to peak transmission) will shift toward lower wavelengths and the shape of the transmission region (passband) will change. Varying the angle of incidence by a small amount can be used to effectively tune the passband over a narrow range. Large changes in the incident angle will cause larger shifts in the central wavelength but will also significantly distort the shape of the passband and, more importantly, cause a significant decrease in the transmittance of the passband.

### Filter Temperature

The central wavelength of the bandpass filter can be tuned slightly ( $\sim 1$  nm over the operating range of the filter) by changing the temperature of the filter. This is primarily due to the slight thermal expansion or contraction of the layers.

## 700 - 780 nm Soft-Coated Bandpass Filters


| Item #            | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup>   | Laser Line | Size  |
|-------------------|------------------|-------------------|----------------------|-----------------------|---|------------|-------|
| <b>FB700-40</b>   | 700 ± 8 nm       | 40 ± 8 nm         | 70%                  | 200 - 1150 nm         |  | N/A        | Ø1"   |
| <b>FB710-10</b>   | 710 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB720-10</b>   | 720 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB740-10</b>   | 740 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB750-40</b>   | 750 ± 8 nm       | 40 ± 8 nm         | 70%                  | 200 - 1150 nm         |  | N/A        | Ø1"   |
| <b>FB760-10</b>   | 760 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB770-10</b>   | 770 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FL05780-10</b> | 780 ± 2 nm       | 10 ± 2 nm         | 70%                  | 200 - 1100 nm         |  | Diode      | Ø1/2" |

a. Center Wavelength

b. Full Width Half Max


c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on  for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number       | Description   | Price    | Availability |
|-------------------|---|----------|--------------|
| <b>FB700-40</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 700 ± 8 nm, FWHM = 40 ± 8 nm     | \$166.01 | Today        |
| <b>FB710-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 710 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FB720-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 720 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FB740-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 740 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | 7-10 Days    |
| <b>FB750-40</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 750 ± 8 nm, FWHM = 40 ± 8 nm     | \$166.01 | Today        |
| <b>FB760-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 760 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FB770-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 770 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FL05780-10</b> | Ø1/2" Soft-Coated Laser Line Filter, CWL = 780 ± 2 nm, FWHM = 10 ± 2 nm | \$69.62  | Today        |

### 840 - 890 nm Soft-Coated Bandpass Filters


| Item #            | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup>   | Laser Line | Size  |
|-------------------|------------------|-------------------|----------------------|-----------------------|---|------------|-------|
| <b>FB840-10</b>   | 840 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FL05850-10</b> | 850 ± 2 nm       | 10 ± 2 nm         | 70%                  | 200 - 1100 nm         |  | Diode      | Ø1/2" |
| <b>FB860-10</b>   | 860 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB870-10</b>   | 870 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FB880-10</b>   | 880 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |
| <b>FL880-10</b>   | 880 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1150 nm         |  | Diode      | Ø1"   |
| <b>FB880-40</b>   | 880 ± 8 nm       | 40 ± 8 nm         | 70%                  | 200 - 1150 nm         |  | N/A        | Ø1"   |
| <b>FB880-70</b>   | 880 ± 8 nm       | 70 ± 8 nm         | 70%                  | 200 - 1150 nm         |  | N/A        | Ø1"   |
| <b>FB890-10</b>   | 890 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"   |

a. Center Wavelength

b. Full Width Half Max



c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on  for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number       | Description   | Price    | Availability |
|-------------------|---|----------|--------------|
| <b>FB840-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 840 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FL05850-10</b> | Ø1/2" Soft-Coated Laser Line Filter, CWL = 850 ± 2 nm, FWHM = 10 ± 2 nm | \$69.62  | Today        |
| <b>FB860-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 860 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FB870-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 870 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FB880-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 880 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |
| <b>FL880-10</b>   | Ø1" Soft-Coated Laser Line Filter, CWL = 880 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | 7-10 Days    |
| <b>FB880-40</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 880 ± 8 nm, FWHM = 40 ± 8 nm     | \$166.01 | Today        |
| <b>FB880-70</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 880 ± 8 nm, FWHM = 70 ± 8 nm     | \$166.01 | Today        |
| <b>FB890-10</b>   | Ø1" Soft-Coated Bandpass Filter, CWL = 890 ± 2 nm, FWHM = 10 ± 2 nm     | \$166.01 | Today        |

### 900 - 990 nm Soft-Coated Bandpass Filters


| Item #          | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup>   | Laser Line | Size |
|-----------------|------------------|-------------------|----------------------|-----------------------|---|------------|------|
| <b>FB900-40</b> | 900 ± 8 nm       | 40 ± 8 nm         | 70%                  | 200 - 1150 nm         |  | N/A        | Ø1"  |
| <b>FL905-10</b> | 905 ± 2 nm       | 10 ± 2 nm         | 70%                  | 200 - 1150 nm         |  | Diode      | Ø1"  |
| <b>FL905-25</b> | 905 ± 5 nm       | 25 ± 5 nm         | 70%                  | 200 - 1150 nm         |  | Diode      | Ø1"  |
| <b>FB910-10</b> | 910 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |
| <b>FB920-10</b> | 920 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |
| <b>FB950-10</b> | 950 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |
| <b>FB960-10</b> | 960 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |
| <b>FB970-10</b> | 970 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |
| <b>FB990-10</b> | 990 ± 2 nm       | 10 ± 2 nm         | 50%                  | 200 - 1200 nm         |  | N/A        | Ø1"  |

a. Center Wavelength

b. Full Width Half Max

c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on  for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number     | Description   | Price    | Availability |
|-----------------|---|----------|--------------|
| <b>FB900-40</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 900 ± 8 nm, FWHM = 40 ± 8 nm   | \$166.01 | Today        |
| <b>FL905-10</b> | Ø1" Soft-Coated Laser Line Filter, CWL = 905 ± 2 nm, FWHM = 10 ± 2 nm | \$166.01 | Today        |
| <b>FL905-25</b> | Ø1" Soft-Coated Laser Line Filter, CWL = 905 ± 5 nm, FWHM = 25 ± 5 nm | \$166.01 | Today        |
| <b>FB910-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 910 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| <b>FB920-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 920 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| <b>FB950-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 950 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| <b>FB960-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 960 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | 7-10 Days    |
| <b>FB970-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 970 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| <b>FB990-10</b> | Ø1" Soft-Coated Bandpass Filter, CWL = 990 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |

### 1000 - 1200 nm Soft-Coated Bandpass Filters

| Item #    | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup> | Laser Line | Size |
|-----------|------------------|-------------------|----------------------|-----------------------|---------------------------------------|------------|------|
| FB1000-10 | 1000 ± 2 nm      | 10 ± 2 nm         | 45%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1100-10 | 1100 ± 2 nm      | 10 ± 2 nm         | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1150-10 | 1150 ± 2 nm      | 10 ± 2 nm         | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FL1152-10 | 1152 ± 2 nm      | 10 ± 2 nm         | 45%                  | 200 - 3000 nm         |                                       | HeNe       | Ø1"  |
| FB1200-10 | 1200 ± 2 nm      | 10 ± 2 nm         | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |

a. Center Wavelength

b. Full Width Half Max

c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number | Description  | Price    | Availability |
|-------------|--|----------|--------------|
| FB1000-10   | Ø1" Soft-Coated Bandpass Filter, CWL = 1000 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| FB1100-10   | Ø1" Soft-Coated Bandpass Filter, CWL = 1100 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | 7-10 Days    |
| FB1150-10   | Ø1" Soft-Coated Bandpass Filter, CWL = 1150 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |
| FL1152-10   | Ø1" Soft-Coated Laser Line Filter, CWL = 1152 ± 2 nm, FWHM = 10 ± 2 nm | \$166.01 | Today        |
| FB1200-10   | Ø1" Soft-Coated Bandpass Filter, CWL = 1200 ± 2 nm, FWHM = 10 ± 2 nm   | \$166.01 | Today        |

### 1300 - 1480 nm Soft-Coated Bandpass Filters

| Item #    | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup> | Laser Line | Size |
|-----------|------------------|-------------------|----------------------|-----------------------|---------------------------------------|------------|------|
| FB1300-12 | 1300 ± 2.4 nm    | 12 ± 2.4 nm       | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1310-12 | 1310 ± 2 nm      | 12 ± 2.4 nm       | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1320-12 | 1320 ± 2 nm      | 12 ± 2.4 nm       | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1330-12 | 1330 ± 2 nm      | 12 ± 2.4 nm       | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1340-12 | 1340 ± 2 nm      | 12 ± 2.4 nm       | 40%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1450-12 | 1450 ± 2.4 nm    | 12 ± 2.4 nm       | 35%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1480-12 | 1480 ± 2 nm      | 12 ± 2.4 nm       | 35%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |

a. Center Wavelength

b. Full Width Half Max

c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number | Description  | Price    | Availability |
|-------------|--|----------|--------------|
| FB1300-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1300 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1310-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1310 ± 2 nm, FWHM = 12 ± 2.4 nm   | \$166.01 | Today        |
| FB1320-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1320 ± 2 nm, FWHM = 12 ± 2.4 nm   | \$166.01 | Today        |
| FB1330-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1330 ± 2 nm, FWHM = 12 ± 2.4 nm   | \$166.01 | Today        |
| FB1340-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1340 ± 2 nm, FWHM = 12 ± 2.4 nm   | \$166.01 | Today        |
| FB1450-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1450 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1480-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1480 ± 2 nm, FWHM = 12 ± 2.4 nm   | \$166.01 | Today        |



### 1510 - 1520 nm Soft-Coated Bandpass Filters

| Item #    | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup> | Laser Line | Size |
|-----------|------------------|-------------------|----------------------|-----------------------|---------------------------------------|------------|------|
| FB1510-12 | 1510 ± 2 nm      | 12 ± 2.4 nm       | 35%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |
| FB1520-12 | 1520 ± 2 nm      | 12 ± 2.4 nm       | 35%                  | 200 - 3000 nm         |                                       | N/A        | Ø1"  |

a. Center Wavelength

b. Full Width Half Max

c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number | Description  | Price    | Availability |
|-------------|--|----------|--------------|
| FB1510-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1510 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1520-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1520 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |

### 1560 - 1610 nm Soft-Coated Bandpass Filters

| Item #    | CWL <sup>a</sup> | FWHM <sup>b</sup> | T (Min) <sup>c</sup> | Blocking <sup>d</sup> | Transmission/<br>OD Data <sup>e</sup> | Laser Line | Size |
|-----------|------------------|-------------------|----------------------|-----------------------|---------------------------------------|------------|------|
| FB1560-12 | 1560 ± 2 nm      | 12 ± 2.4 nm       | 50%                  | 200 - 1850 nm         |                                       | N/A        | Ø1"  |
| FB1590-12 | 1590 ± 2 nm      | 12 ± 2.4 nm       | 50%                  | 200 - 1850 nm         |                                       | N/A        | Ø1"  |
| FB1600-12 | 1600 ± 2.4 nm    | 12 ± 2.4 nm       | 50%                  | 200 - 1850 nm         |                                       | N/A        | Ø1"  |
| FB1610-12 | 1610 ± 2 nm      | 12 ± 2.4 nm       | 50%                  | 200 - 1850 nm         |                                       | N/A        | Ø1"  |

a. Center Wavelength

b. Full Width Half Max

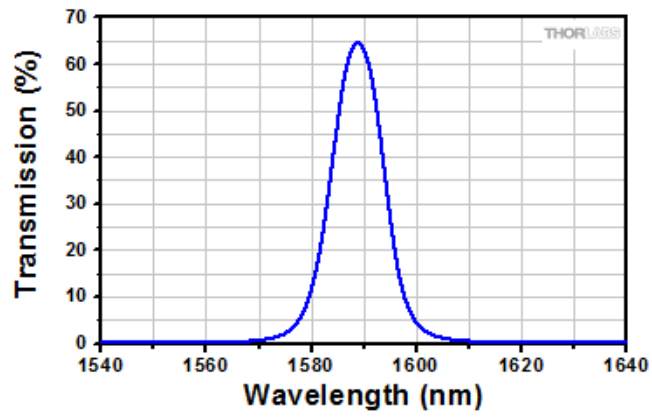
c. Minimum Transmission at Center Wavelength

d. <0.01% (<-40 dB)

e. Click on for a plot and downloadable data. Measured data accounts for all losses including Fresnel reflections. Please note that transmission is only guaranteed for the specified center wavelength and that the data in the plots is typical. Performance may vary from lot to lot.

| Part Number | Description  | Price    | Availability |
|-------------|--|----------|--------------|
| FB1560-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1560 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1590-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1590 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1600-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1600 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |
| FB1610-12   | Ø1" Soft-Coated Bandpass Filter, CWL = 1610 ± 2.4 nm, FWHM = 12 ± 2.4 nm | \$166.01 | Today        |

**FB1590-12 Transmission**



**FB1590-12 Optical Density**

