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FGT20200 - April 30, 2024

Item # FGT20200 was discontinued on April 30, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

COLOR-TEMPERATURE-BALANCING COLORED GLASS FILTERS

- **Increase the Color Temperature of a Visible Light Source**
- **Conversion Value: -132 or -160 mireds**

FGT200
Ø25.0 mm
-160 mireds

FGT05165
Ø12.5 mm
-132 mireds

FGT200S
2" Square
-160 mireds

FGT200 Ø25.0 mm Filter Shown Mounted in the Filter Holder of the SLS201L Stabilized Broadband Light Source

OVERVIEW

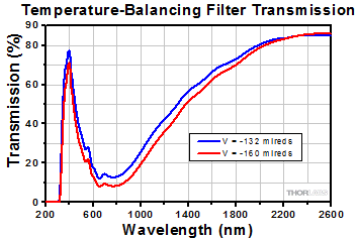
Features

- Pass Blue Light and Attenuate Red Light
- Available in Ø12.5 mm, Ø25.0 mm, Ø2", and 2" Square Sizes
- Use with Our Broadband or Stabilized Broadband Light Sources

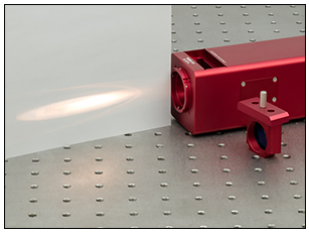
General Specifications	
Clear Aperture	80% of Diameter (Circular Filters) 80% of Dimension (Square Filters)
Surface Quality	40-20 Scratch-Dig
Transmitted Wavefront Error	Ø12.5 mm: <λ/4 at 632.8 nm Ø25.0 mm: <λ/2 at 632.8 nm Ø2" and 2" Square: <λ at 632.8 nm
Dimensional Tolerance	+0.0/-0.4 mm
Parallelism	<3 arcmin

These Color-Temperature-Balancing Colored Glass Filters are designed to increase the color temperature of broadband light sources by attenuating light on the red end of the visible and near-IR spectrum and transmitting light on the blue end. The amount of increase depends on the original color temperature of the source and the conversion value (V) of the filter. Filters with a more negative conversion value will increase the color temperature by a greater amount. We offer filters with conversion values of -132 mireds and -160 mireds. Given their conversion values, these filters are particularly useful in imaging applications for color correcting a tungsten light source to more closely match natural light. For an explanation of conversion values and the mireds unit, please see the *Conversion Values* tab.

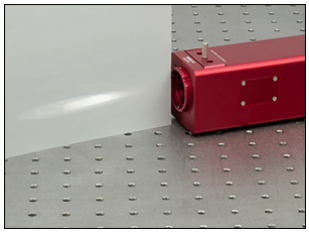
Unmounted filters are available in Ø12.5 mm, Ø25.0 mm, Ø2", and 2" x 2" sizes. For easy integration with our broadband stabilized light sources, the Ø25.0 mm size can be mounted in the filter holder included with each source, as shown in the photo at the top of the page. For storage of our 2" square filters, we offer the KT03 storage boxes, sold below.



Click to Enlarge
Click to Download an Excel File of Raw Data
The graph above shows the measured transmission curve for a filter with a conversion value (V) of -132 mireds and a filter with a conversion value of -160 mireds. For details on the mireds unit, please see the *Conversion Values* tab.



Click to Enlarge
The photo above shows light from an SLS201L 2796 K tungsten-halogen source with no filter installed. For a plot of the power output with and without a filter, please see the *Conversion Values* tab.



Click to Enlarge
The photo above shows light from an SLS201L 2796 K tungsten-halogen source with an FGT200 Ø25.0 mm filter installed. For a plot of the power output with and without a filter, please see the *Conversion Values* tab.

Colored Glass Selection Guide					
Bandpass			**Longpass**		**Color-Temperature-Balancing**
Mounted	Unmounted	AR Coated	Mounted	Unmounted	Unmounted

CONVERSION VALUES

The color temperature of a light source can be expressed in mireds (micro reciprocal degrees), given by 10^6 divided by the temperature in kelvin. For example, the color temperature of our SLS201L stabilized broadband light source is rated at 2796 K, which equates to 358 mireds. The SI unit of mireds is reciprocal megakelvin (MK^{-1}).

The filters on this page offer a negative conversion value, meaning that they will decrease the mireds color temperature of light and thus increase the color temperature in kelvin. The filtered color temperature of a source can be calculated from the formula below, where V is the conversion value of the filter in mireds, K_1 is the color temperature of the source in kelvin before the filter, and K_2 is the color temperature in kelvin after the filter.

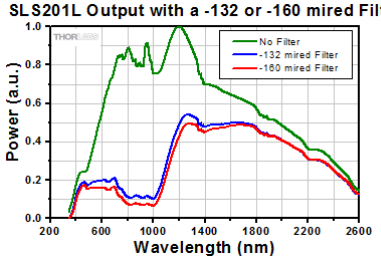
$$V = \frac{10^6}{K_2} - \frac{10^6}{K_1}$$

Color Temperature of Light Sources After Filter		
	Light Source Item # (Unfiltered Temperature)	
Conversion Value	**SLS201L (2796 K)**	**OSL2 (3200 K)**
-132 mireds	4432 K	5540 K
-160 mireds	5059 K	6557 K

In the table above, the values highlighted in green give the resulting color temperature of each source when used with a filter of the conversion value given in the first column.

The table above and on the right gives calculated values for the color temperature of a selection of our white-light sources after being filtered. For example, the color temperature of the SLS201L light source when used with our -132 mireds conversion value filters can be calculated by first solving for K_2, such that $K_2 = (10^6) / (V + 10^6/K_1)$, and then by plugging in the initial color temperature (K_1 = 2796 K) and the conversion value (V = -132 mireds) to produce $K_2 = 10^6 / 226 = 4432$ K. The graph to the right shows the measured power output curve for the SLS201L source with and without the -132 or -162 mired filters.

SLS201L Output with a -132 or -160 mired Filter

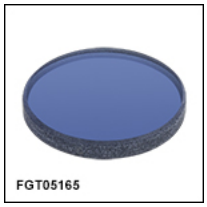


Click to Enlarge

Click to Download an Excel File of Raw Data

The graph above shows the measured spectrum of the SLS201L light source with and without a -132 mired filter or -160 mired filter installed.

Unmounted Temperature-Balancing Filter, -132 mireds



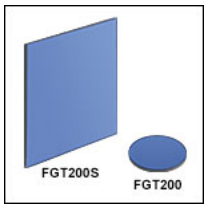
- Fabricated from 2.0 mm Thick LB-165 Hoya Glass
- Conversion Value of -132 mireds
- Ø12.5 mm Unmounted Filter

These unmounted, temperature-balancing, colored glass filters each offer a conversion value of -132 mireds.[a] By attenuating more red than blue light, they increase the color temperature of a given light source by an amount determined by the equation on the *Conversion Values* tab. For compatibility with our lens tubes and filter mounts, we offer this filter in a Ø12.5 mm size.

a. The conversion value is dependent on the thickness of the filter.

Part Number	Description	Price	Availability
FGT05165	**Customer Inspired! Ø12.5 mm Temperature-Balancing Filter, -132 mireds**	**$108.17**	**Today**

Unmounted Temperature-Balancing Filters, -160 mireds



- Fabricated from 2.0 mm Thick LB-200 Hoya Glass
- Conversion Value of -160 mireds
- Ø12.5 mm, Ø25.0 mm, Ø2", and 2" Square Sizes

These unmounted, temperature-balancing, colored glass filters each offer a conversion value of -160 mireds.[a] By attenuating more red than blue light, they increase the color temperature of a given light source by an amount determined by the equation on the *Conversion Values* tab. For compatibility with our lens tubes and filter mounts, we offer these filters in Ø12.5 mm, Ø25.0 mm, Ø2", and 2" x 2" sizes.

a. The conversion value is dependent on the thickness of the filter.

Part Number	Description	Price	Availability
FGT05200	**Customer Inspired! Ø12.5 mm Temperature-Balancing Filter, -160 mireds**	**$111.38**	**Today**
FGT200	**Customer Inspired! Ø25.0 mm Temperature-Balancing Filter, -160 mireds**	**$118.88**	**Today**
FGT20200	**Customer Inspired! Ø2" Temperature-Balancing Filter, -160 mireds**	**$164.93**	**Lead Time**
FGT200S	**Customer Inspired! 2" x 2" Square Temperature-Balancing Filter, -160 mireds**	**$164.93**	**Today**

Storage Box for Square Filters

If you purchase individual filters and would like to have a safe, convenient place to store them when not in use, consider our KT03 Storage Box. It holds up to ten 2" x 2" square filters.

Part Number	Description	Price	Availability
KT03	**Storage Box for Unmounted 2" Square Optics (Max. Capacity: 10)**	**$98.90**	**Today**