

LED ColorDichroics™

The Challenge

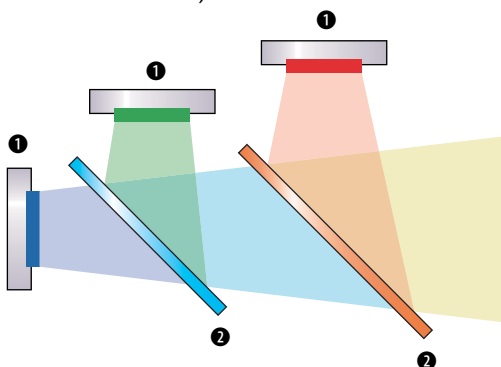
For efficient transmission and/or reflectance of light from light emitting diode (LED) sources, Materion Barr Precision Optics & Thin Film Coatings LED ColorDichroics™ dichroic filters/mirrors provide superior performance.

Our dichroic filters/mirrors are designed to combine light emitted from different color LEDs into one beam. In addition, the thin film coatings of our LED ColorDichroics™ are specifically optimized for random polarized light. Both the high reflection and the high transmission wavelength ranges are specially adapted for LED spectral emission characteristics.

Benefits

- High reflection and high transmission in respective wavelength ranges
- Narrow spectral separation between transmission and reflection bands
- Narrow cut-on/cut-off spectral tolerances and excellent spectral uniformity
- Excellent optical and mechanical stability due to plasma sputtering deposition process (20–120° temperature shift < 1nm, 48 h humidity shift < 1nm)
- LED ColorDichroics™ dichroic filters/mirrors are available for all main arrangement options of separate Red, Green and Blue LEDs, as well as options involving Cyan and Yellow LEDs
- High degree of flexibility for custom specific spectral characteristics
- Engineering support for custom designed light management systems

Application examples LED ColorDichroics™ (Dichroic Filters/Mirrors)



Applications

Our LED ColorDichroics™ dichroic filters/mirrors are used for combination of light emitted by separate high brightness LED light sources.

Technical Data

Spectral performance

- Angle of incidence (AOI): 45°
(different AOI upon customer request)
- Polarization: optimized for random polarized light.

Reflection/transmission bands

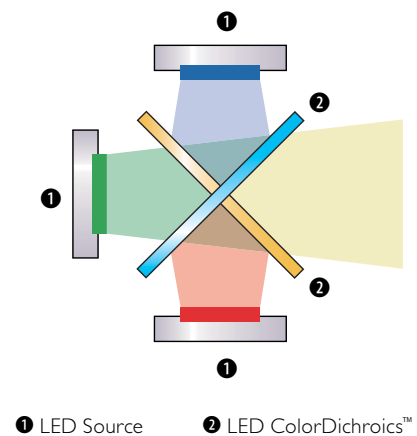
- Blue typ. 420...470 nm
- Green typ. 500...560 nm
- Red typ. 590...660 nm
(adapted and optimized upon customer's request)
- Solutions for Cyan and Yellow LEDs also available.

Substrate material

- Heat resistant borosilicate glass, other substrate materials on request

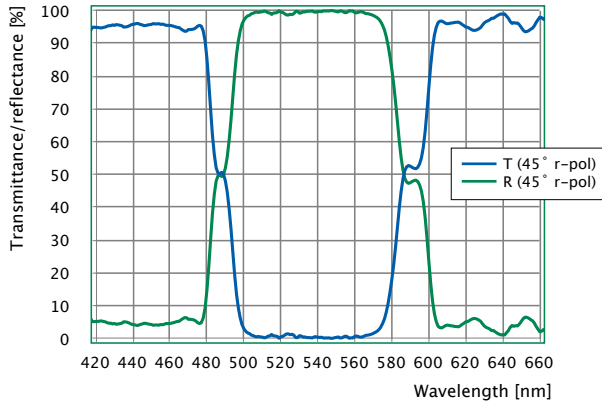
Dimensions

- On customer's request

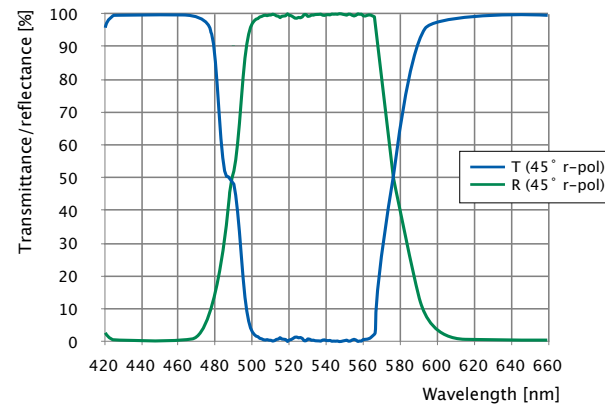


Typical spectral characteristics of LED ColorDichroics™

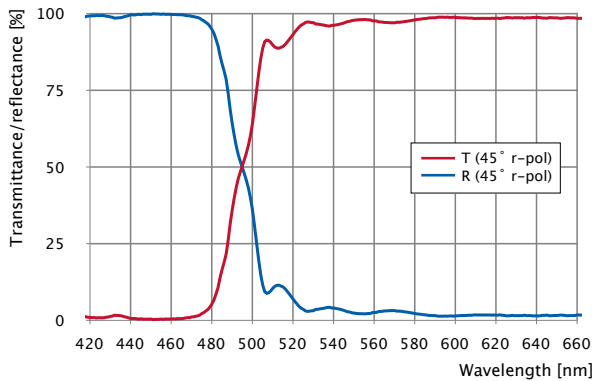
Green mirror/blue-red filter



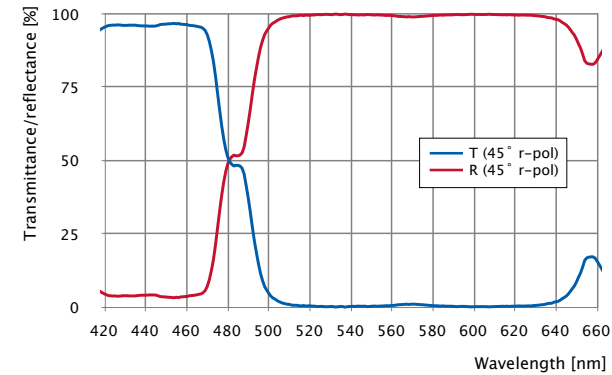
Green filter/blue-red mirror



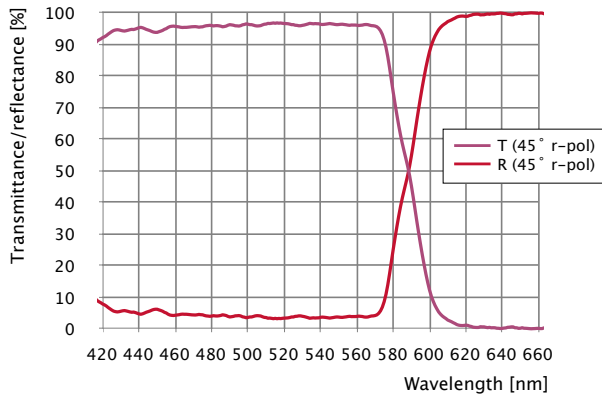
Blue mirror/green-red filter



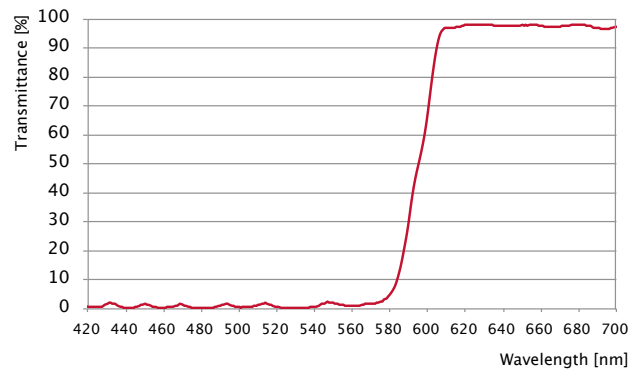
Blue filter/green-red mirror



Red mirror/blue-green filter



Red filter/blue-green mirror



Materion is a global advanced materials company, dedicated to providing solutions that enable our customers' technologies and drive their growth. Our products include precious and non-precious specialty metals, precision optical filters, inorganic chemicals and powders, specialty coatings, specialty-engineered beryllium alloys, beryllium and beryllium composites, and engineered clad and plated metal systems. The Materion business is structured to enhance our ability to provide customers with innovative, best total-cost solutions.

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