

LED ColorDichroics™

Dichroic Filters/Mirrors for LED Applications

Materion Balzers Optics LED ColorDichroics™ dichroic filters/mirrors are used to efficiently transmit and/or reflect the light from light emitting diode (LED) sources. These dichroic filters/mirrors are designed to combine light emitted from different color LEDs into one beam. The thin film coatings of these LED ColorDichroics™ are specifically optimized for random polarized light. Both the high reflection and the high transmission wavelength ranges are specifically adapted to 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 < 1 nm, 48 h humidity shift < 1 nm)
- 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

Applications

Materion Balzers Optics 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.

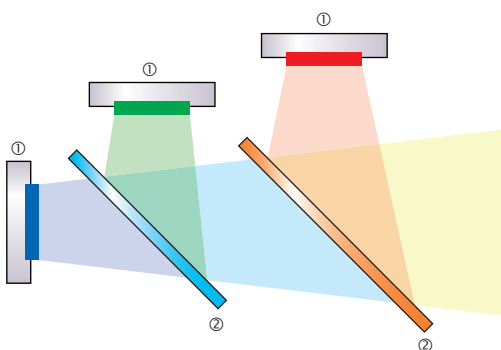
Substrate material

Heat resistant borosilicate glass, other substrate materials on request

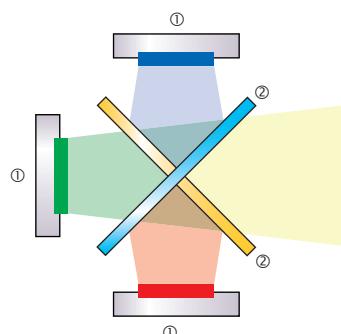
Dimensions

On customer's request

Application examples LED ColorDichroics™ (Dichroic Filters/Mirrors)



- ① LED Source
② LED ColorDichroics™



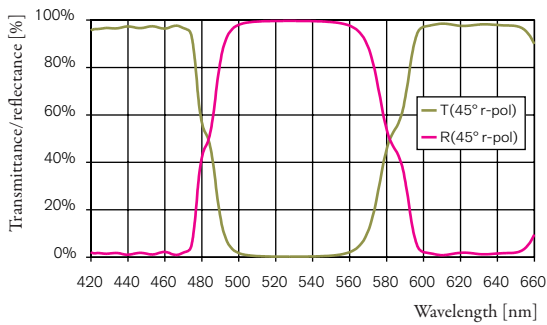


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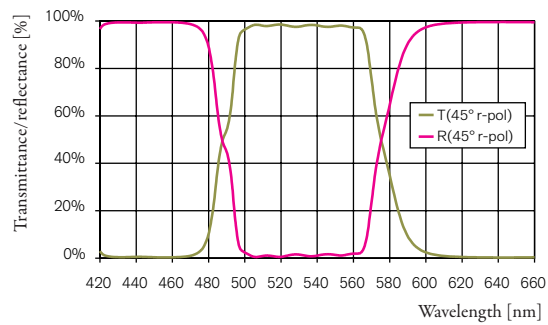
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Typical spectral characteristics of LED ColorDichroics™

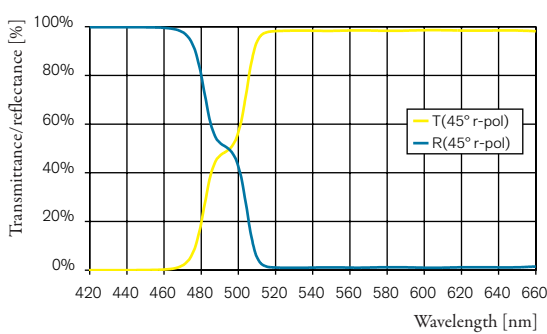
Green mirror/blue-red filter



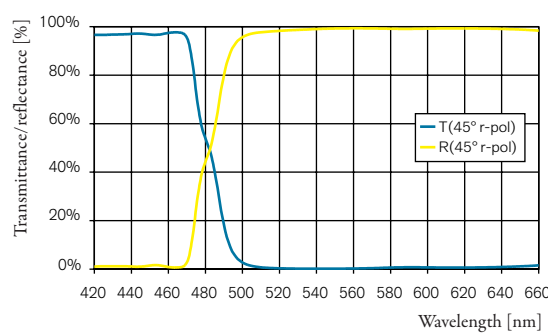
Green filter/blue-red mirror



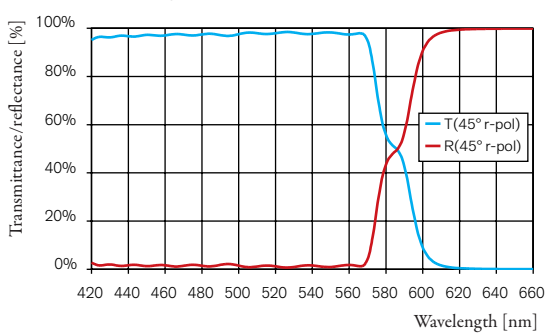
Blue mirror/green-red filter



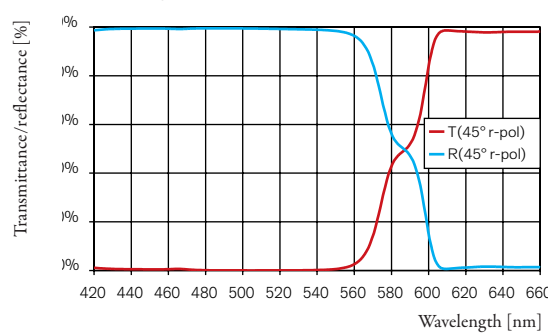
Blue filter/green-red mirror



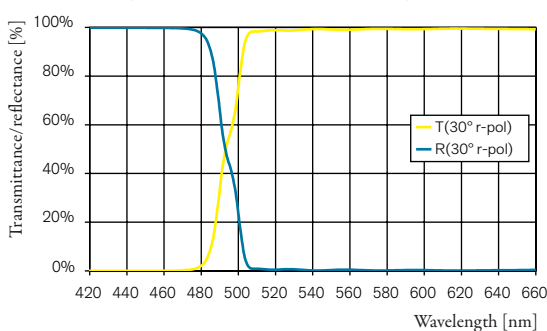
Red mirror/blue-green filter



Red filter/blue-green mirror



Blue mirror/green-red filter for AOI: 30 deg



Red filter/blue-green mirror for AOI: 30 deg

