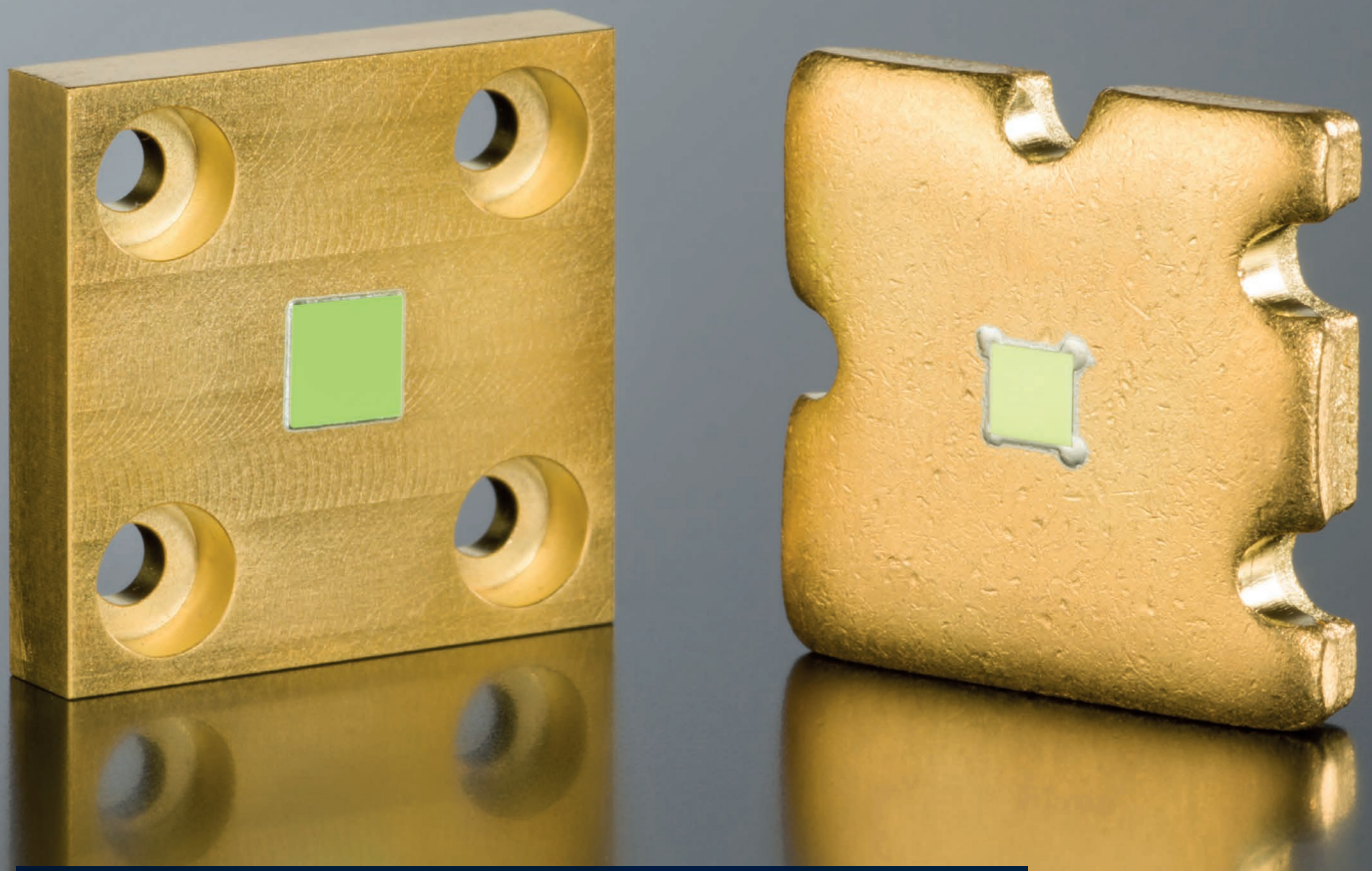
SCHOTT
glass made of ideas



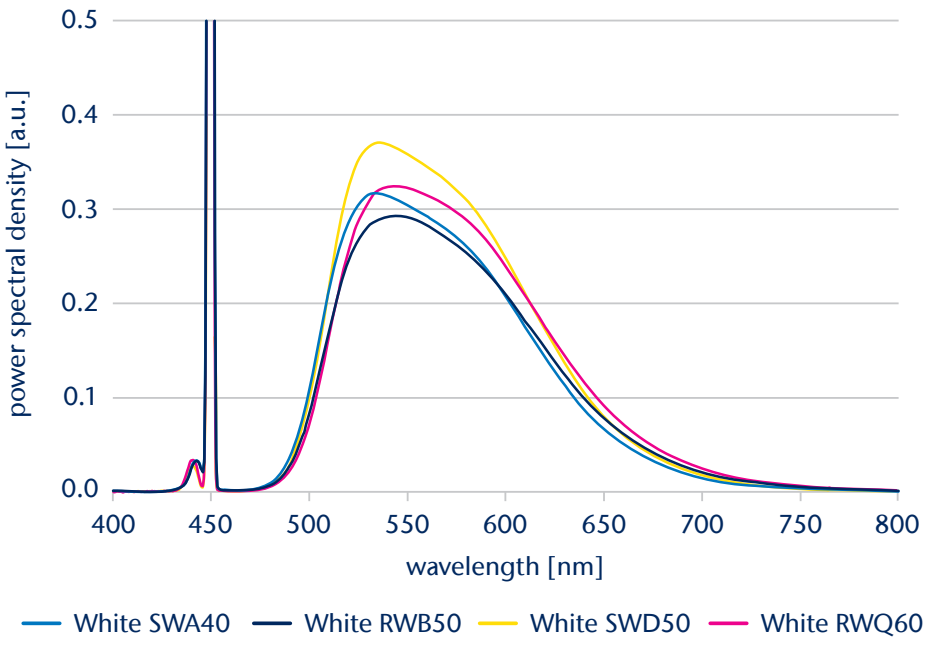
Static
Ceramic Converter

Enabler for High Luminance Light Sources

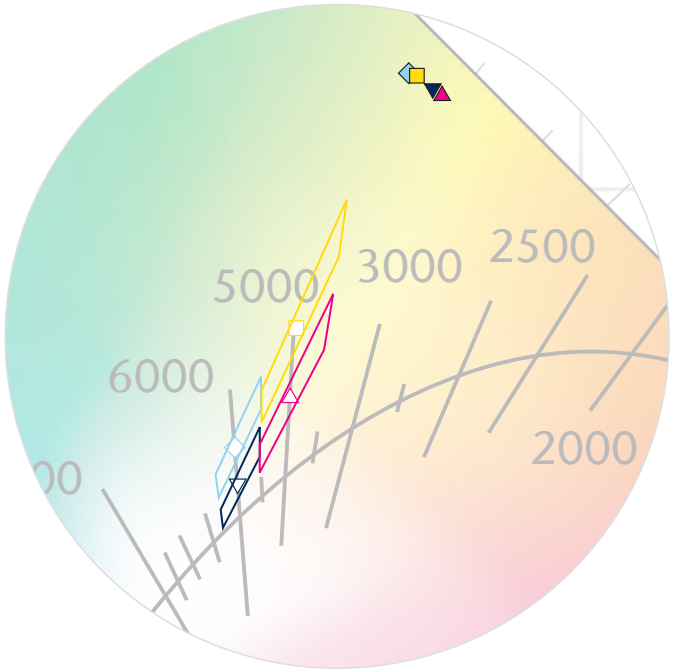
Version August 2024

SCHOTT offers several types of white material

Emission spectrum



Tolerance window for white color coordinates (c_x and c_y)



Visualization of spec in the CIE 1931 color space.

Tolerance window

	c_x	c_y
6,000 K		
◇ White SWA40	0.3326	0.4021
	0.3098	0.3516
	0.3114	0.3397
	0.3326	0.3845
	0.3326	0.4021
▽ White RWB50	0.3325	0.3764
	0.3121	0.3342
	0.3136	0.3231
	0.3325	0.3604
	0.3325	0.3764
5,000 K		
□ White SWD50	0.3787	0.4952
	0.3330	0.3965
	0.3328	0.3797
	0.3739	0.4645
	0.3787	0.4952
△ White RWQ60	0.3708	0.4450
	0.3327	0.3688
	0.3326	0.3530
	0.3664	0.4178
	0.3708	0.4450

Technical details

White 6,000 K (150 µm* die thickness, anti-reflection coated phosphor on heatspreader)

Optical specifications	White SWA40	White RWB50	
Conversion efficacy [lm/W]	> 230	> 220	
Conversion efficiency [W/W]	> 63 %	> 62 %	
Emission color coordinates c_x	0.4100	0.4233	Center values, tolerances ± 0.007
Emission color coordinates c_y	0.5603	0.5514	
White color coordinates c_x	0.3198	0.3212	Tolerance window see previous pages.
White color coordinates c_y	0.3655	0.3454	
Emission color coordinates u'	0.1842	0.1931	
Emission color coordinates v'	0.5664	0.5659	
White color coordinates u'	0.1896	0.1976	
White color coordinates v'	0.4876	0.4781	

White 5,000 K (150 µm* die thickness, anti-reflection coated phosphor on heatspreader)

Optical specifications	White SWD50	White RWQ60	
Conversion efficacy [lm/W]	> 240	> 230	
Conversion efficiency [W/W]	> 62 %	> 61 %	
Emission color coordinates c_x	0.4142	0.4287	Center values, tolerances ± 0.007
Emission color coordinates c_y	0.5598	0.5490	
White color coordinates c_x	0.3520	0.3488	Tolerance window see previous pages.
White color coordinates c_y	0.4286	0.3926	
Emission color coordinates u'	0.1864	0.1964	
Emission color coordinates v'	0.5668	0.5659	
White color coordinates u'	0.1893	0.1990	
White color coordinates v'	0.5185	0.5038	

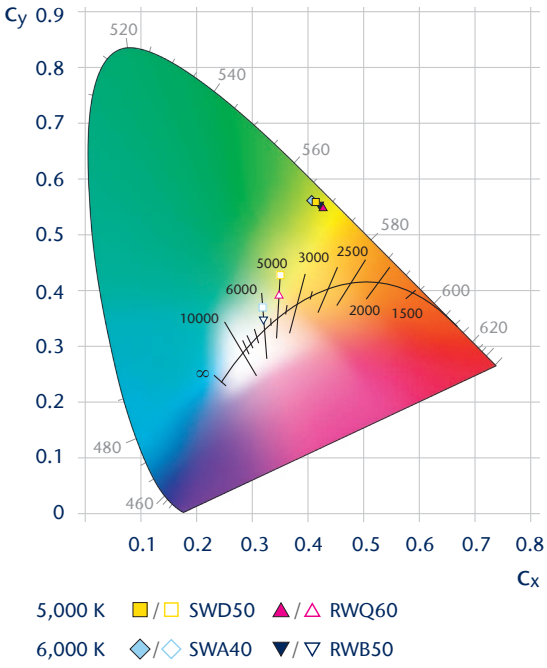
White color coordinates change with blue laser wavelength and are measured at 449.5 nm.
Emission spectrum is defined by the power spectral density > 465 nm.
Efficacy and efficiency is measured for full (white) spectrum, defined by the power spectral density > 400 nm.
AR coating optimized for blue light incident angle of 60°.
Efficacy, efficiency and color coordinates measured with 60° incident angle of blue laser at low laser power.
Emission is detected in normal direction.

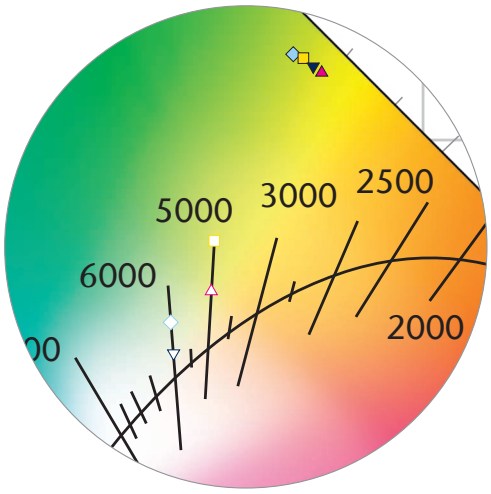
* Tolerances apply and are available upon request.

More details see webpage:
schott.com/ceramic-converter

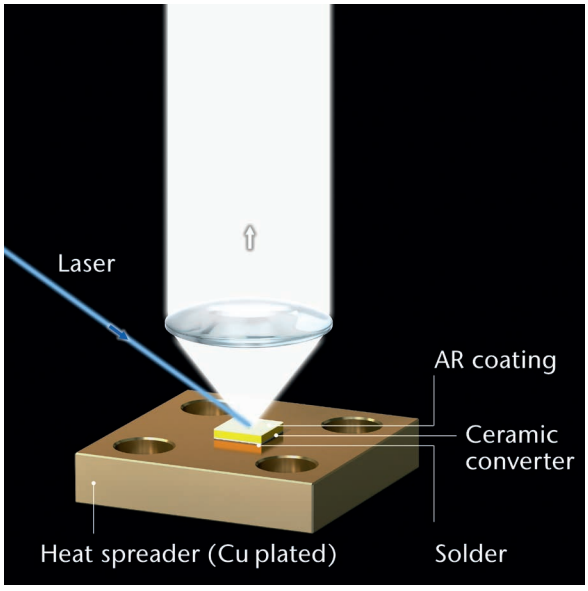
Static Ceramic Converter – Enabling high luminance for your laser pumped phosphor light sources

SCHOTT static converters provide high irradiance and superior luminance. Assembled on a heat sink these components enable compact light sources without moving parts. This is a fully inorganic solution offering high reliability.*
SCHOTT offers various types of white static converter materials with correlated color temperatures (CCT) of 6,000 K and 5,000 K, serving a wide range of applications.



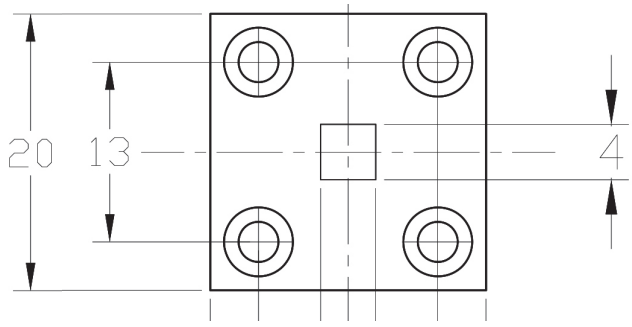


How does it work for white light?



For white light generation, the material is designed to diffuse the optimal amount of blue light to achieve the desired color coordinates.

White standard samples



Standard samples available with
heat spreader dimensions of 20 x 20 x 4 mm and
phosphor material dimensions of 4 x 4 x 0.150 mm.

Tolerances apply, technical drawings available upon request.

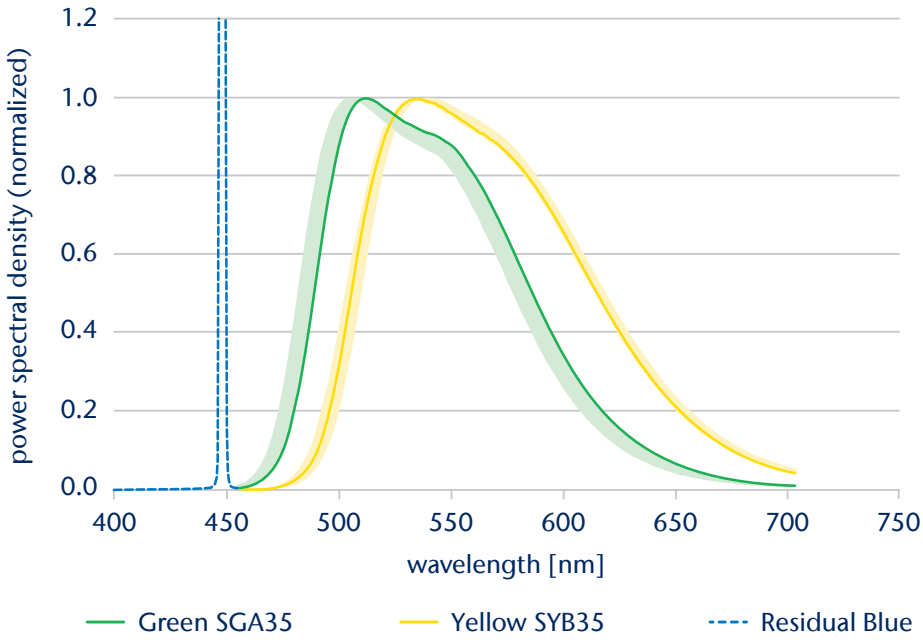
Customization available upon request.

* Operation above 65 °C on the heat spreader is not recommended.

SCHOTT offers green and yellow converter material

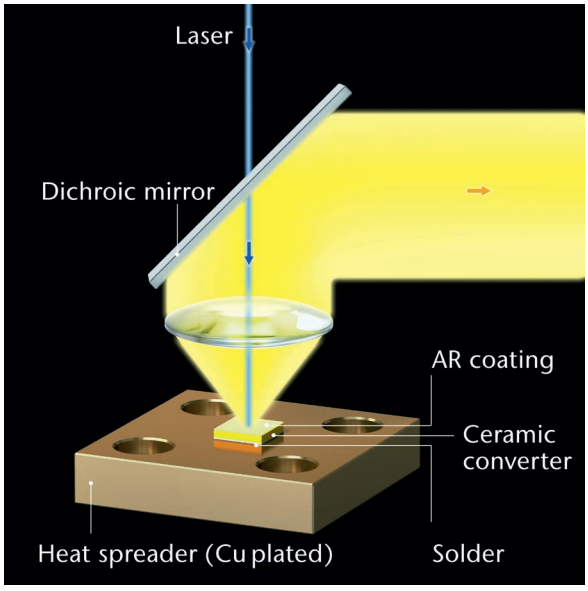
SCHOTT manufactures ceramic phosphor converters for metrology, imaging and digital projection from two standard materials such as yellow and green in several variants.

Emission spectrum



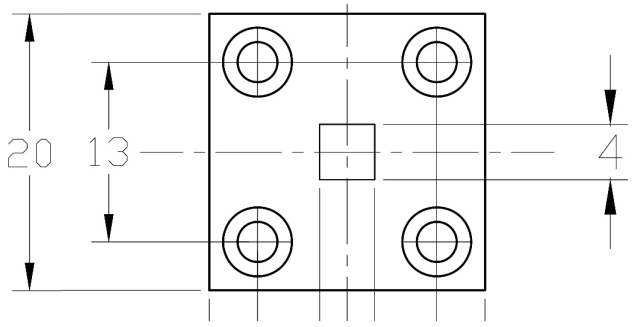
Range shows different materials including SYA35, SYB35, SYC35, SWA40 and SGA35, SGB35, SGF35, SGG35, GGB35 and others.

How does it work for green and yellow light?



Blue laser light is applied via a dichroic mirror. This also blocks residual blue light, that is reflected from the sample. The pure emission spectrum of green or yellow light ideal for applications such as digital projection or stage lighting.

Yellow/Green standard samples



Standard samples available with
heat spreader dimensions of 20 x 20 x 4 mm and
phosphor material dimensions of 4 x 4 x 0.080 mm.

Tolerances apply, technical drawings available upon request.

Customization available upon request.

Technical details

Yellow (80 µm* die thickness, anti-reflection coated phosphor on heatspreader)

Optical specifications	Yellow SYA35	Yellow SYB35	Yellow SYC35 NEW	Yellow SWA40
Conversion efficacy [lm/W]	> 240	> 250	> 240	> 200
Conversion efficiency [W/W]	> 50 %	> 52 %	> 50 %	> 42 %
Emission color coordinates c_x	0.411 ± 0.01	0.417 ± 0.01	0.430 ± 0.01	0.409 ± 0.01
Emission color coordinates c_y	0.561 ± 0.01	0.557 ± 0.01	0.546 ± 0.01	0.559 ± 0.01

Green (80 µm* die thickness, anti-reflection coated phosphor on heatspreader)

Optical specifications	Green SGA35	Green SGB35	Green SGF35	Green SGG35 NEW	Shifted Green GGB35
Conversion efficacy [lm/W]	> 280	> 270	> 240	> 210	> 260
Conversion efficiency [W/W]	> 59 %	> 57 %	> 51 %	> 45 %	> 57 %
Emission color coordinates c_x	0.333 ± 0.01	0.326 ± 0.01	0.320 ± 0.01	0.316 ± 0.01	0.299 ± 0.01
Emission color coordinates c_y	0.590 ± 0.01	0.587 ± 0.01	0.583 ± 0.01	0.578 ± 0.01	0.579 ± 0.01

Emission spectrum defined by the power spectral density > 465 nm.
Efficacy and efficiency specified for emission spectrum.
Anti-reflection coated phosphor optimized for blue light normal incidence.
Efficacy, efficiency and color coordinates measured with 60° incident angle of blue laser (449.5 nm) at low laser power.
Emission is detected in normal direction.

* Tolerances apply and are available upon request.

More details see webpage:
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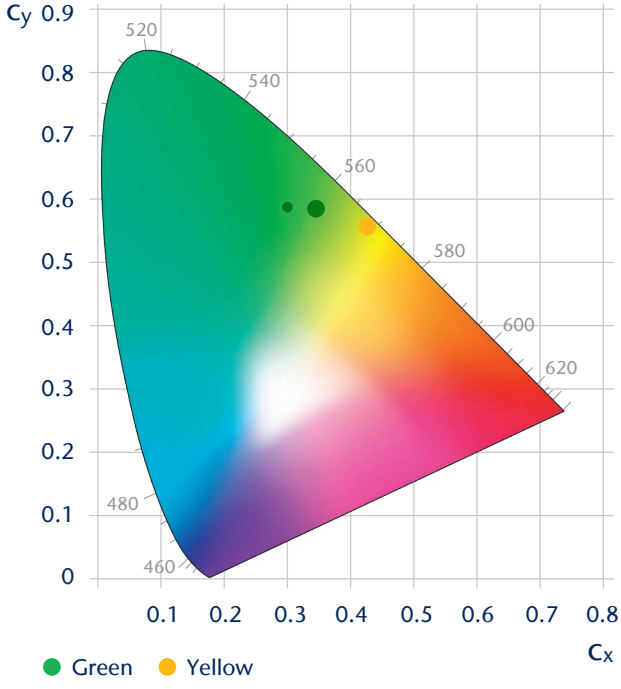
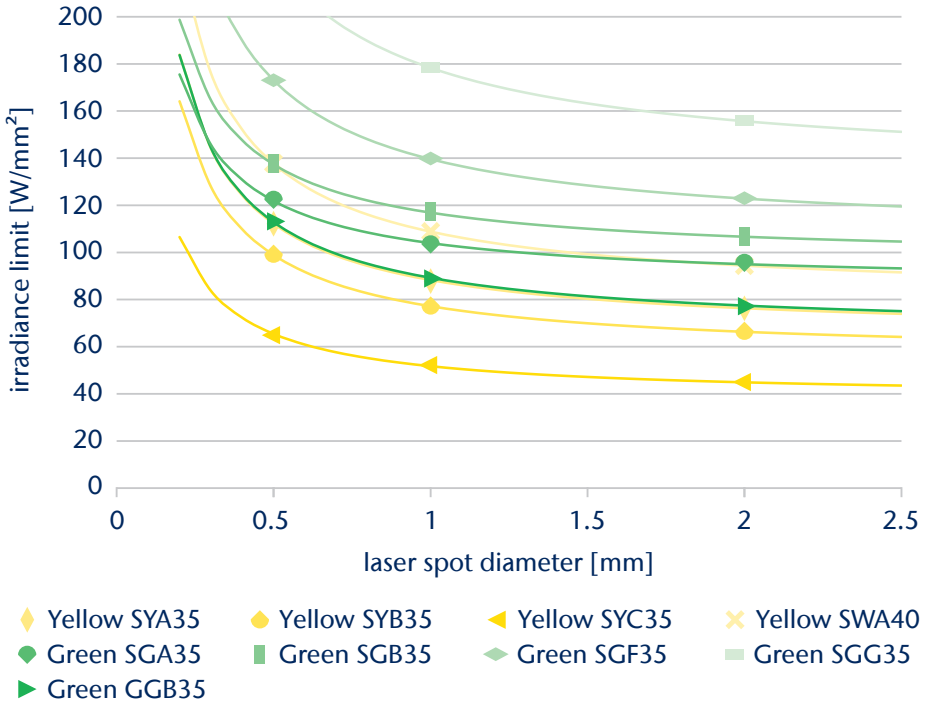


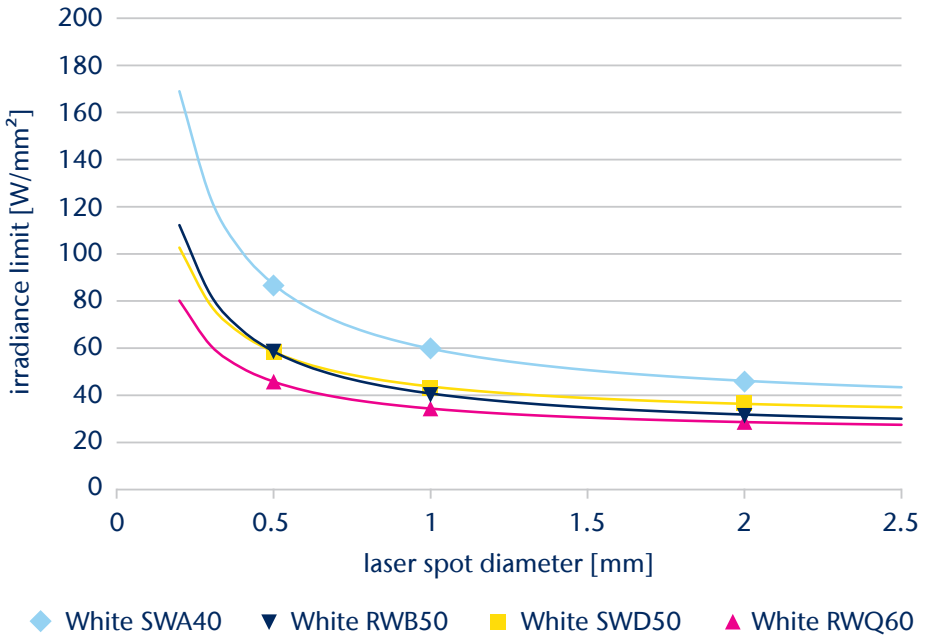
Color coordinates of green and yellow ceramic converter material in the CIE 1931/2° color space

Products offer high irradiance limits for maximum luminance

Yellow and green – 80 µm die thickness



White 5,000 K and white 6,000 K – 150 µm die thickness



Indicated irradiance limits are not based on measurements, but on validated numerical simulation, taking into account all properties of relevance. Accordingly, the values on this page may in no case be understood as technical product specifications, and are for general orientation purposes, only.
The values apply for illumination by a 450 nm CW mode laser with tophat profile, and for good thermal contact of a heatspreader sized 20x20x4 to a heatsink at 30 °C.
For safety reasons stay at least 20% below indicated irradiance limit.

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SCHOTT AG, Hattenbergstrasse 10, 55122 Mainz, Germany
Phone +49 (0)6131/66-1812, info.optics@schott.com

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