



ISOLED KNOWLEDGE

**FULL
SPECTRUM**

ISOLED[®]

CUSTOMISED LIGHT SOLUTIONS



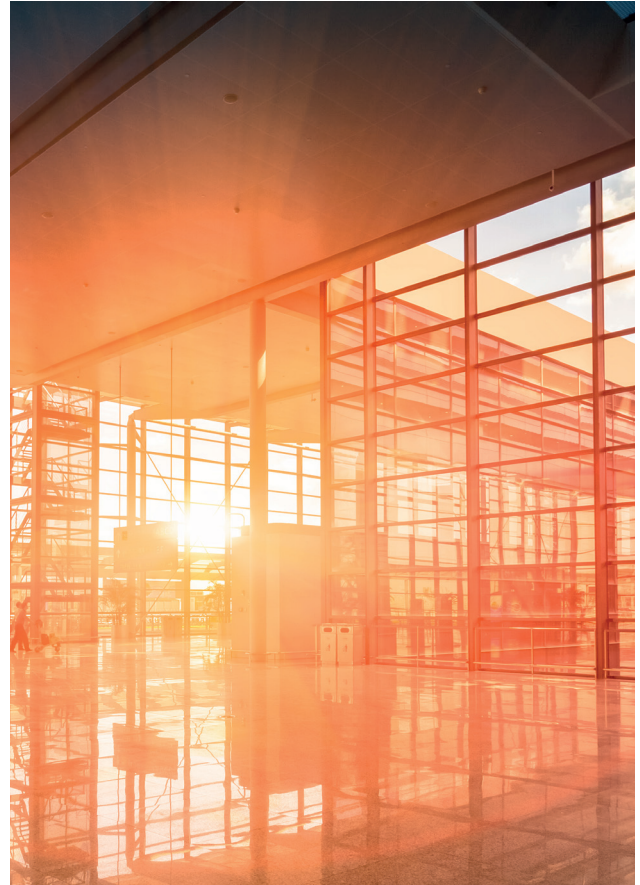
FOCUS ON LIGHT QUALITY - FULL SPECTRUM

Approach to sunlight

The triumphal procession of LEDs has been continuing for almost 20 years. With their convincing energy and cost efficiency, LEDs have displaced almost all traditional lighting technologies from the market.

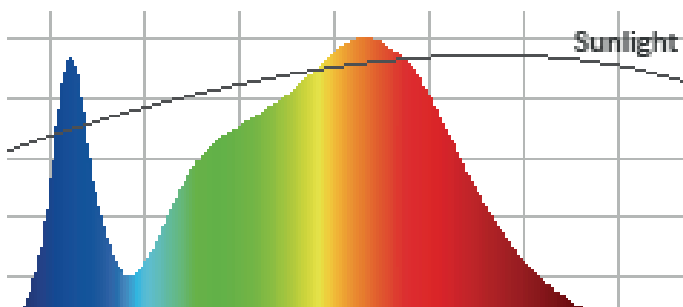
The LED technology and the materials used are constantly improving, the demands on smart lighting solutions are increasing daily!

The focus is increasingly shifting to improving and optimising the light quality of LED illuminants, luminaires and lamps, which are integrated into intelligent and holistic lighting solutions. The term full spectrum refers to the approximation of the colour rendering of LEDs to that of natural sunlight.

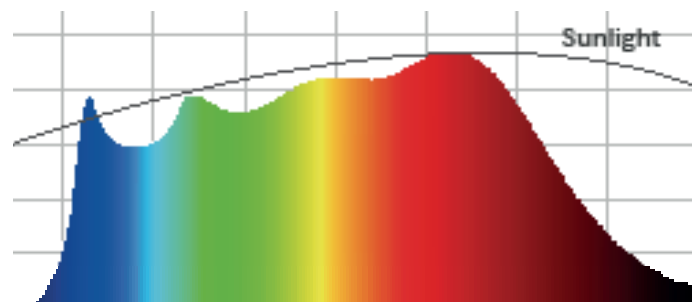


Authentic colour perception

The new full spectrum LEDs have almost identical color spectra to natural sunlight. In contrast to conventional LEDs, the color spectrum of the new full-spectrum light sources does not contain a peak in the blue color range typical for LEDs.



*Colour spectrum new full spectrum LED flex tape with CRI>99 from ISOLED®



*Measurement results integrating sphere - Light laboratory ISOLED®



Definition Colour Rendering Index

The colour rendering index is expressed in Ra or CRI (Colour Rendering Index).

The Ra or CRI value evaluates the quality of the colour rendering of a light source.

The higher the value, the better the colour rendering.

Important



The colour rendering index refers exclusively to the visible range of the colour spectrum of light (wave range from 380 to 780 nm).

CRI 100 = light spectrum of the sun

Natural sunlight contains all light colours, whose visual brightness is evenly distributed over the colour spectrum.

The CRI value of 100 corresponds to the colour spectrum of natural sunlight on the earth's surface.

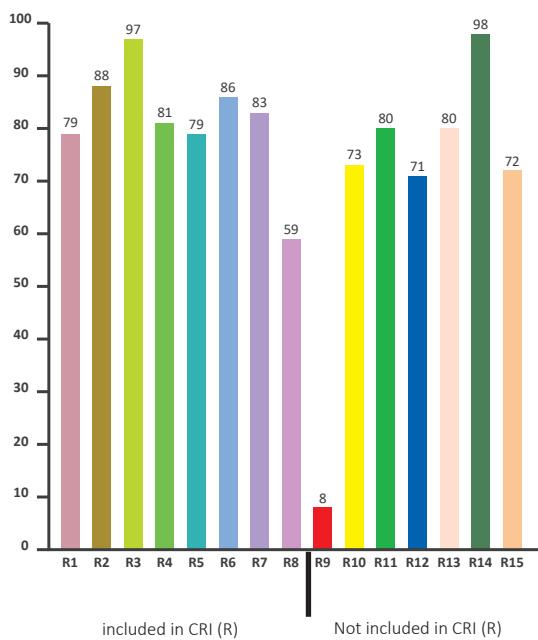
The colour rendering ratings of all illuminants and luminaires refer to this.

For example

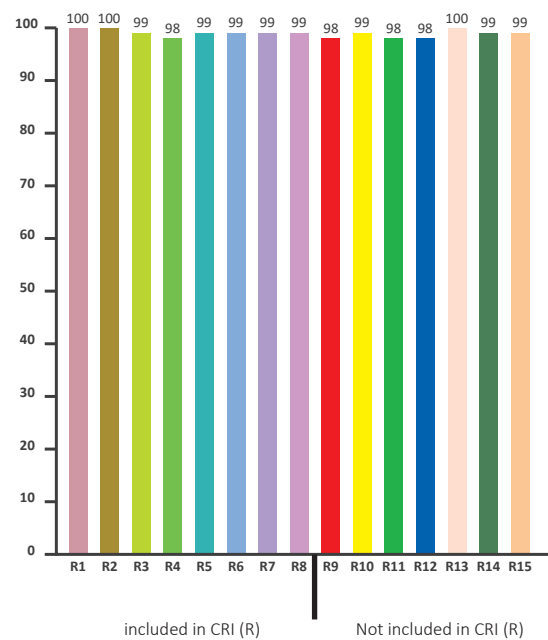


CRI>80 means that the colour rendering of the measured illuminant corresponds to at least 80% of the colour rendering in sunlight.

CRI>80



CRI>99





CALCULATION OF THE CRI VALUE (RA)

The test colours (see figure) are standardised and were defined with a remission curve (non-directional reflection of waves) in DIN 6169. The average value of the first 8 test colours is used to calculate the CRI value (Ra).

All other colours from R9 upwards are reference colours (Re), which are used in detail for the specific evaluation of a colour if required.

A high colour rendering index does not automatically mean that all colours are equally well rendered and therefore cannot be assessed equally well.

The colour rendering value of each individual light colour can be read in the test report of the light laboratory. With full-spectrum LEDs, it is noticeable that the R9 value, for example, is also very high (with conventional LEDs very often well below 50).

This means that the red of an illuminated object is perceived as very rich and particularly powerful.

$$\text{Formula } R_a = \frac{R_2 + \dots + R_7 + R_8}{8}$$





FULL SPECTRUM LEDS - AUTHENTIC COLOUR PERCEPTION FOR ALL AREAS

Red should stay red!

Illumination with a low CRI value does NOT allow an authentic colour perception as it is in natural sunlight (daylight).

- » Especially when it comes to making specific decisions about the colors of objects (e.g. in dental surgeries when choosing the colour for the filling etc.)
- » when you want to present sales items in an attractive way for the customer and with natural-looking colors (e.g. fashion, food, etc.)
- » or if the visual tasks of certain professions require it, then lighting solutions with high colour rendering index.



- » Retail for fashion
- » Sales areas
- » Showrooms



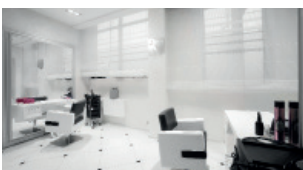
- » Hotel industry
- » Gastronomy



- » Architect's office
- » engineering drawing offices



- » Dentist and
- » Dental technician practices



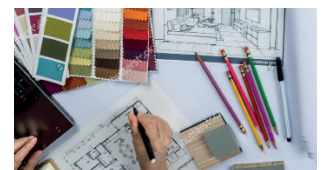
- » Furniture stores
- » Interior designer
- » Food retailing (meat, bread, fruit, vegetables etc.)



- » Interior designers
- » Furniture designer



- » Hairdressing salons
- » Beauty salons



- » Advertising agencies
- » Graphic design offices

