



next generation led

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60 degree LED tube



Properties

- Lifespan L70 %: > 30.000 hours
- Focused beam angle of 60° degree results in more light on the area that needs to be lit
- Ideal to use at heights where normal LED tubes can't be used, without increasing the wattage of the tubes!
- SMD2835 (Surface Mounted Device)
- Energy savings up to 70%
- Aluminum cooling surface
- Built in driver
- Flicker free to reduce the eyestrain
- Will not break when dropped
- Environment friendly : no mercury or toxic gasses
- 80% more efficiency compared to traditional fluorescent
- Immediate start regardless of temperature or humidity
- Retro-fit = easy installation
- Warranty: 5 years

Retro-fit

70% Saving

30.000 h

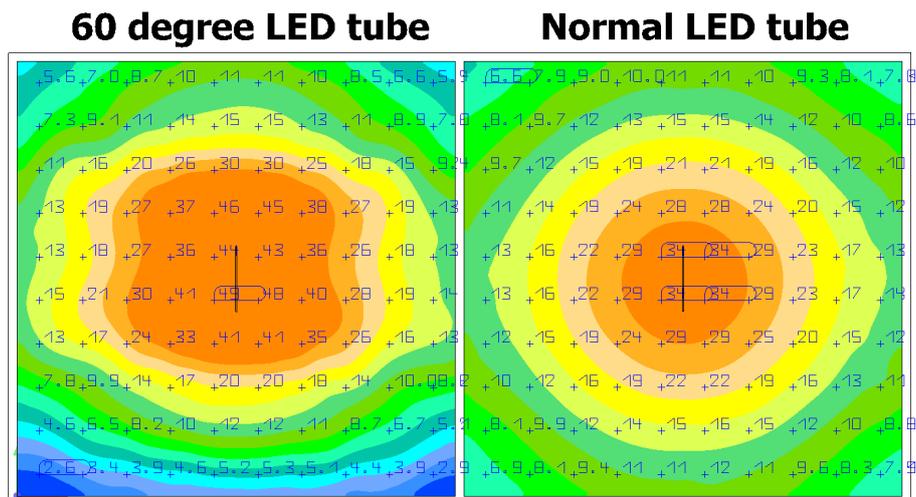
Specifications

TL 60 degree	60 CM	90 CM	120 CM		150 CM
Power	10 W	15 W	20 W	24 W	30 W
Number of LED's	76	120	156	168	236
Input voltage	AC 85~165/ 165 ~265 V				
Diameter	26 mm				
Color temperature	3000 K / 4000 K / 5000 K				
Cover	Available in clear, striped or frosted cover				
Color rendering index	Standard CRI>80, Optional CRI>90				
Powerfactor	>0.8				

Application

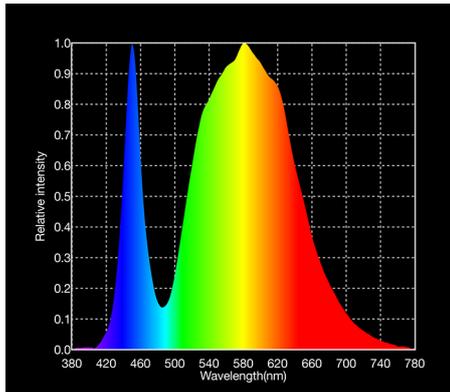
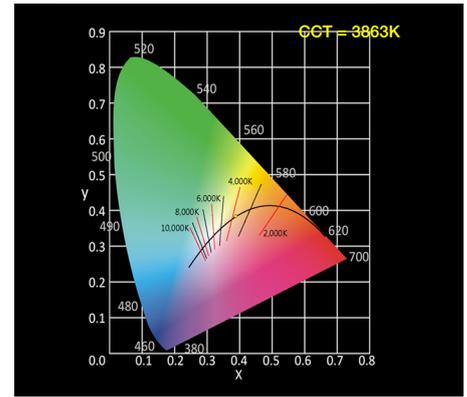
Office, hospital, hotel, supermarket, library, parking, corridors ...

Updated: June 2018



CIE 1931

The CIE color space, developed in 1931, is still used to define colors, and as a reference for other color spaces. The figure is a two-dimensional display of colors of the same intensity (brightness), which is based on observations of color measurements by people.

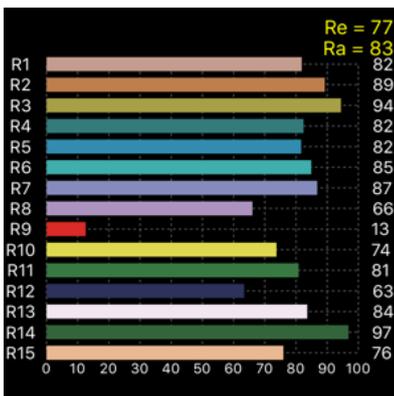
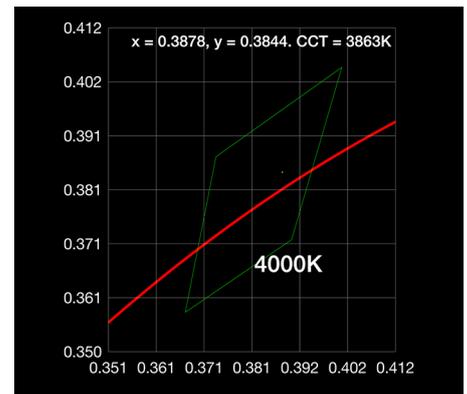


SPECTRUM

Isaac Newton used the Latin word spectrum to define the color series which arose when he dropped a bundle of sunlight through a glass prism. The color spectrum consists of the colors of the rainbow with the color sequence red-orange-yellow-green-blue-indigo-violet, which corresponds to bearish wave length (increasing frequency) of the light waves.

C78 377

ANSI C 78.377 is now the standard for color quality, as determined by the American National Standards Institute. ANSI recommends lamp manufacturers to stay within a 4-step ellipse. This means that manufacturers with a particular focus on the CIE diagram have a broad range of observable differences.



CRI HISTOGRAM

The color reproduction of a light source indicates whether the color of an object can be displayed true to nature. The graph shows whether we can accurately determine color, depending on the color rendering properties of the light source.

Ra = average of R1 to R8

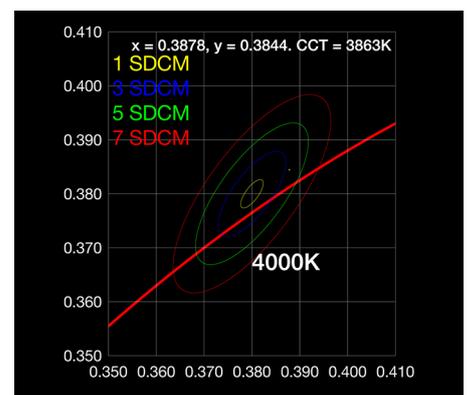
Re = average of R1 to R15

R9 = saturated red. Should be as high as possible.

SDCM

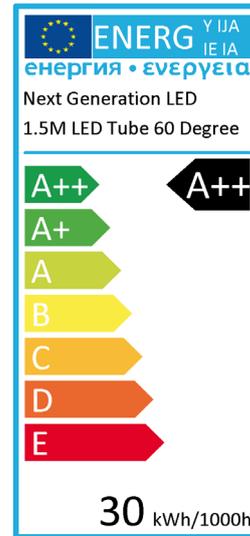
SDCM is an acronym which stands for Standard Deviation Colour Matching. SDCM has the same meaning as a "MacAdam ellipse". A 1-step MacAdam ellipse defines a zone in the CIE 1931 2 deg (xy) colour space within which the human eye cannot discern colour difference. Most LEDs are binned at the 4-7 step level, in other words you certainly can see colour differences in LEDs that are ostensibly the same colour.

SDCM	CCT @ 3000K	ΔU_V
1x	$\pm 30K$	± 0.0007
2x	$\pm 60K$	± 0.0010
4x	$\pm 100K$	± 0.0020
7-8x	$\pm 175K$	± 0.0060



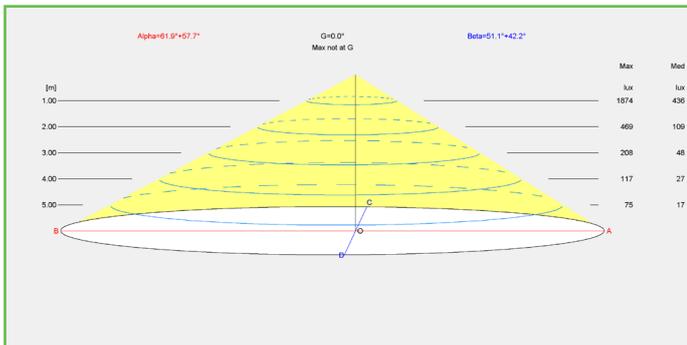
ENERGY LABEL

Electrical appliances carry an energy label. This label prints the so-called energy efficiency score in classes. These classes range from 'very energy efficient' (A++) to 'very waste of energy' (E). A more expensive new device may eventually turn out to be cheaper if the energy score is good. IPEA is the new system for luminaire energy efficiency assessment.



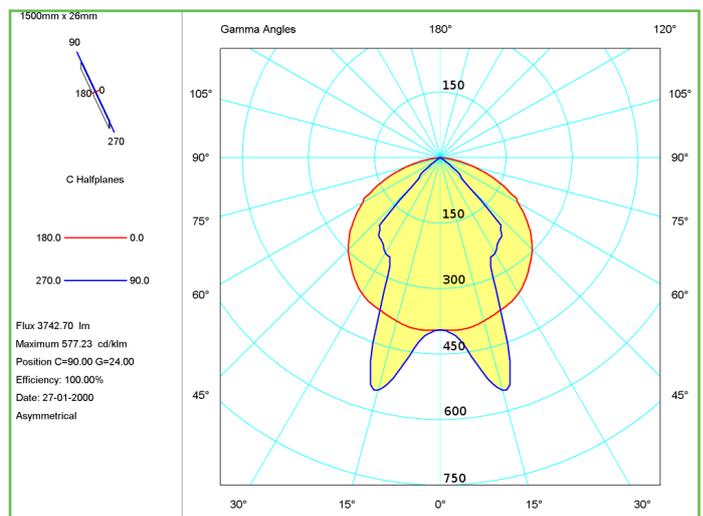
BEAM

The Illuminance Cone Diagram indicates the maximum illuminance at different distances from the fixture.



POLAR DIAGRAM

The polar luminous intensity graph illustrates the distribution of luminous intensity, in candelas, for the transverse (solid line) and axial (dashed line) planes of the luminaire. The shown curve provides a visual guide to the type of distribution expected from the luminaire e.g. wide, narrow, direct, indirect... in addition to intensity.



60° LED Tube

REFERENCE	LENGTH	WATT	COVER	COLOR	C.R.I.
250-0100	60 CM	10 W	CLEAR	3000 K	80
250-0101	60 CM	10 W	CLEAR	4000 K	80
250-0102	60 CM	10 W	CLEAR	5000 K	80
250-0103	90 CM	15 W	CLEAR	3000 K	80
250-0104	90 CM	15 W	CLEAR	4000 K	80
250-0105	90 CM	15 W	CLEAR	5000 K	80
250-0106	120 CM	20 W	CLEAR	3000 K	80
250-0107	120 CM	20 W	CLEAR	4000 K	80
250-0108	120 CM	20 W	CLEAR	5000 K	80
250-0109	150 CM	30 W	CLEAR	3000 K	80
250-0110	150 CM	30 W	CLEAR	4000 K	80
250-0111	150 CM	30 W	CLEAR	5000 K	80

