

LIGHTING TERMS AND DEFINITIONS

Correlated Color Temperature (CCT)

CCT describes the relative color appearance of a white light source, indicating whether it appears more yellow/gold or more blue, in terms of the range of available shades of white. CCT is given in Kelvin (SI unit of absolute temperature) and refers to the appearance of a theoretical black body heated to high temperatures. As the black body gets hotter, it turns red, orange, yellow, white, and finally blue. The CCT of a light source is the temperature (in K) at which the heated black body matches the color of the light source in question.



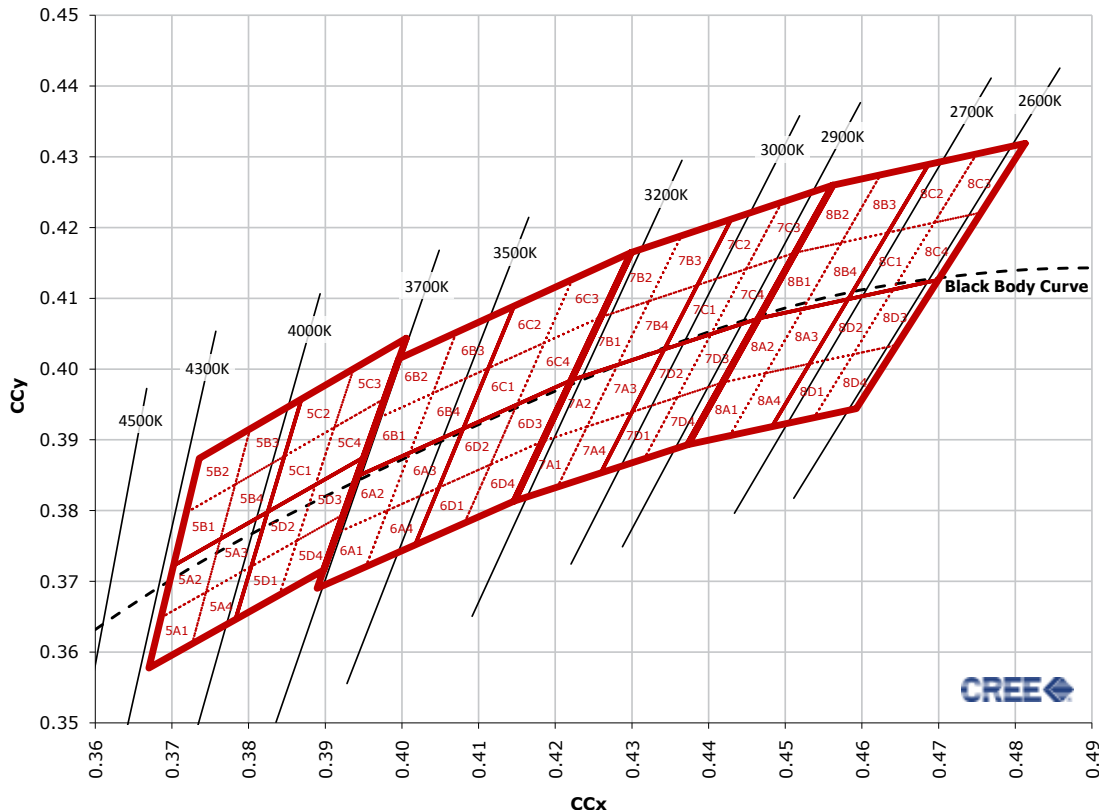
Color Rendering Index (CRI)

CRI indicates how well a light source renders colors, on a scale of 0 to 100, compared to a reference light source of similar color temperature. The test procedure established by the International Commission on Illumination (CIE) involves measuring the extent to which a series of eight standardized color samples differ in appearance when illuminated under a given light source, relative to the reference source. The average "shift" in those eight color samples is reported as Ra or CRI. In addition to the eight color samples used by convention, some lighting manufacturers report an "R9" score, which indicates how well the light source renders a saturated deep red color.

Sources: US Department of Energy, IESNA, Cree, Nichia, Osram Sylvania

Binning

During the manufacturing process of white LEDs, some variance in color occurs. To overcome this issue, LEDs of the same color quality are grouped together in a process called binning correlating to the chart below. An ANSI standard is used to ensure consistency. White LEDs with color most resembling sunlight and incandescent sources are identified by how close they lay near the Black Body Curve.





LAMP COMPARISON CHART

	INCANDESCENT (60W)	HALOGEN	COMPACT FLUORESCENT	FLUORESCENT	METAL HALIDE	LEDs DAYLIGHT WHITE 6500K	LEDs COOL WHITE 4000K	LEDs WARM WHITE 3000K
LUMENS PER WATT	9	15 - 20	35 - 60	50 - 100	50 - 90	65 - 107	50 - 100	45 - 93
RATED LAMP LIFE (IN HOURS)	1,000	2,000 - 18,000	2,000 - 10,000	7,000 - 24,000	5,000 - 20,000	50,000	50,000	50,000
COLOR RENDERING INDEX (CRI)	100	100	65 - 88	50 - 90	70 - 90	50 - 92	50 - 92	50 - 92
CORRELATED COLOR TEMPERATURE (CCT)	2,700K	2,900K - 3,250K	2,700K - 6,500K	2,700K - 6,500K	3,000K - 6,000K	6,500K +	3,710K - 4,260K	2,871K - 3,220K

Wattage

A measurement of the rate at which energy is consumed by a device. A 400 watt lamp will consume energy at a rate of 4 times higher than a 100 watt lamp. A kilowatt is 1,000 watts.

Lumens per Watt

The number of lumens (measurement of light produced in the visible spectrum) divided by the total watts used to create the light.

Candlepower (CP)

The luminous intensity of a beam in a given direction, expressed in Candelas.

Rated Lamp Life

The longevity of a light source is established through laboratory testing. For traditional lamp types, a sample group of lamps are burned, having been subjected to several starts per day — the length of time required for half of the lamps to fail determines that product’s rated life. For **LEDs** this is calculated differently. **LEDs** do not burn out like traditional lamps; rather, their brightness slowly fades. So, if the lifespan of an **LED** is listed at 50,000 hours that is the point when the **LED** will most likely be shining at 70% of its initial brightness.