

How to buy LED lighting:

Common specs explained

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REGENCYSUPPLY



When you're ready to make the leap to LED lighting, it can be a little scary. There are a number of different terms and performance metrics that can make a simple thing feel hard.

Let me help you sort through a few of the most common specs, and offer you an easy way out!

Common LED lighting terms for efficiency and reliability

1. Wattage

What does it mean?

Wattage is simply the measure of how much energy a lamp needs to light up.

Why is it important?

The wattage of an LED lamp is usually going to be its most marketed feature. While there are other benefits to LED lighting over traditional lighting, their reduced wattage consumption is still their biggest advantage.

2. Replacement wattage

What does it mean?

Replacement wattage indicates the wattage of the traditional lamp that is being replaced by the LED bulb or fixture.

Why is this important?

Replacement wattage will help you find an LED bulb that will be bright enough to replace the one that you are currently using. For example, you may see an LED A-Lamp that only uses 8 watts, but its replacement wattage is a 40W incandescent bulb.

3. Rated life

What does it mean?

The rated life of an LED is how long it is intended to operate before reaching 70 percent of its original brightness.

Why is this important?

With traditional light sources, the rated life is the length of time the product is expected to operate before burning out. This is set by listing the number of hours it takes for 50 percent of a sample of identical products to burn out.

LED's, however, don't typically burn out. They slowly dim over time. An LED's rated life is therefore when the lamp is expected to be 30 percent dimmer than it was when brand new.

Another key advantage LED's have over traditional lighting is how long they last. There are LED bulbs that can replace a 4,000-hour halogen lamp and last up to 50,000 hours. Remember, this means that it should be at 70 percent brightness at 50,000 hours.

Common LED lighting terms for light output or brightness

4. Lumens

What does it mean?

Lumens are the measurement of how much light the bulb puts out.

Why is it important?

Lumens are important in comparing an LED bulb to a traditional source. Comparing the lumens of an LED bulb to the lumens of a traditional one will help determine if an LED bulb will be bright enough to directly replace your traditional lamp.

5. Center Beam Candle Power (CBCP)

What does it mean?

Center beam candle power measures the intensity of light at the center of a beam of light.

Why is this important?

This is an important measurement for spot and accent lighting. It often isn't enough to only use the lumen output when determining if a lamp will be bright enough.

It is possible to have a high LUMEN output, but a low CBCP. This would imply that the light is spread out over a large area, which wouldn't work well for trying to draw attention to a painting on the wall, or a mannequin wearing a sequin jumpsuit.

The right light source may actually have lower lumens than comparable products, but if the manufacturer has done a good job of concentrating the light to the center of the beam, then your sequin jumpsuit will sparkle and shine like nothing else.

6. Efficacy (lumens per watt)

What does it mean?

Efficacy is a ratio of how many lumens are produced (how much light) per watt of energy consumed.

Why is this important?

Efficiency! The higher the efficacy ratio, the more efficiently your product is performing. Manufacturers

are making huge improvements to both engineering and manufacturing processes, and efficacy ratings are constantly improving.

Just a few years ago, most LED's were around 30-50lu/watt. Currently, you shouldn't settle for less than 70lu/watt, and some LED's are over 100lu/watt. In labs, they are already reporting numbers like 300lu/watt, so it's only a matter of time for the next wave of LED efficiency! Who doesn't want more for less?

Common LED lighting terms for visual appeal and color

7. Color Temperature (CCT)

What does it mean?

Color temperature, officially referred to as Correlated Color Temperature, is a numerical value that indicates the color of light a particular fixture or bulb will emit.

A low number indicates warm light. Think, fireplace or candlelight quality (red and orange hues). A higher number indicates a cooler light like daylight and hospital lighting (whites and blues). Standard ranges are around 2700k on the warm side to over 5000k on the cool side.

Why is this important?

The cooler temperatures (higher numbers) tend to appear "brighter", and often LED manufacturers will use lower wattages at higher color temperatures in order to make their product appear brighter.

If you are changing to LED bulbs in a standard house lamp, restaurant, or hotel setting, a cooler temperature will create a harsh environment, and not set the proper "mood." It is important to know the approximate color temperature range of your existing lighting, so you can find a suitable replacement.

8. Color Rendering Index (CRI)

What does it mean?

CRI is color rendering index. While a bit complicated and somewhat controversial this, in essence, measures a light source's ability to reflect colors accurately. Low numbers would be in the 40's while 100 would be perfect.

Why is this important?

Have you ever walked through a parking garage that had really "yellow" looking lighting? (see color temperature above) Or old street lighting that made everything look orange? Those light sources had very low CRI ratings, so your beautiful blue shirt, or red pants, or white hat or purple socks (hey, I didn't dress you!) all pretty much looked yellow/ black/ junky.

That might not matter in a tunnel you drive through, but it would certainly matter to a retailer trying to make its product look attractive, or in a parking garage where security is crucial. Imagine trying to describe what someone was wearing to law enforcement if all the clothes looked grey!

9. Dimmable

What does it mean?

Is the driver inside the LED dimmable? Usually, it will say yes or no, and which system the product dims with.

Why is this important?

LED technology doesn't always communicate well with dimmers. Be sure the lamp you are buying is rated as "dimmable," and which dimming system it is compatible with (0-10v, 3 phase, etc.).

Choosing the right LED product

Now that you have the basics, let's run through a "real life" example.

You are sitting in your office, enjoying a quiet afternoon. Nothing but your ink blotter, a glass of scotch, and a table lamp, giving off a warm, comforting glow. As you contemplate life, sip your scotch, and start to draft your next big business move, the lamp starts to flicker. Flicker. Flicker. Die.

You go down three flights of stairs, past the servant's quarters, stroll through your wine cellar, and into your storage closets. Drats. No bulbs left. You unscrew the dead bulb and take it with you to your trusty lighting retailer.

As you walk the aisles, mourning the fact that the ice is slowly watering down your scotch back home, you finally make your way to the bulbs. You look down. In your hand, a standard light bulb. A-lamp, it says. 60w. 540 lumens.

You ask a clerk, "Excuse me, where are your 60W A-lamps?" He rushes past you, snickering. "60 watts? Come on, old man! LEDs are the wave of the future!" You never did like that clerk.

You find the shelf with the LED A-lamps. So many choices, so many specs. Defeat sets in. Overwhelming. Then you remember reading an extremely engaging and helpful article on making sense of LED specs. Something clicks in your head. Almost like... a light bulb turning on.

Wattage. Start there. You see 7, 8, 10, 13W options. But which option is bright enough?

Lumens, right. Start on lumens. You find a few options that have 550-600 lumens. Plenty to replace your 540-lumen A-lamp. Check.

Now, wattage. You're no fool. You want to save some energy. You toss out the 13w, and focus on the 7, 8, and 10W options.

Rated life... how can someone rate life? Are we all keeping score? Sorry. back on track. Lighting. Rated life on the 8W is 30,000 hours, but the 7 and 10W options both have 50,000-hour ratings. Out with the 8.

You have the right size, it's bright enough, and you found a great value in a product that is rated to last the longest. You're done.

Or are you?

Color temperature, right. The 7W is "cool white, 5000k," while the 10W is "warm white 2700k". Tricky tricky. No wonder they got away with only 7 watts. Almost fell for it.

You grab the:

10W
600 lumen
50,000 hour
2700k warm white
LED bulb

Then you cash out and head home.

After screwing it into your desk lamp, and enjoying a warm, comfortable light once again, you think to yourself, "Hey. That wasn't so bad. The ice didn't even melt in my scotch!" And slip back into a comfortable rhythm of plotting to take over the world.

You get the picture!

Happy lighting!