

What we have learned about LED's that applies to primitive survival:

Primitive power will fluctuate in voltage: This will eventually burn out filament and most florescent lights. Purchase only LED SMD (surface mount diode) that are advertized to work with 12 V DC or 110 to 220 Volt AC LED SMD bulbs in low wattage between 1 and 12 watts. These will last many times longer than the cluster bulbs made of individual 3mm, 5mm, or 10mm discrete plastic encased LEDs of the older original type. The SMDs conduct more heat away and thus run much longer up to 50K hours. The older type last typically last 3k to 6K hours for white.

12 volt DC SMD spot lights will fluctuate between 11 and 16 volts. Some SMD spot and flood lights will take this range and some will not. The G4 base usually will not. The MR16 and MR11 is more likely to take the range. Both have an internal voltage regulator that makes them less likely to work with a voltage dimmer.

14 volts ac is said to be the limit. However I have tested using DC up to 16 volts for short periods of time. They sometimes get hot to touch at this time. How long they would last is anyone's guess.

The 1W G4s can usually be used with a resistor to dim them and to limit current at 16 volts. The most efficacy in light to watts input is running at about half power.

There are a lot of lies in the reported light output and wattage and angle of view. When you accurately test them. They can be off by 10 to 60% according to measurements. On top of this what you order today may not match in measurements to what you can get tomorrow from the same vendor. The products vary all over the place. It is like take your best several guesses and run with it. Cost doesn't make a difference. Many times the lowest cost is the best.

SMDs are much longer lasting than 3, 5 or 10 mm LEDs (small plastic lens case included). Buy only SMDs for flood and task lights for 12 volt DC and 110-220 Volt AC. Any open SMD (includes clusters as used in 12 volt disk or 110-220 volt) with no-lenses effect will have a viewing angle of about 120 degrees.

The 12 volt SMD 5 meter adhesive backed waterproof strip lighting is a good find and will work for growing and site lighting. It comes in all colors however white is the most efficient light output to power in put ratio. The life time is reasonable at 50k hr due to cool running temperature.

Buy 3w CREE for flash lights and lower than 12 volt lighting.
Search for "cree white emitter" on eBay and make your own.

Certain colors don't last long. White, violet, blue, pink.
Other colors last a long time: red, yellow,

Viewing angle is the angle where light drops to half intensity when measured from one side to the other. A wide angle is good for general lighting of an area. Spot lighting is good for tasks.

When the following LED light dimmer is used as a battery charger, it acts like a current control device with some max open circuit voltage. The way to use it is to adjust up and down the amount of current on a fully charged battery until the desired trickle charging rate is achieved. Then when an uncharged battery is put in the circuit it will charge at a higher rate tapering off when full to trickle rate. This setting will be mostly independent of large fluctuations in input voltage. This allows the input source to be charged while charging smaller cells. This dimmer works well for 12 volt DC SMD strip and spot lighting.



12 volt dc dimmers and transformers are available on eBay.