



Photometric Units

Photometric light units are based on the sensitivities of the human eye, i.e. the luminosity function. In contrast, radiometric units measure absolute values.

- **Lumens** measure the "luminous flux". This is a measure of the total number of quanta (or "packets") of light produced by a light source. This is the total "quantity" of light emitted by the light source, independent of direction.
As the human eye is most sensitive at 555nm (Green), to achieve the same perceived brightness, a higher wattage is required at different wavelengths.
- **Lux** measures the "illuminance" or "illumination". It is equal to one lumen per square metre i.e. lux expresses how many lumens you need given the area you are trying to illuminate.
- **Lumens per Watt** is the electric wattage (power) consumed to drive the source while lumens refers to the luminous output of the source. The wattage of course would be the sum of the heat generated as well the energy of the total light emitted.
- **Candela** is the SI base unit of luminous intensity; that is, power emitted by a light source in a particular direction, weighted by the luminosity function, which is a standardized model of the sensitivity of the human eye to different wavelengths.
 - The candela is based on the luminous intensity of a 555nm (green) light source emitting in a particular direction with a radiant intensity of 1/683 W/sr
 - i.e. to achieve the same luminous intensity (brightness) more radiant intensity (power) is required.
 - A common candle emits light with a luminous intensity of roughly one candela.
 - The candela measures the brightness as perceived by a standardised human eye
 - Measurement is in a specific direction only, it describes not the total output of a light source.