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LED Lighting: What is a Foot Candle & How is it Measured?

Posted by Traci Cox on Apr 27, 2015 12:25:00 PM

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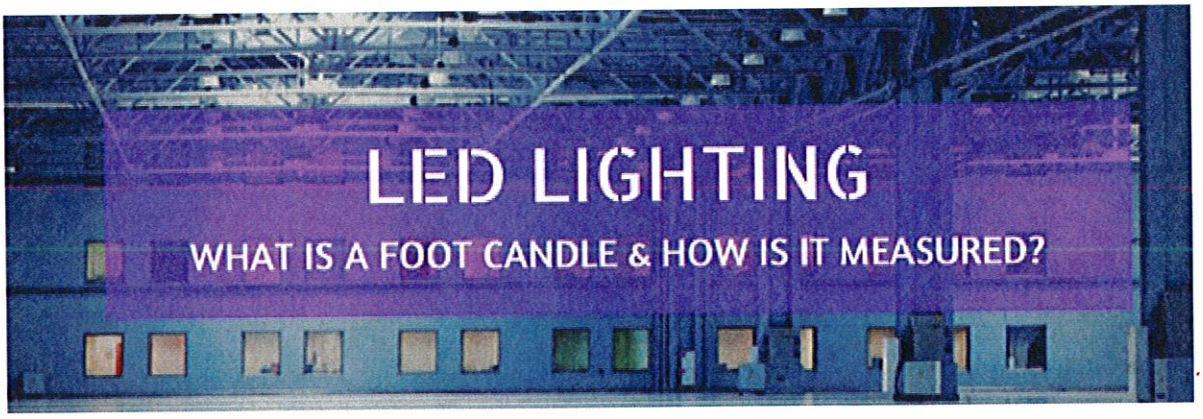


What is a foot candle?

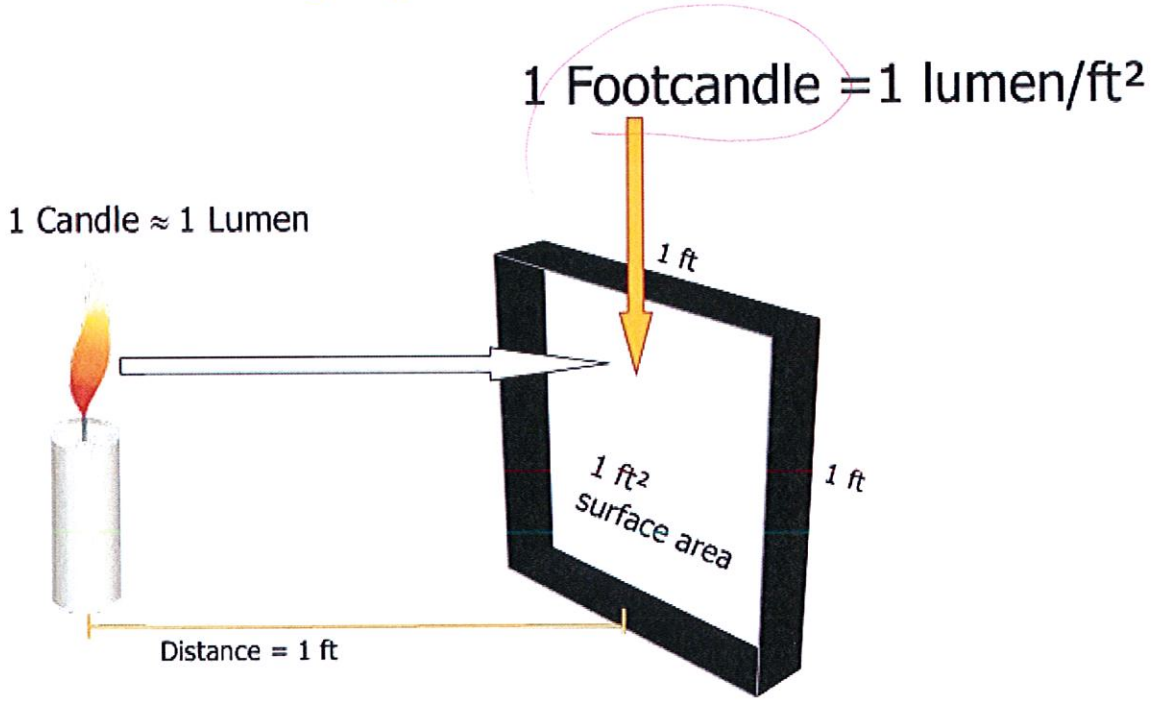
You may be wondering, what the heck is a foot candle? Why is this so important? How many foot candles are in my building and how many are required? How do you measure this?

Believe it or not, foot candles are the most common unit of measure used by lighting professionals to calculate light levels in businesses and outdoor spaces. In a

nutshell, *a foot candle is a measurement of light intensity* and is defined as the illuminance on a one-square foot surface from a uniform source of light.

How many foot candles are recommended for your location?

Now you are probably asking yourself, how do I measure the foot candles in our facility?! That's an excellent question and exactly what I do as a LED Lighting Specialist. I have a light meter that measures the number of foot candles in each room and under each light, and this is the process I usually take to measure your foot candles for LED Lighting.



Step 1: Measuring the Light Intensity

I will use the light meter to measure the number of foot-candles that there are hitting the subject. Once I have this number, I can then use it to convert it into Lumens or Watts depending on whichever method is preferred. For the case of this example, we will base our calculations on a measurement of 50 foot-candles.

Step 2: Converting to Lumens

Please note that *one foot-candle = 10.76 Lumens**, which means that in order to convert foot-candles to lumens, I would need to take the amount of foot-candles that I measured, 50 foot-candles ,and multiply by 10.76 to get the number of lumens (50 x 10.76 = 538 lumens)

* A lumen is the same as Lux and is what many modern light meters will calculate their measurement in.

Step 3: Converting to Watts

The next step is to calculate the number of watts. *One lumen is = 0.001496 watts.* This is pretty simple, after you have your total number of lumens from step 2. You take the total number of lumens and multiply it by 0.001496 watts (538 x 0.001496 = 0.805 watts/square meter).

Calculation Cheat Sheet:

Congratulations! You now you know how to convert foot-candles to lumens (Lux) and Watts

- To calculate Lumens (Lux) from foot-candles: Lumens = Foot Candles x 10.76
- To calculate Watts from foot-candles: Watts = Lumens x 0.001496
- You can also calculate the number of watts directly from foot-candles by combining both equations & using the following: Watts = Foot Candles x 0.01609696

(since 10.76 x 0.001496 = 0.01609696)

The Illuminating Engineering Society, IES, has recommended the following foot candle levels to ensure adequate illumination and safety for occupants. Please refer to the below guideline to see where your facility should be and to assist in achieving appropriate light levels with the greatest energy efficiency.

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