

RapidTables

How to convert lumens to watts

How to convert luminous flux in lumens (lm) to [electric power in watts \(W\)](#).

You can calculate watts from lumens and luminous efficacy. Lumen and watt units represent different quantities, so you can't convert lumens to watts.

Lumens to watts calculation formula

The power P in watts (W) is equal to the luminous flux Φ_v in lumens (lm), divided by the luminous efficacy η in lumens per watt (lm/W):

$$P_{(W)} = \Phi_{v(lm)} / \eta_{(lm/W)}$$

So

$$\text{watts} = \text{lumens} / (\text{lumens per watt})$$

or

$$W = \text{lm} / (\text{lm/W})$$

Example

What is the power consumption of a lamp that has luminous flux of 900 lumens and luminous efficacy of 15 lumens per watt (lm/W)?

$$P = 900 \text{ lm} / 15 \text{ lm/W} = 60 \text{ W}$$

Luminous efficacy table

Light type	Typical luminous efficacy (lumens/watt)
Tungsten incandescent light bulb	12.5-17.5 lm/W
Halogen lamp	16-24 lm/W
Fluorescent lamp	45-75 lm/W
LED lamp	80-100 lm/W
Metal halide lamp	75-100 lm/W
High pressure sodium vapor lamp	85-150 lm/W
Low pressure sodium vapor lamp	100-200 lm/W
Mercury vapor lamp	35-65 lm/W

Energy saving lamps have high luminous efficacy (more lumens per watt).

Lumens to watts table

Lumens	Incandescent light bulb watts	Fluorescent / LED watts

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- [Lumens to watts](#)
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Lumens	Incand	Flouresc	LED
375 lm	25 W	6.23 W	
600 lm	40 W	10 W	
900 lm	60 W	15 W	
1125 lm	75 W	18.75 W	
1500 lm	100 W	25 W	
2250 lm	150 W	37.5 W	? 34
3000 lm	200 W	50 W	

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