

PPFD Conversion Guide

The following calculations can be used to convert Foot-candles (FC) and Lux into PPFD (Photosynthetic Photon Flux Density); measured in $\mu\text{mol}/\text{m}^2 \text{ s}^{-1}$ and expressed as micromoles per meter squared per second. PPFD is the correct method to express the intensity of PAR (400-700nm) light that is instantaneously landing on a single spot in a plant canopy. The correct instrument to measure PPFD is called a quantum meter; like the LBGQM from Hydrofarm.

Lux to PPFD ($\mu\text{mol m}^{-2} \text{ s}^{-1}$)		PPFD ($\mu\text{mol m}^{-2} \text{ s}^{-1}$) to Lux	
Sunlight	0.0185	Sunlight	54
Cool White Fluorescent	0.0165	Cool White Fluorescent	74
Mogul Base HPS	0.0122	Mogul Base HPS	82
DE 1000W HPS	0.0130	DE 1000W HPS	77
Metal Halide	0.0141	Metal Halide	71
Philips 315W Agro 3100K CMH	0.0170	Philips 315W Agro 3100K CMH	59
Philips 315W 4200K CMH	0.0154	Philips 315W 4200K CMH	65
Multiply the Lux by the conversion factor to get PPFD. For example, full sunlight is 108,000 Lux or $2000 \mu\text{mol m}^{-2} \text{ s}^{-1}$ ($108,000 \times 0.0185$)		Multiply the PPFD by the conversion factor to get Lux. For example, full sunlight is $2000 \mu\text{mol m}^{-2} \text{ s}^{-1}$ or 108,000 Lux (2000×54).	
Conversion data provided by Apogee Instruments, Logan, UT			

Foot-candles (FC) to PPFD ($\mu\text{mol m}^{-2} \text{ s}^{-1}$)		PPFD ($\mu\text{mol m}^{-2} \text{ s}^{-1}$) to Foot-candles (FC)	
Sunlight	0.200	Sunlight	5.01
Cool White Fluorescent	0.146	Cool White Fluorescent	6.87
Mogul Base HPS	0.131	Mogul Base HPS	7.62
DE 1000W HPS	0.141	DE 1000W HPS	7.11
Metal Halide	0.152	Metal Halide	6.60
Philips 315W Agro 3100K CMH	0.184	Philips 315W Agro 3100K CMH	5.45
Philips 315W 4200K CMH	0.167	Philips 315W 4200K CMH	6.01
Multiply the FC by the conversion factor to get PPFD. For example, full sunlight is 10,020 FC or $2000 \mu\text{mol m}^{-2} \text{ s}^{-1}$ (10200×0.02)		Multiply the PPFD by the conversion factor to get FC. For example, full sunlight is $2000 \mu\text{mol m}^{-2} \text{ s}^{-1}$ or 10,020 FC (2000×5.01).	
Conversion data provided by Apogee Instruments, Logan, UT			

Conversion Table Using the Philips 315W Agro 3100K CMH Lamp		
PPFD	FC	Lux
400	2180	23600
500	2725	29500
600	3270	35400
700	3815	41300
800	4360	47200
900	4905	53100
1000	5450	59000