

Effects of under- and over-voltage on incandescent lamps

Enter known values in **YELLOW** boxes. Results appear in **CYAN** boxes.

GREEN boxes indicated copied values.

Known variables are CAPITALIZED. Unknown variables are lower-case.

Osram - 54622 HPL575/115V **HPL575/115**

Enter all known values for any given lamp (from lamp catalogs/documentation):

WATTAGE	RATED VOLTAGE	LIFE (hours)	COLOR TEMP (K)	LUMENS
575	115	300	3265	16,520

Calculated Results:

WATTAGE	Actual Voltage	LIFE (hours)	COLOR TEMP (K)	LUMENS
575	115	300	3265	16,520

Formulas:

life/LIFE = (VOLTS/volts)^13				
life	RATED LIFE	volts	RATED VOLTS	LIFE hours
	300	115	115	300

lumens/LUMENS = (VOLTS/volts)^3.4				
lumens	RATED LUMENS	volts	RATED VOLTS	OUTPUT lumens
	16,520	115	115	16,520

coltemp/COLTEMP = (volts/VOLTS)^0.42				
coltemp	RATED COLTEMP	volts	RATED VOLTS	COLOR TEMPERATURE K
	3265	115	115	3265

lumensperwatt/LUMENSperWATT = (volts/VOLTS)^0.9				
lumensperwatt	LUMENSperWATT	volts	RATED VOLTS	LUMENS per WATT
	28.7	115	115	28.7

watts/WATTS = (volts/VOLTS)^1.6				
watts	RATED WATTS	volts	RATED VOLTS	WATTS
	575	115	115	575

ohms/OHMS = (volts/VOLTS)^0.4				
ohms	RATED OHMS	volts	RATED VOLTS	OHMS
	23.00	115	115	23.00

amps/AMPS = (volts/VOLTS)^0.6				
amps	RATED AMPS	volts	RATED VOLTS	AMPS
	5.0	115	115	5.0

Osram - 54611 HPL750/115VX **HPL750/115X**

Enter all known values for any given lamp (from lamp catalogs/documentation):

WATTAGE	RATED VOLTAGE	LIFE (hours)	COLOR TEMP (K)	LUMENS
750	115	1500	3050	16,400

Calculated Results:

WATTAGE	Actual Voltage	LIFE (hours)	COLOR TEMP (K)	LUMENS
750	115	1500	3050	16,400

Formulas:

life/LIFE = (VOLTS/volts)^13				
life	RATED LIFE	volts	RATED VOLTS	LIFE hours
	1500	115	115	1500

lumens/LUMENS = (VOLTS/volts)^3.4				
lumens	RATED LUMENS	volts	RATED VOLTS	OUTPUT lumens
	16,400	115	115	16,400

coltemp/COLTEMP = (volts/VOLTS)^0.42				
coltemp	RATED COLTEMP	volts	RATED VOLTS	COLOR TEMPERATURE K
	3050	115	115	3050

lumensperwatt/LUMENSperWATT = (volts/VOLTS)^0.9				
lumensperwatt	LUMENSperWATT	volts	RATED VOLTS	LUMENS per WATT
	21.9	115	115	21.9

watts/WATTS = (volts/VOLTS)^1.6				
watts	RATED WATTS	volts	RATED VOLTS	WATTS
	750	115	115	750

ohms/OHMS = (volts/VOLTS)^0.4				
ohms	RATED OHMS	volts	RATED VOLTS	OHMS
	17.63	115	115	17.63

amps/AMPS = (volts/VOLTS)^0.6				
amps	RATED AMPS	volts	RATED VOLTS	AMPS
	6.5	115	115	6.5