

## CONVERSION CHART

### VOLUME CONVERSION CHART

CONVERT	INTO	MULTIPLY BY
LITRES	CUPS	4.2260
	PINTS	2.1130
	GALLONS	0.2640
	MILLILITRES	1000.0000
GRAMS	QUARTS	1.0570
	OUNCES	0.0350
	POUNDS	0.0020
KILOGRAMS	KILOGRAMS	0.0010
	GRAMS	1000.0000
	OUNCES	35.2740
PINTS	POUNDS	2.2050
	LITRES	0.4730
	QUARTS	0.5000
QUARTS	GALLONS	0.1250
	PINTS	2.0000
	LITRES	0.9460
GALLONS	GALLONS	0.2500
	PINTS	2.0000
	LITRES	3.7850
OUNCES	QUARTS	4.0000
	GRAMS	28.3500
	POUNDS	0.0625
POUNDS	KILOGRAMS	0.0290
	GRAMS	453.5900
	OUNCES	16.0000
3 TSP	KILOGRAMS	0.4540
	=	1 TBSP
	=	1 CUP
16 TBSP	=	1 CUP
	=	1 PINT

### LINEAR CONVERSION CHART

CONVERT	INTO	MULTIPLY BY
CENTIMETRES	INCHES	0.3940
	FEET	0.0328
	METRES	0.0100
METRES	MILLIMETRES	10.0000
	CENTIMETRES	100.0000
	FEET	3.2810
	INCHES	39.3700
YARDS	MILLIMETRES	1000.0000
	YARDS	1.0930
	INCHES	2.5400
INCHES	CENTIMETRES	2.5400
	FEET	0.0833
	METRES	0.0254
YARDS	YARDS	0.0278
	INCHES	36.0000
	FEET	3.0000
YARDS	FEET	3.0000
	METRES	0.9140

### TEMPERATURE CONVERSION FORMULAS

CONVERSION	FROM / TO	FORMULA
CELSIUS	FAHRENHEIT	$^{\circ}\text{F} = ^{\circ}\text{C} \times 1.8 + 32$
FAHRENHEIT	CELSIUS	$^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.8$
CELSIUS	KELVIN	$\text{K} = ^{\circ}\text{C} + 273.15$
KELVIN	CELSIUS	$^{\circ}\text{C} = \text{K} - 273.15$

### ABBREVIATIONS

MG/L	=	MILLIGRAMS PER LITRE
PPM	=	PARTS PER MILLION
TDS	=	TOTAL DISSOLVED
EC	=	ELECTRICAL CONDUCTIVITY
PH	=	POTENTIAL HYDROGEN

### CHEMICAL ABBREVIATIONS & NAMES

B	BORON	MG	MAGNESIUM
C	CARBON	MN	MANGANESE
CA	CALCIUM	MO	MOLYBDENUM
CL	CHLORINE	N	NITROGEN
CU	COPPER	NA	SODIUM
FE	IRON	O	OXYGEN
F	FLUORINE	P	PHOSPHORUS
H	HYDROGEN	S	SULFUR
K	POTASSIUM	ZN	ZINC

### COMPARE LIGHT OUTPUT OF METAL HALIDE, HPS & T5 HO

TYPE	WATTS	LUMENS	LUMENS P/WATT	LIFE HOURS	KWH PER YEAR**
T5 HO BULBS*	216	20,000	92.6	20,000	946
MH	400	32,000	80.0	20,000	1,752
HPS	1000	100,000	100.0	24,000	4,380

\* 4- 54 W T5 HO bulbs are equivalent to one 400 W HPS or MH bulb.

\*\*Assumes bulbs are run 12 hours per day, 365 days per year.

### CALCULATING YOUR COST OF ELECTRICITY

To calculate the cost to run the different bulbs you will need to determine how much you pay for electricity per kilowatt hour. Refer to your electric bill to find this number and then use that number in the equation below. The costs here assumes the lamp is running for 12 hours a day.

$$1000 \text{ W} \quad (1 \times \text{Hours per day}) \times \text{Cost per KWH} = \text{Cost per day}$$

$$400 \text{ W} \quad (0.4 \times \text{Hours per day}) \times \text{Cost per KWH} = \text{Cost per day}$$

### ELECTRICITY COST PER DAY FOR GROW LIGHTS @12 HOURS PER DAY (EXAMPLE ONLY)

COST PER KWH	*216 W T5 HO	400W MH/HPS	1000W MH/HPS
\$0.067	\$0.17	\$0.32	\$0.80
\$0.076	\$0.20	\$0.36	\$0.91
\$0.103	\$0.27	\$0.49	\$1.24
\$0.115	\$0.30	\$0.55	\$1.38

Note on making your own calculations:

4- 54 W (216 W) T5 HO bulbs are equivalent to one 400W HPS or MH bulb.

If you would like to calculate the formula for other variables:

- 1,000 watts = 1 KW and a 1,000 watt lamp running for one hour
- is equal to 1 KW A 400 watt lamp running for one hour = 0.4 KW

### WATTAGE VS HANGING HEIGHT

HID fixtures must be kept at least 2' from the top of plants depending on the wattage. T5 HO fluorescent fixtures can be placed much closer to plants depending on the number of bulbs in the fixture.

WATTAGE/TYPE	HANGING HEIGHT FROM TOP OF PLANTS
100 - 250 W HPS/MH	12"
400 - 600W HPS/MH	12"-18"
750 - 1000 W HPS/MH	24"
T5 HO (ANY WATTAGE)	2"-4"

Note: The height of the reflector above plants will affect coverage area.

### WATTS / SQ FT

Most plants/vegetables need about 10 - 12 hours of light to promote growth. Fruits or flowers will show improvement with up to 18 hours a day of extra light. Consider supplemental light to increase more equal growth

WATTS	NO NATURAL LIGHT	WITH NATURAL LIGHT
150	2' X 2'	3' X 3'
50	3' X 3'	4' X 4'
400, 430	4' X 4'	6' X 6'
600	6' X 6'	8' X 8'
1000	8' X 8'	10' X 10'