

# The Metric System Conversions

## Length

Unit	Abbreviation	Number of Meters	Approximate U.S. Equivalent
kilometer	km	1,000	0.62 mile
hectometer	hm	100	109.36 yards
dekameter	dam	10	32.81 feet
meter	m	1	39.37 inches
decimeter	dm	0.1	3.94 inches
centimeter	cm	0.01	0.39 inches
millimeter	mm	0.001	0.039 inches

## Area

Unit	Abbreviation	Number of Square Meters	Approximate U.S. Equivalent
square kilometer	km <sup>2</sup>	1,000,000	0.3861 square miles
hectare	ha	10,000	2.47 acres
acre	a	100	119.60 square yards
square centimeters	cm <sup>2</sup>	0.0001	0.155 square inches

## Volume

Unit	Abbreviation	Number of Cubic Meters	Approximate U.S. Equivalent
cubic centimeter	cm <sup>3</sup> or cc	0.000001	0.061 cubic inch (cu in)
cubic decimeter	dm <sup>3</sup>	0.001	61.023 cu in
cubic meter	m <sup>3</sup>	1	1.307 cubic yards (cu yd)

## Capacity

Unit	Abbreviation	Number of Liters	Approximate U.S. Equivalent
kiloliter	kl	1,000	1.31 cubic yards
hectoliter	hl	100	3.53 cubic feet (cu ft)
dekaliter	dal	10	0.35 cu ft or 2.64 gallons
liter	l	1	61.02 cu in or 1.057 quarts
deciliter	dl	0.1	6.1 cu in or 0.21 pints
centiliter	cl	0.01	0.61 cu in or 0.338 fl oz
milliliter	ml	0.001	0.061 cu in or 0.27 fluidram

## Mass and Weight

Unit	Abbreviation	Number of Grams	Approximate U.S. Equivalent
metric ton	t	1,000,000	1.102 short tons
kilogram	kg	1,000	2.2046 pounds
hectogram	hg	100	3.527 ounces
dekagram	dag	10	0.353 ounce
gram	g	1	0.035 ounce
decigram	dg	0.	1 1.543 grains
centigram	cg	0.01	0.154 grain
milligram	mg	0.001	0.015 grain

Table is based on Webster's Ninth New Collegiate Dictionary. 1984. Merriam-Webster, Inc., Springfield, MA, p. 748.

# Conversion Factors For Fertilizers & Pesticides

## Metric to U.S.

1 pound (lb) = 454 grams (g)  
 1 square meter (m<sub>2</sub>) = 10.76 square feet (ft<sub>2</sub>)  
 1 hectare (ha) = 10,000 m<sub>2</sub> = 2.47 acres (ac)  
 1 kilogram (kg) = 1,000 g = 2.2 lb  
 1 lb/ac = 1.12 kg/ha  
 1 kg/ha = 0.89 lb/ac  
 1 liter (l) = 1,000 milliliters (ml) = 0.264 gallons (gal)  
 1 gallon = 3,785 ml

Another useful approximation that is often used to convert back and forth from U.S. to metric units is as follows:

1 lb/1,000 ft<sub>2</sub>      ≅      0.5 kg/100 m<sub>2</sub> = 5 g/m<sub>2</sub>

## Conversion Factors

### Weight Measures

1 ounce (oz)	= 28.349527 g	= 0.0625 lb		
1 pound (lb)	= 16 oz	= 453.59243 g		
1 ton (U.S.)	= 2,000 lb	= 907.18486 kg	= 32,000 oz	
1 milligram (mg)	= 0.001 g			
1 gram (g)	= 1,000 mg	= 0.035274 oz	= 0.0022046 lb	= 0.001 kg
1 kilogram (kg)	= 1,000 g	= 35.273957 oz	= 2.20462 lb	
1 ton (metric)	= 2,204.6 lb	= 1,000 kg		

### Square (or Surface) Measures

1 square inch (in <sub>2</sub> )	= 6.451626 cm <sub>2</sub>	= 0.0069444 ft <sub>2</sub>		
1 square foot (ft <sub>2</sub> )	= 144 in <sub>2</sub>	= 0.111 yd <sub>2</sub>	= 0.0929 m <sub>2</sub>	
1 square yard (yd <sub>2</sub> )	= 9 ft <sub>2</sub>	= 1,296 in <sub>2</sub>	= 0.83613 m <sub>2</sub>	
1 acre (ac) = 43,560 ft <sub>2</sub>	= 4,840 yd <sub>2</sub>	= 4,046.873 m <sub>2</sub>	= 0.404687 ha	= 0.0015625 mi <sub>2</sub>
1 square mile = 640 ac	= 1 section	= 258.9998 ha	= 3,097,600 yd <sub>2</sub>	= 2,589,998 km <sub>2</sub>
1 square millimeter (mm <sub>2</sub> )	= 0.01 cm <sub>2</sub>	= 0.000001 m <sub>2</sub>	= 0.00155 in <sub>2</sub>	
1 square centimeter (cm <sub>2</sub> )	= 100 mm <sub>2</sub>	= 0.155 in <sub>2</sub>	= 0.001076 ft <sub>2</sub>	
1 square meter (m <sub>2</sub> )	= 10.76387 ft <sub>2</sub>	= 1,550 in <sub>2</sub>	= 1.195985 yd <sub>2</sub>	= 1,000,000 mm <sub>2</sub> = 10,000 cm <sub>2</sub>
1 hectar (ha)	= 2.471 ac	= 395.367 rod <sub>2</sub>	= 10,000 m <sub>2</sub>	= 0.01 km <sub>2</sub> = 0.0039 mi <sub>2</sub>
1 square kilometer (km <sub>2</sub> )	= 0.3861 mi <sub>2</sub>	= 247.1 ac	= 100 ha	= 1,000,000 m <sub>2</sub>

# Conversion Factors Continued

## Cubic Measures

1 cubic inch (in<sub>3</sub>) = 16.3872 cm<sub>3</sub> = 0.000579 ft<sub>3</sub> = 0.00433 U.S. gal  
1 cubic foot (ft<sub>3</sub>) = 0.80356 bu = 1,728 in<sub>3</sub> = 0.037037 yd<sub>3</sub> = 0.028317 m<sub>3</sub> = 7.4805 U.S. gal = 6.229 imperial gal =  
28.316 l = 29.922 qt (liquid) = 25.714 qt (dry)  
1 cubic foot (ft<sub>3</sub>) of water = 62.43 lb (1 lb of water = 27.68 in<sub>3</sub> = 0.1198 U.S. gal = 0.01602 ft<sub>3</sub>)  
1 cubic foot (ft<sub>3</sub>) of dry soil (approximate) = 90 lb (sandy), 80 lb (loamy), 75 lb (clay)  
1 bushel (bu) dry soil (approximate) = 112 lb (sandy), 100 lb (loamy), 94 lb (clay)  
1 cubic yard (yd<sub>3</sub>) = 27 ft<sub>3</sub> = 46,656 in<sub>3</sub> = 764.559 l = 202 U.S. gal = 0.764559 m<sub>3</sub>  
1 cubic centimeter (cc) = 0.06102 in<sub>3</sub> = 1,000 ml<sub>3</sub> = 0.000001 m<sub>3</sub>  
1 cubic meter (m<sub>3</sub>) = 1.30794 yd<sub>3</sub> = 35.3144 ft<sub>3</sub> = 28.3776 bu = 264.173 gal = 61,023 in<sub>3</sub> = 1,000,000 cm<sub>3</sub>

## Volumes (U.S. — Dry)

1 quart (qt) = 67.2 in<sub>3</sub> = 2 pt = 1.10121 l = 0.125 pk = 0.03125 bu = 0.038889 ft = 67.2 in<sub>3</sub>  
1 peck (pk) = 0.25 bu = 2 gal = 8 qt = 16 pt = 32 c = 8.809581 l = 537.605 in<sub>3</sub>  
1 bushel (bu) = 4 pk = 32 qt = 64 pt = 128 c = 1.2445 ft<sub>3</sub> = 35.2383 l = 2,150.42 in<sub>3</sub>

## Volumes (U.S. — Liquid)

1 fluid ounce (fl oz) = 2 tablespoons = 0.125 c = 0.0625 pt = 0.03125 qt = 0.00781 gal = 29.573 ml = 1.80469 in =  
0.029573 l  
1 cup (c) = 16 tablespoons = 8 fl oz = 0.5 pt = 236.6 cm<sub>3</sub>  
1 pint (pt) U.S. = 16 fl oz = 32 tablespoons = 2 c = 0.125 gal = 473.167 ml = 28.875 in<sub>3</sub> = 0.473167 l = 0.0167 ft<sub>3</sub>  
1 quart (qt) = 2 pt = 4 c = 8 gills = 32 fl oz = 57.749 in<sub>3</sub> = 64 tablespoons = 0.25 gal = 0.94633 l = 0.3342 ft<sub>3</sub>  
1 gallon (gal) = 4 qt = 8 pt = 16 c = 128 fl oz = 0.1337 ft<sub>3</sub> = 3,785.4 ml = 231 in<sub>3</sub> = 8.337 lb water = 3.782 kg  
1 milliliter (ml) = 1 cm<sub>3</sub> = 0.1 centiliter = 0.01 deciliter = 0.001 l = 0.061 in<sub>3</sub> = 0.03815 fl oz  
1 liter (l) = 2.1134 pt = 1.0567 liquid qt = 0.9081 dry qt = 0.264178 gal = 10 dl = 1,000 ml = 33.8147 fl oz = 61.03 in<sub>3</sub> =  
0.035 ft<sub>3</sub> = 0.02838 bu = 0.001308 yd<sub>3</sub>

## Linear (or Distance Measures)

1 inch (in) = 25.4 mm = 2.54 cm = 0.0254 m = 0.083333 ft = 0.027778 yd  
1 foot (ft) = 12 in = 0.3333 yd = 0.060606 rod = 30.48 cm = 0.3048 m  
1 yard (yd) = 36 in = 3 ft = 0.9144 m  
1 mile (mi) statute = 5,280 ft = 1,760 yd = 1,609.35 m = 63,360 in  
1 millimeter (mm) = .01 cm = 0.01 dm = 0.001 m = 1,000 microns = 0.03937 in  
1 centimeter (cm) = 10 mm = 0.01 m = 0.3937 in = 0.0328 ft = 0.01094 yd  
1 decimeter (dm) = 10 cm = 0.1 m = 3.937 in  
1 meter (m) = 100 cm = 39.37 in = 3.2808 ft = 1.09361 yd = 0.001 km  
1 kilometer (km) = 1,000 m = 3,280.8 ft = 1,093.6 yd = 0.62137 mi

# Conversion Factors Continued

## Dilutions

1 part per million (ppm) = 1 milligram per liter or kilogram = 0.0001% = 0.013 ounce by weight in 100 gallons = 0.379 grams in 100 gallons = 1 pound in 500 tons

1 percent (%) = 10,000 parts per million = 10 grams per liter = 1.28 ounces by weight per gallon = 8.336 pounds per 100 gallons

## Miscellaneous Weights and Measures

1 micrometer = 0.00039 in

1 acre-inch of water = 27,152.4 gall = 624.23 gal per 1,000 ft

1 pound per cubic foot = 0.26 g per in<sup>3</sup>

1 gram per cubic inch = 3.78 lb per ft<sup>3</sup>

## Approximate Rates of Application Equivalents (U.S. Measures)

1 ounce per square foot = 2,722.5 lb per ac

1 ounce per square yard = 302.5 lb per ac

1 ounce per 100 square feet = 27.2 lb per ac

1 pound per 100 square feet = 435.6 lb per ac

1 pound per 1,000 square feet = 43.56 lb per ac

1 pound per acre = 1 oz per 2,733 ft<sup>2</sup> (0.37 oz/1,000 ft<sup>2</sup>) = 4.5 g per gal = 0.0104 g per ft<sup>2</sup> = 1.12 kg per ha

100 pounds per acre = 2.5 lb per 1,000 ft<sup>2</sup> = 1.04 g per ft<sup>2</sup>

5 gallons per acre = 1 pt per 1,000 ft<sup>2</sup> = 0.43 ml per ft<sup>2</sup>

100 gallons per acre = 2.5 gal per 1,000 ft<sup>2</sup> = 1 qt per 100 ft<sup>2</sup> = 935 l per ha

1 quart per 100 gallons (approximate) = 10 ml per gal

1 pound per gallon = 120 g per l

1 kilogram per hectare = 0.89 lb per ac