

Metric System Conversion Factors¹

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Area Equivalents

1 Acre (A)

= 43,560 *square feet* (ft^2)

= 4,840 *square yards* (yd^2)

= 0.405 *hectares* (*ha*)

= 160 *square rods* (rd^2)

= 4,047 *square meters* (m^2)

1 Acre-inch (ac-in)

= 102.8 *cubic meters* (m^3)

= 27,154 *gallons, US* (*gal*)

= 3,630 *cubic feet* (ft^3)

1 Are (a)

= 100 *square meters* (m^2)

= 119.6 *square yards* (yd^2)

= 0.025 *acre* (A)

1 Cubic Foot (ft^3)

= 1,728 *cubic inches* (in^3)

= 0.037 *cubic yards* (yds^3)

= 0.02832 *cubic meters* (cm^3)

= 28,320 *cubic centimeters* (cm^3)

1 Cubic Yard (yd^3)

= 27 *cubic feet* (ft^3)

= 0.764 *cubic meters* (m^3)

1 Hectare (ha)

= 10,000 *square meters* (m^2)

= 100 *are* (a)

= 2.471 *acres* (A)

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1 Square Foot (ft²)= 144 *square inches (in²)*= 929.03 *square centimeters (cm²)*= 0.0929 *square meters (m²)***1 Square Mile (mi²)**= 27,878,400 *square feet (ft²)*= 3,097,600 *square yards (yd²)*= 640 *square acres (A²)*= 2,589,988.11 *square meters (m²)***1 Square Rod (rd²)**= 39,204 *square inches (in²)*= 272.25 *square feet (ft²)*= 30.25 *square yards (yds²)*= 25.3 *square meters (m²)***1 Square Yard (yd²)**= 9 *square feet (ft²)*= 0.836 *square meters (m²)***Flow Equivalents****1 Gallon Per Minute (GPM, gal/min)**= 0.134 *cubic feet/minute (CFMft³/min)***1 Cubic Foot Per Minute (CFM, ft³/min)**= 449 *gallons per hour (GPH)*= 7.481 *gallons per minute (GPM)***Length Equivalents****1 Centimeter (cm)**= 0.3937 *inch (in)*= 0.01 *meter (m)*= 0.03281 *foot (ft)***1 Chain, Gunter's or Surveyor's (ch)**= 792 *inches (in)*= 66 *feet (ft)*= 22 *yards (yd)*= 4 *rods (rd)*= 0.0125 *miles (mi)*= 2011.68 *centimeters (cm)*= 20.116 *meters (m)***1 Foot (ft)**= 12 *inches (in)*= 30.48 *centimeters (cm)*= 0.3048 *meters (m)***1 Inch (in)**= 0.08333 *foot (ft)*= 25.4 *millimeters (mm)*= 2.54 *centimeters (cm)*= 0.0254 *meters (m)***1 Kilometer (km)**= 39,370 *inches (in)*= 3,281 *feet (ft)*= 0.621 *U.S. statute mile (mi)*= 100,000 *centimeters (cm)*= 1,000 *meters (m)***1 Meter (m)**= 39.4 *inches (in)*= 3.28 *feet (ft)*= 1.094 *yards (yd)*= 1000 *millimeters (mm)*

= 100 *centimeters (cm)*

1 Micrometer (micron, μm)

= 0.001 *millimeters (mm)*

= 1×10^{-3} *millimeters (mm)*

1 Rod (rd)

= 198 *inches (in)*

= 16 1/2 *feet (ft)*

= 5 1/2 *yards (yd)*

= 1/4 *chain (ch)*

= 502.92 *centimeters (cm)*

= 5.03 *meters (m)*

1 Statute Mile (mi)

= 5,280 *feet (ft)*

= 1,760 *yards (yd)*

= 1,609 *meters (m)*

= 1.61 *kilometers (km)*

1 Yard (yd)

= 36 *inches (in)*

= 3 *feet (ft)*

= 0.9144 *meters (m)*

Liquid Equivalents

1 Acre-inch of Water (ac in)

= 27,154 *gallons (gal)*

= 3,630 *cubic feet (ft³)*

1 Cubic Foot of Water (ft³)

= 7.48 *gallons, US (gal)*

= 62.4 *pounds, US (lb, #)*

= 28.3 *liters (L)*

1 Cup, measuring (c)

= 8 *fluid ounces (fl. oz.)*

= 1/2 *pint (pt)*

= 16 *tablespoons (tbsp)*

= 236.6 *milliliters (ml)*

1 Fluid Ounce, US (fl. oz.)

= 6 *teaspoons (tsp)*

= 2 *tablespoons (tbsp)*

= 29.57 *milliliters (ml)*

1 Gallon, US (gal)

= 4 *quarts (qt)*

= 8 *liquid pints (pt)*

= 16 *cups (c)*

= 256 *tablespoons (tbsp)*

= 128 *fluid ounces, US (fl. oz.)*

= 8.337 *pounds, US (lb, #) of water*

= 3.785 *liters (L)*

= 3,785 *milliliters (ml)*

= 0.1337 *cubic foot (ft³)*

= 231 *cubic inches (in³)*

= 0.8333 *Imperial gallon*

1 Liquid Pint, US (pt)

= 2 *cups (c)*

= 32 *tablespoons (tbsp)*

= 16 *fluid ounces, US (fl. oz.)*

= 473.2 *milliliters (ml)*

1 Liquid Quart, US (qt)

= 2 *liquid pints, US (pt)*

= 4 *cups (c)*

= 64 *tablespoons (tbsp)*

= 32 *fluid ounces, US (fl. oz.)*

= 57.75 *cubic inches (in³)*

= 0.9463 *liters (L)*

1 Liter (L)

= 1,000 *milliliters (ml)*

= 33.8 *fluid ounces, US (fl. oz.)*

= 2.1 *liquid pints, US (pt)*

= 1.057 *liquid quarts, US (qt)*

= 0.26 *gallons, US (gal)*

1 Milliliter (mL)

= 1 *cubic centimeter (cm³)*

= 0.34 *fluid ounces, US (fl. oz.)*

= 0.002 *liquid pint, US (pt)*

1 Tablespoon (tbsp)

= 3 *teaspoons (tsp)*

= 14.8 *milliliters (ml)*

= 1/2 *fluid ounces, US (fl. oz.)*

1 Teaspoon (tsp)

= 80 *drops*

= 0.1667 *fluid ounces, US (fl.oz.)*

= 4.93 *milliliters (ml)*

Mixture Proportions

1 *pint/100 gallons = 1 teaspoon/1 gallon*

1 *quart/100 gallons = 2 tablespoons/1 gallon*

Pressure Equivalents

1 *pound per square inch (PSI) = 6.9 kilopascal (kPa)*

Temperature Equivalents

Convert degrees Centigrade (°C) to degrees Fahrenheit (°F)

degrees Centigrade (°C) = (°F - 32) x 5/9

Convert degrees Fahrenheit (°F) to degrees Centigrade (°C)

degrees Fahrenheit (°F) = (°C x 9/5) + 32

Weight Equivalents

1 Ton, US, short or net

= 2,000 *pounds, US (lb, #)*

= 0.907 *metric tons*

= 907.2 *kilograms (kg)*

1 Metric Ton

= 1,000 *kilograms (kg)*

= 10⁶ (1 million) *grams (g)*

= 2,205 *pounds, US (lb, #)*

1 Pound, US (lb, #)

= 16 *ounces, weight (oz.)*

= 7,000 *grains*

about 1 *liquid pint (pt)*

= 453.6 *grams (g)*

= 0.4536 *kilograms (kg)*

1 Ounce, weight (oz.)

= 28.35 *grams (g)*

1 Kilogram (kg)

= 1,000 *grams (g)*

= 35.3 *ounces, weight (oz.)*

= 2.205 *pounds, US (lb, #)*

1 Gram (g)= 1,000 *milligrams (mg)*= 0.001 *kilograms (kg)*= 0.035 *ounces, weight (oz.)*= 0.0022 *pounds, US (lb, #)***1 Milligram (mg)**= 0.001 *grams (g)*= 10^{-3} *grams (thousandth)***1 Microgram (μg)**= 0.001 *milligrams (mg)*= 10^{-6} *grams (millionth)***1 Nanogram (ng)**= 0.001 *micrograms (μg)*= 10^{-9} *grams (billionth)***1 Picogram (pg)**= 10^{-12} *grams (trillionth)***1 Part Per Billion (ppb)**= 1 *nanogram per gram (ng/g)*= 1 *microgram per kilogram ($\mu\text{g}/\text{kg}$)*= 1 *microgram per liter ($\mu\text{g}/\text{L}$)***1 Part Per Million (ppm)**= 1 *milligram per liter (mg/L)*= 1 *milligram per kilogram (mg/kg)*= 1 *microgram per gram ($\mu\text{g}/\text{g}$)*= 0.0001 *percent (%)*= 0.013 *fluid ounces per 100 gallon water***1 Part Per Trillion (ppt)**= 1 *picogram per gram (pg/g)***1 Percent (%)**= 10,000 *parts per million (ppm)*= 10 *grams per liter (g/L)*= 1.33 *ounces (oz.) by weight per 1 gallon water*= 8.34 *pounds (lb, #) per 100 gallons water***MIXTURE RATIOS**1 *milligram per gram (mg/g) = 1,000 parts per million (ppm)*1 *fluid ounce, US per 1 gallon, US (1 fl. oz./1 gal) = 7,490 parts per million (ppm)*1 *fluid ounce, US per 100 gallons, US (1 fl. oz./100 gal) = 75 parts per million (ppm)***SLOPES**

10% = 6° = 10:1

18% = 10° = 6:1

25% = 14° = 4:1

33% = 18° = 3:1

50% = 26° = 2:1

100% = 45° = 1:1

Table 1. Metric prefix definitions, multiples, and equivalents

PREFIX	MULTIPLE	EQUIVALENT
tera -	10 ¹²	trillionfold
giga -	10 ⁹	billionfold
mega -	10 ⁶	millionfold
kilo -	10 ³	thousandfold
hecto -	10 ²	hundredfold
deca -	10 ¹	tenfold
PREFIX	SUBMULTIPLE	EQUIVALENT
deci -	10 ⁻¹	tenth
centi -	10 ⁻²	hundredth
milli -	10 ⁻³	thousandth
micro -	10 ⁻⁶	millionth
nano -	10 ⁻⁹	billionth
pico -	10 ⁻¹²	trillionth

Note: basic metric unit = 1

Table 2. Conversion factors

TO CONVERT	MULTIPLY BY	TO OBTAIN
Acres	43,560	Square Feet (ft ²)
Acres	0.00405	Square Kilometer (km ²)
Acres	4050	Square Meter (m ²)
Acres	4840	Square Yards (yd ²)
Acre-Feet	324,851	Square Feet (ft ²)
Acre-Feet	43,560	Cubic Feet (ft ³)
Acre-Feet	1233.5	Cubic Meters (m ³)
Bar	14.5	Pounds Per Square Inch (psi, lb/sq.in., #/in ²)
Bar	1019.7	Grams Per Cubic Centimeters (g/cm ³)
Bar	29.53	Inches of Mercury at Zero Degrees Centigrade (in hg @ 0°C)
Centimeters (cm)	0.03281	Feet (ft)
Centimeters	0.3937	Inches (in)
Centimeters	0.1094	Yards (yd)
Centimeters	0.01	Meters (m)
Centimeters	10	Millimeters (MM)
Centimeters Per Second (cm/sec)	1.9685	Feet Per Minute (ft/min)
Centimeters Per Second (cm/sec)	0.0223694	Miles Per Hour (mph)
Cubic Centimeters (cm ³)	0.0610237	Cubic Inches (in ³)
Cubic Feet (ft ³)	0.0283	Cubic Meter (m ³)
Cubic Feet	7.4805	Gallons (gal)
Cubic Feet	1728	Cubic Inches (in ³)
Cup	8	Fluid Ounces (fl oz.)
Feet (ft)	30.48	Centimeters (cm)
Feet	0.3048	Meters(m)
Foot Candle	10.764	Lux
Gallons (gal)	3.785	Liters (l)

Table 2. Conversion factors

TO CONVERT	MULTIPLY BY	TO OBTAIN
Gallons	3,785	Milliliters (ml)
Gallons	128	Ounces, Liquid (fl oz.)
gal/Acre (GPA)	9.354	Liters/Hectare (l/ha)
gal/1000 ft ²	4.0746	Liters/100 Square Meters (l/100m ³)
GAL/Minute (gpm)	2.228 X 10 ⁻³	Cubic Feet/Second (ft ³ /sec)
Grams (g)	0.002205	Pounds, US (lbs, #)
Grams	0.0235274	Ounces, US Weight (oz.)
Grams Per Liter (g/l)	1,000	ppm
Grams Per LITER (g/l)	10	Percent (%)
Grams/Square Meter (g/m ²)	0.00020481	Pounds Per Square Feet (lb/sq ft, #/ft ²)
Grams Per Cubic Meter (g/cm ³)	0.036127	Pounds Per Cubic Inch (lb/in ³)
Grams Per Cubic Meter (g/cm ³)	62.428	Pounds Per Cubic Foot (lb/ft ³)
Hectares (ha)	2.471	Acres (A)
Inches	2.540	Centimeters (cm)
Inches	0.0254	Meters (m)
Inches	25.40	Millimeters (mm)
Square Inches (in ²)	6.4516	Square Centimeters (cm ²)
Cubic Inches (in ³)	16.3871	Cubic Centimeters (cm ³)
Kilograms (kg)	2.2046	Pounds, US (lbs, #)
Kilograms/Hectare (kg/ha)	0.892	Pounds/Acre
Kilograms/Hectare (kg/ha)	0.02048	Pounds Per 1000 Square Feet (lb/1000 ft ²)
Kilogram Per Liter (kg/l)	8.3454	Pounds Per Gallon (lb/gal)
Kilometers (km)	100,000	Centimeters (cm)
Kilometers	3,281	Feet (ft)
Kilometers	1,000	Meters (m)
Kilometers	0.6214	Miles (mi)
Kilometers	1,094	Yards (yd)
Kilometers Per Hour (km/h)	0.62137	Miles Per Hour (mph)
Kilometers Per Hour (km/h)	54.6807	Feet Per Minute
Liters (l)	0.2642	Gallons (gal)
Liters	2.113	Pints (pt)
Liters	1.057	Quarts (qt)
Liters/Acre	0.107	Gallons/Acre
Liters/100 Square Meters (l/100 m ²)	0.2454	Gallons/1000 Square Feet (gal/1000ft ²)
Liters/Hectare (l/ha)	0.107	Gallons Per Acre
Meters (m)	3.281	Feet (ft)
Meters	39.37	Inches (in)
Meters	1.094	Yards (yd)
Meters	100	Centimeters (cm)
Meters	0.001	Kilometers (km)
Meters	1,000	Millimeters (mm)
Meters Per Second (m/sec)	2.2369	Miles Per Hour (mph)
Square Meters (m ²)	10.764	Square Feet (ft ²)
Cubic Meters (m ³)	35.3147	Cubic Feet (ft ³)
Cubic Meters (m ³)	1.30795	Cubic Yards (yd ³)
Miles (mi)	160,900	Centimeters (cm)

Table 2. Conversion factors

TO CONVERT	MULTIPLY BY	TO OBTAIN
Miles	5280	Feet (ft)
Miles	1.609	Kilometers (km)
Miles	1760	Yards (yd)
Miles/Hour (mph)	1.467	Feet/Second (ft/sec)
Miles/Hour	88	Feet/Minute (ft/min)
Miles/Hour	1.61	Kilometers/Hour (km/hr)
Miles/Hour	0.447	Meter/Second (m/sec)
Milliliters (ml)	0.0338	Ounces, Fluid (fl oz.)
Millimeters (mm)	0.03937	Inches (in)
Ounces, Fluid (fl. oz.)	0.02957	Liters (l)
Ounces, Fluid (fl. oz.)	29.573	Milliliters (ml)
Ounces, US, Weight (oz.)	28.35	Grams (gm)
Parts Per Million (ppm)	2.719	Pounds of Active Ingredient (lb ai)/Acre-foot of Water
PPM	0.001	Grams/Liter (gm/l)
PPM	8.34	Pounds/Million gal (lb/Mgal)
PPM	1	Milligrams/Kilograms (mg/kg)
PPM	0.013	Ounces/100 gal of Water
PPM	0.3295	Gallons/Acre-foot of Water
PPM	8.345	Pounds/Million gal of Water
Percent (%)	10	Grams/Kilograms (g/kg)
Pint, Liquid (pt.)	0.473	Liter (l)
Pint Per Acre (pt/a)	1.1692	Liter Per Hectare (l/ha)
Pounds, US (lb, #)	0.4536	Kilograms (kg)
Pounds	453.6	Grams (g)
Pounds/Acre	1.12	Kilograms/Hectare (kg/ha)
Pounds/Acre (lb/a)	0.02296	Pounds Per 1000 Square Feet (lb/1000 ft ²)
Pounds/Square Feet (lb/ft ²)	4883	Grams/Square meter (gm/m ²)
Pounds/Gallon	0.12	Kilogram/Liter (kg/l)
PSI; Pounds Per Square Inch (lbs/in ²)	6.9	Kilopascals (kPa)
PSI	0.06895	Bar
PSI	0.062046	Atmosphere (atm)
Quarts, Liquid (qt)	0.9463	Liters (l)
Quarts Per Acre (qt/a)	2.3385	Liters Per Hectare (l/ha)
Square Centimeters (cm ²)	0.001076	Square Feet (ft ²)
Square Centimeters	0.1550	Square inches (in ²)
Square Feet (ft ²)	929	Square Centimeters (cm ²)
Square Feet	0.0929	Square Meters (m ²)
Square Feet	9.294 X 10 ⁻⁶	Hectares (ha)
Square Inch	6.452	Square Centimeters (cm ²)
Ton (2000 lbs)	907	Kilograms (kg)
Yards (yd)	91.44	Centimeters (cm)
Yards	0.9144	Meters (m)
Yards	914.4	Millimeters (mm)
Cubic yards (Yd ³)	0.7645	Cubic Meters (m ³)
Phosphoric Acid (P ₂ O ₅)	0.437	Phosphorus (P)
Potassium Oxide (K ₂ O)	0.830	Potassium (K)

Table 2. Conversion factors

TO CONVERT	MULTIPLY BY	TO OBTAIN
Calcium Oxide (CaO)	0.715	Calcium (Ca)
Magnesium Oxide (MgO)	0.602	Magnesium (Mg)

Table 3. Decimal and millimeter length equivalents.

FRACTION (inch) =	DECIMALS (inch) =	MILLIMETERS
1	1.00	25.4
15/16	0.9375	23.812
7/8	0.875	22.225
13/16	0.8125	20.638
3/4	0.75	19.05
11/16	0.6875	17.462
5/8	0.625	15.875
9/16	0.5625	14.288
1/2	0.5	12.70
7/16	0.4375	11.112
3/8	0.3750	9.525
11/32	0.34375	8.731
5/16	0.3125	7.938
9/32	0.28125	7.144
1/4	0.25	6.350
15/64	0.234375	5.953
7/32	0.21875	5.556
13/64	0.203125	5.159
3/16	0.1875	4.762
11/64	0.171875	4.366
5/32	0.15625	3.969
9/64	0.140625	3.572
1/8	0.1250	3.175
7/64	0.109375	2.778
3/32	0.09375	2.381
5/64	0.078125	1.984
1/16	0.0625	1.588
3/64	0.046875	1.191
1/32	0.03125	0.794
1/64	0.015625	0.397