

# Agricultural Measurements and Conversions

## Length (linear) measurements and conversions

- 1 foot = 12 inches
- 1 yard = 3 feet
- 1 surveyor's rod = 16.5 feet
- 1 mile = 5,280 feet
- 1 mile = 1,760 yards
- 1 mile = 320 surveyors rods
- 1 mile = .869 nautical miles
- 1 nautical mile = 1.151 mile
- 1 kiloyard = 3000 feet
- 1 kiloyard = .568 mile
- 1 mile = 1.76 kiloyards
- 1 knot = 1.151 mile/hour
- 1 mile/hour = .8690 knots
- 1 mile = 8 surveyors furlongs
- 1 surveyors furlong = 0.125 mile
- 1 furlong = 660 feet
- 1 fathom = 6 feet
- 1 foot = .1667 fathom
- 1 hand (equine) = 4 inches = 10.16 centimeters

Online conversion: [http://www.onlineconversion.com/length\\_common.htm](http://www.onlineconversion.com/length_common.htm)

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

Length Converter – Unit Converter: [http://www.unitconversion.org/unit\\_converter/length.html](http://www.unitconversion.org/unit_converter/length.html)

## Surface (area) measurements and conversions

- 1 square foot = 144 square inches
- 1 square foot = 929 square centimeters
- 1 square inch = 6.451 square centimeters
- 1 square yard = 9 square feet
- 1 square yard = .836 square meters
- 1 square rod = 30.25 square yards
- 1 square rod = 272.25 square feet
- 1 square rod = 25.293 square meters
- 1 square centimeter = .155 square inches
- 1 square decimeter = 15.5 square inches
- 1 square meter = 1.196 square yards
- 1 square meter = 10.764 square feet
- 1 square kilometer = 247.1 acres

- 1 square kilometer = .386 square mile
- 1 acre = 160 square rods
- 1 acre = 1 rod wide and 0.5 mile long
- 1 acre = 43,560 square feet
- 1 square acre = 208.71 feet by 208.71 feet
- 1/2 acre = 147.58 feet wide and 147.58 feet long
- 1/4 square acre = 104.355 feet wide and 104.355 feet long
- 1 acre = 4,840 square yards
- 1 square acre = 69.57 yards by 69.57 yards
- 1 circular acre = 235.504 feet in diameter
- 1 centiare = 1 square meter
- 1 are = 100 square meters
- 1 square are = 10 meters by 10 meters
- 1 are = 100 centiares
- 1 are = .025 acres
- 1 are = 119.599 square yards
- 1 decare = 1,000 square meters
- 1 decare = 10 ares
- 1 hectare = 10,000 square meters
- 1 hectare = 10 decares
- 1 hectare = 2.47105 acres
- 1 acre = .404686 hectares
- 1 square hectare = 100 meters by 100 meters
- 1 hectare = 107,584 square feet
- 1 square hectare = 328 feet by 328 feet
- 1 square mile = 259 hectares
- 1 square kilometer = 1,000,000 square meters
- 1 square kilometer = 100 hectares
- 1 square kilometer = 10 hectares by 10 hectares

Online Conversions: <http://www.onlineconversion.com/area.htm>

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

Biomass Energy Data Book, U.S. Department of Energy: [https://cta.ornl.gov/bedb/appendix\\_a.shtml](https://cta.ornl.gov/bedb/appendix_a.shtml)  
Area Conversion – Unit Converter: [http://www.unitconversion.org/unit\\_converter/area.html](http://www.unitconversion.org/unit_converter/area.html)

### U.S. government land measurements and conversions

1 township = 36 sections  
 1 section = 640 acres  
 1 section = 1 square mile  
 1 quarter section = 160 acres  
 1 quarter section = 0.5 mile long and 0.5 mile wide  
 1 eighth section = 80 acres  
 1 eighth section = 1/2 mile long and 1/4 mile wide  
 1 sixteenth section = 40 acres  
 1 sixteenth section = 1/4 mile long and 1/4 mile wide

### Surveyor's measurements and conversions

1 link = 7.92 inches  
 1 link = .66 feet  
 1 rod = 25 links  
 1 rod = 16.5 feet  
 1 pole = 1 rod  
 1 pole = 25 links  
 1 chain = 4 rods  
 1 chain = 66 feet  
 1 acre = 10 square chains  
 1 mile = 80 chains

### Volume measurements and conversions

1 cubic foot = 1,728 cubic inches  
 1 cubic yard = 27 cubic feet

### Dry

1 teaspoon = .17 fluid ounces (1/6 oz.)  
 1 tablespoon (1/2 oz.) = 3 teaspoons (level)  
 1 peck = 8 quarts  
 1 bushel = 4 pecks  
 1 chaldron = 36 bushels  
 1 bushel grain or shelled corn = 1.25 cubic feet  
 1 cubic foot grain or shelled corn = .8 bushels  
 1 bushel ear corn = 2.5 cubic feet  
 1 cubic foot ear corn = .4 bushels  
 1 board ft. = 1" x 12" x 12" nominal dimensions  
 1 cord (wood) = 128 cubic feet  
 1 cubic yard concrete = 81 sq. ft.—4" floor  
 1 cubic yard concrete = 54 sq. ft.—6" floor

Volume – Dry Conversion – Unit Converter: [http://www.unitconversion.org/unit\\_converter/volume-dry.html](http://www.unitconversion.org/unit_converter/volume-dry.html)

### Liquid

1 fluid ounce = 2 tablespoons  
 1 cup (liquid) = 16 tablespoons (8 ounces)  
 1 quart = 2 pints  
 1 gallon = 4 quarts  
 1 cup = 8 fluid ounces  
 1 pint = 2 cups  
 1 pint = 16 fluid ounces  
 1 quart = 2 pints  
 1 quart = 32 fluid ounces  
 1 gallon = 128 ounces  
 1 gallon = .1337 cubic feet  
 1 cubic foot = 7.48 gallons  
 1 gallon = 231 cubic inches  
 1 gallon = 32 gill  
 1 US gallon = .8327 imperial gallons (British)  
 1 imperial gallon (British) = 1.201 U.S. gallons  
 1 gallon water (20° C) = 8.33 pounds  
 1 foot of water (4° C) = .4335 pounds per sq. inch  
 1 pound per sq. inch = 2.307 feet of water (4° C)  
 1 cubic foot = 62.427 pounds of water (4° C)  
 1 gallon = 8.33 pounds of water (4° C)  
 1 acre inch = 27,154 gallons liquid  
 1 acre foot = 325,851 gallons liquid

Online Conversion: <http://www.onlineconversion.com/volume.htm>

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

Capacity and Volume Converter – Unit Converter: [http://www.unitconversion.org/unit\\_converter/volume.html](http://www.unitconversion.org/unit_converter/volume.html)

### Velocity

1 mile per hour = 1.467 feet per second  
 1 mile per hour = .4469 meters per second  
 1 mile per hour = 1.609 kilometers per hour  
 1 kilometer per hour = .9114 feet per second  
 1 kilometer per hour = .2778 meters per second  
 1 kilometer per hour = .6214 miles per hour  
 1 meter per second = 3.281 feet per second  
 1 meter per second = 2.237 miles per hour

1 meter per second = 3.6 kilometers per hour  
 1 foot per second = .3048 meters per second  
 1 foot per second = .6818 miles per hour  
 1 foot per second = 1.0972 kilometers per hour

Biomass Energy Data Book; U.S. Department of Energy [https://cta.ornl.gov/bedb/appendix\\_a.shtml](https://cta.ornl.gov/bedb/appendix_a.shtml)  
 Velocity Conversion – Unit Converter: [http://www.unitconversion.org/unit\\_converter/velocity.html](http://www.unitconversion.org/unit_converter/velocity.html)

## Flow Rate

### Mass

1 short (U.S.) ton (2,000 lbs.) per day = .907 metric tons per day  
 1 short ton per day = 37.80 kilograms per hour  
 1 short ton per day = .630 kilograms per minute  
 1 short ton per day = 83.33 pounds per hour  
 1 short ton per day = 1.389 pounds per minute

1 short ton per hour = 33.33 pounds per minute  
 1 short ton per hour = 15.12 kilograms per minute

1 metric ton (2,205 lbs.) per day = 1.102 short tons per day  
 1 metric ton per day = 41.67 kilograms per hour  
 1 metric ton per day = .694 kilograms per minute  
 1 metric ton per day = 91.86 pounds per hour  
 1 metric ton per day = 1.531 pounds per minute

1 metric ton per hour = 36.74 pounds per minute  
 1 metric ton per hour = 16.67 kilograms per minute

Online conversion: [http://www.onlineconversion.com/flow\\_rate\\_mass.htm](http://www.onlineconversion.com/flow_rate_mass.htm)  
 Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

### Volume

1 cubic foot per hour = .0283 cubic meter per hour  
 1 cubic meter per hour = 35.315 cubic feet per hour

1 U.S. gallon per hour = 3.785 liters per hour  
 1 gallon per hour = 3.209 cubic feet per day  
 1 gallon per hour = 1,171 cubic feet per year  
 1 gallon per hour = 90.84 liters per day

1 gallon per hour = 33,157 liters per year  
 1 gallon per hour = 19.97 imperial gallons per day  
 1 gallon per hour = 7,289 imperial gallons per year

1 liter per hour = .264 gallons per hour  
 1 liter per hour = .8474 cubic feet per day  
 1 liter per hour = 309.3 cubic feet per year  
 1 liter per hour = 6.298 U.S. gallons per day  
 1 liter per hour = 2,299 U.S. gallons per year  
 1 liter per hour = 5.28 imperial gallons per day  
 1 liter per hour = 1,927 imperial gallons per year

1 acre foot per day = 325,851 gallons per day  
 1 acre foot per day = 13,577 gallons per hour  
 1 acre foot per day = 266 gallons per minute  
 1 acre foot per day = 3.77 gallons per second  
 1 acre foot per day = 1815.00 cubic feet per hour  
 1 acre foot per day = 30.250 cubic feet per minute  
 1 acre foot per day = .504 cubic feet per second  
 1 acre foot per day = 67.222 cubic yards per hour  
 1 acre foot per day = 1.120 cubic yards per minute  
 1 acre foot per day = 51.40 cubic meters per hour  
 1 acre foot per day = .857 cubic meters per minute

1 acre foot per hour = 7,820,434 gallons per day  
 1 acre foot per hour = 325,851 gallons per hour  
 1 acre foot per hour = 5,430.86 gallons per minute  
 1 acre foot per hour = 90.51 gallons per second  
 1 acre foot per hour = 43,600 cubic feet per hour  
 1 acre foot per hour = 726.000 cubic feet per minute  
 1 acre foot per hour = 12.100 cubic feet per second  
 1 acre foot per hour = 1,613 cubic yards per hour  
 1 acre foot per hour = 26,889 cubic yards per minute  
 1 acre foot per hour = .448 cubic yards per second  
 1 acre foot per hour = 1,233.48 cubic meters per hour  
 1 acre foot per hour = 20.56 cubic meters per minute  
 1 acre foot per hour = .343 cubic meters per second

1 acre inch per hour = 27,154 gallons per day  
 1 acre inch per hour = 1131.43 gallons per hour  
 1 acre inch per hour = 18.857 gallons per minute  
 1 acre inch per hour = .314 gallons per second  
 1 acre inch per hour = 60.50 cubic feet per minute  
 1 acre inch per hour = 1.008 cubic feet per second  
 1 acre inch per hour = 2.241 cubic yards per minute

1 acre inch per hour = .037 cubic yards per second  
 1 acre inch per hour = 1.713 cubic meters per minute  
 1 acre inch per hour = .029 cubic meters per second

1 hectare meter per day = 8.107 acre feet per day  
 1 hectare meter per day = 110,072 gallons per hour  
 1 hectare meter per day = .338 acre feet per hour  
 1 hectare meter per day = 97.29 acre inches per day  
 1 hectare meter per day = 14,714 cubic feet per day  
 1 hectare meter per day = 416.67 cubic meters per day

Online conversion: [http://www.onlineconversion.com/fow\\_rate\\_volume.htm](http://www.onlineconversion.com/fow_rate_volume.htm)

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

### Circle and sphere (area) measurements and conversions

Diameter of a circle = circumference x .31831  
 Circumference of a circle = diameter x 3.1416  
 Area of a circle = diameter x diameter x .7854  
 Surface of a ball = diameter x diameter x 3.1416  
 Doubling the diameter of a pipe increases it's capacity 4 times

### Apothecaries' weight (1 pound = 12 ounces) measurements and conversions

1 pound = 12 ounces  
 1 ounce = 8 drams  
 1 dram = 3 scruples  
 1 scruple = 20 grains

### Avoirdupois' weight (1 pound = 16 ounces) measurements and conversions

1 pound = 16 ounces  
 1 pound = 256 drams  
 1 quarter = 25 pounds  
 1 hundredweight (cwt) = 100 pounds  
 1 ton = 2000 pounds

### Ton (weight) measurements and conversions

1 short ton (U.S. ton) = 2000 lbs.  
 1 short ton = 907 kgs.  
 1 long ton (imperial ton or shipping ton) = 2,240 lbs.  
 1 long ton = 1,016 kgs.  
 1 metric ton (tonne) = 2,204.60 lbs.  
 1 metric ton = 1,000 kgs.  
 1 long ton = 1.120 short tons  
 1 long ton = 1.0160573 metric tons  
 1 metric ton = 1.10231136 short tons  
 1 metric ton = 0.9841964 long tons  
 1 short ton = 0.8928571 long tons  
 1 short ton = 0.9071847 metric tons

Online conversions: [http://www.onlineconversion.com/weight\\_common.htm](http://www.onlineconversion.com/weight_common.htm)

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

Weight and Mass Converter – Unit Converter: [http://www.unitconversion.org/unit\\_converter/weight.html](http://www.unitconversion.org/unit_converter/weight.html)

### Speed measurements and conversions

1 kilometer per hour = .6214 miles per hour  
 1 mile per hour = 1.609 kilometers per hour  
 1 meter per second = 2.24 miles per hour  
 1 mile per hour = .447 meters per second  
 1 knot = 1.15 miles per hour  
 1 meter per second = 3.6 kilometers per hour

Online conversions: [http://www.onlineconversion.com/speed\\_common.htm](http://www.onlineconversion.com/speed_common.htm)

Convertit.com: <http://www.convertit.com/Go/ConvertIt/Measurement/Converter.ASP>

### Application measurements and conversions

phosphorus (P) x 2.29 = P<sub>2</sub>O<sub>5</sub>  
 P<sub>2</sub>O<sub>5</sub> x .44 = phosphorus (P)  
 potassium (K) x 1.2 = K<sub>2</sub>O  
 K<sub>2</sub>O x .83 = potash (K)  
 1 short ton per acre = 2.24 metric tons per hectare  
 1 metric ton per hectare = .446 short tons per acre

## References

Energy Kids Page, Energy Information Administration, ([http://www.eia.doe.gov/kids/energyfacts/science/energy\\_calculator.html](http://www.eia.doe.gov/kids/energyfacts/science/energy_calculator.html))

Energy Information Administration, (<http://www.eia.doe.gov/>)

Wikipedia, ([http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page))

Measurement Converter, Convertit.com, (<http://www.convertit.com/Go/ConvertIt/>)

Bioenergy Feedstock Information Network, (<http://bioenergy.ornl.gov/>)

Iowa Energy Center, Iowa State University, (<http://www.energy.iastate.edu/>)

Biomass Energy Datebook, U.S. Department of Energy, ([https://cta.ornl.gov/bedb/appendix\\_a.shtml](https://cta.ornl.gov/bedb/appendix_a.shtml))

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