

# Conversion Factors

Data are arranged alphabetically. Unless designated otherwise, the English measures of capacity are those used in the United States, and the units of weight and mass are avoirdupois units.

The word *gallon*, used in any conversion factor, designates the U.S. gallon. To convert into the imperial gallon, multiply the U.S. gallon by 0.83267. Likewise, the word *ton* designates a short ton, or 2,000 pounds.

The figures  $10^{-1}$ ,  $10^{-2}$ ,  $10^{-3}$ , and so on denote 0.1, 0.01, 0.001, and so on respectively. And the figures  $10^1$ ,  $10^2$ ,  $10^3$ , and so on denote 10, 100, 1000, etc. respectively.

With respect to the properties of water, it freezes at 32°F and is at its maximum density at 39.2°F. In the conversion factors given below using the properties of water, calculations are based on water at 39.2°F, in vacuo, weighing 62.427 pounds per cubic foot, or 8.345 pounds per U.S. gallon.

Parts per million (PPM) is always by weight and is simply a more convenient method of expressing concentration, either dissolved or undissolved material. PPM is used where percentage would be so small as to necessitate several ciphers after the decimal point (e.g. one part per million = 0.0001 per cent).

As used in the sanitary field, PPM represents the number of pounds of dry solids contained in 1 million pounds of water, including solids. In this field, one part per million may be expressed as 8.345 pounds of dry solids to 1 million U.S. gallons of water. In the Metric system, one part per million may be expressed as one gram of dry solids to 1 million grams of water, or one milligram per liter.

In arriving at parts per million by means of pounds per million gallons or milligrams per liter, the density of the solution or suspension has been neglected. If this is appreciably different from unity, the results are slightly in error.

MULTIPLY	BY	TO OBTAIN	MULTIPLY	BY	TO OBTAIN
Acres	43,580	Square feet		27.85	Lbs./sq.foot
	4047	Square meters		0.1934	Lbs./sq.inch
	1.582 x 10 <sup>3</sup>	Square miles	Centimeters/second	1.989	Feet/min.
Acre-feet	4840	Square yards		0.1934	Lbs./sq. inch
	43,580	Cubic feet		0.038	Kilometers/hr.
Atmospheres	1233.49	Cubic meters		.6	Meters/min.
	76.0	Cms. of mercury		.02237	Miles/hr.
	29.92	Inches of mercury		3.728 x 10 <sup>-4</sup>	Miles/min.
	33.90	Feet of water	Cms./sec./sec.	0.03281	Feet/sec/sec.
	10,333	Kgs./sq. meter	Cubic centimeters	3.531 x 10 <sup>-5</sup>	Cubic feet
	14.70	Lbs./sq. inch		8.102 x 10 <sup>2</sup>	Cubic inches
Barrels-oil	1.058	Tons/sq. foot		10~	Cubic meters
	42	Gallons-oil		1.308 x 10 <sup>6</sup>	Cubic yards
	378	Pounds-cement		2.642 x 10~	Gallons
Bags or sacks-cement	94	Pounds-cement		103	Liters
Board-feet	144 sq.in. x 1 in.	Cubic inches		2.113 x 10 <sup>3</sup>	Pints (liq.)
British Thermal Units	0.2520	Kilogram-calories		1.087 x 10 <sup>3</sup>	quarts (liq.)
	777.9	Foot-lbs	Cubic feet	2.832 x 10 <sup>1</sup>	Cubic cms.
	3.927 x 10 <sup>-4</sup>	Horse-power-hours		1728	Cubic inches
	107.5	Kilogram-meters		0.02832	Cubic meters
	2.928 x 10 <sup>-4</sup>	Kilowatt-hours		0.03704	Cubic yards
BTU/min	12.97	Foot lbs./sec		7.48052	Gallons
	0.02358	Horse-power		28.32	Liters
	17.57	watts		59.84	Pints (liq.)
Centares (Centiares)	1	Square meters		29.92	Quarts (liq.)
Centigrams	0.01	Grams	Cubic feet/minute	472.0	Cubic cms./sec.
Centiliters	0.01	Liters		0.1247	Gallons/sec.
Centimeters	0.3937	Inches		0.4720	Liters/sec.
	0.01	Meters		82.43	Lbs. of water/min.
	10	Millimeters	Cubic feet/second	0.648317	Million gals./day
Centimeters of mercury	0.01316	Atmospheres		448.831	Gallons/min.
	0.4416	Feet of water			
	136.0	Kgs./sq. meter			

MULTIPLY	BY	TO OBTAIN	MULTIPLY	BY	TO OBTAIN
Cubic inches	18.39	Cubic centimeters	Fathoms	6	Feet
	5.787 x 10 <sup>1</sup>	Cubic feet	Feet	30.48	Centimeters
	1.639 x 10 <sup>2</sup>	Cubic meters		12	Inches
	2.143 x 10 <sup>2</sup>	Cubic yards		0.3048	Meters
	4.329 x 10 <sup>3</sup>	Gallons	Feet of water	1/3	Yards
	1.639 x 10 <sup>3</sup>	Liters		0.02950	Atmospheres
	0.03483	Pints (liq.)		0.8826	Inches of mercury
	0.01732	Quarts (liq.)		304.8	Kgs./sq. meter
	10G	Cubiccentimeters		82.43	Lbs./sq foot
	61.023	Cubic inches	Feet/minute	0.433s	Lbs./sq. inch
Cubic meters	1.308	Cubic yards		0.0580	Centimeters/sec.
	264.2	Gallons		0.01887	Feet/sec.
	1.03	Liters		0.01829	Kilometers/hr.
	2113	Pints (liq.)		0.3048	Meters/min.
	1057	Quarts (liq.)	Feet/second	0.01138	Miles/hr.
	27	Cubic feet		30.48	Centimeters/sec.
	48,656	Cubic inches		1.097	Kilometers/hr.
	0.7646	Cubic meters		0.5921	Knots
	202.0	Gallons		18.29	Meters/min.
	764.6	Liters		0.8818	Miles/hr.
Cubic yards/minute	1616	Pints (liq.)		001138	Miles/min.
	807.9	Quarts (liq.)		0.3048	Meters/sec./sec.
	0.045	Cubic feet/sec.	Foot-pounds	1.286 x 10 <sup>3</sup>	B.T. Units
	12.74	Liters/sec.		5.050X 10 <sup>7</sup>	Horse-power
	0.1	Grams		3.241 x 10 <sup>1</sup>	Kilogram-calories
	0.1	Liters		0.1383	Kilogram-meters
	0.1	Meters		3.788 x 10 <sup>7</sup>	Kilowatt-hrs
	80	Minutes	Foot-pounds/minute	1.286 x 10 <sup>3</sup>	B.T.Units/min.
	0.01745	Radians		0.01667	Foot-pounds/sec.
	3600	Seconds		3.030 x 10 <sup>2</sup>	Horse-power
Degrees/sec.	0.01745	Radians/sec.		3.241 x 10 <sup>1</sup>	Kg.-calories/min.
	0.1667	Revolutions/min.		2.260 x 10 <sup>6</sup>	Kilowatts
	0.002778	Revolutions/sec.	Foot-pounds/second	7.717 x 10 <sup>2</sup>	B.T.Units/min.
	10	Grams		1.818 x 10 <sup>3</sup>	Horse-power
Dekagrams	10	Liters		1.94s x 10 <sup>2</sup>	Kg.-calories/min.
	10	Meters	Gallons	1.358 x 10 <sup>3</sup>	Kilowatts
Dekaliters	10	Gallons		3785	Cubic centimeters
Dekameters	10	Meters		0.1337	Cubic feet
Drams	27.34375	Grains		231	Cubic inches
	0.0825	Ounces			
	1.771845	Grams			

REFERENCES

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