

# Conversion Charts and Formulas

## METRIC SYSTEM

**LENGTH** - Basic unit is a meter

Metric Unit	Meters	Inches	Feet	Yards	Miles
Millimeter (mm)	.001	-	-	-	-
Centimeter (cm)	.01	.3937	-	-	-
Decimeter (dm)	.1	3.937	.3281	.1094	-
Meter (m)	1	39.37	3.281	1.094	-
Decameter (dkm)	10	393.7	32.81	10.94	-
Hectometer (hm)	100	3937	328.1	109.4	-
Kilometer (km)	1000	-	3281	1094	.6214

### To convert

Inch to mm - multiply by 25.4  
 mm to inch - multiply by .03937  
 feet to meters - multiply by .3048  
 Meters to feet - multiply by 3.281  
 Yards to meters - multiply by .9144  
 Meters to yards - Multiply by 1.094  
 Miles to km - multiply by 1.609  
 km to miles - multiply by .6214

**Area** - Basic unit is centare (ca) which is one square meter

Metric Unit	Centares	Square Inchces	Square Feet	Square Yards	Acres
Sq. Millimeter(sq. mm)	0.000001	-	-	-	-
Sq. Centimeter(sq. cm)	0.0001	0.1550	-	-	-
Sq. Decemeter(sq. dm)	0.01	15.50	0.1076	-	-
Centare/sq. meter (ca/sq m)	1	1550	10.76	1.196	-
Are (a)	100	-	1076	119.6	-
Hectare (ha)	10,000	-	-	-	2.471
Sq. Kilometer(sq. km)	1,000,000	-	-	-	247.1

### To convert

Sq. in. to sq. cm - multiply by 6.452  
 Sq. cm to sq. in. - multiply by .1550  
 Sq. Ft. to sq. m. - multiply by .0929  
 Sq. m. to sq. ft. - multiply by 10.76  
 Sq. yds to sq. m. - multiply by .8361  
 Sq. m. to sq. yds. - multiply by 1.196  
 Acres to Hectares - multiply by .4047  
 Hectares to Acres - multiply by 2.471  
 Acres to sq. km - multiply by .004047  
 Sq. km to Acres - multiply by 247.1  
 Sq. miles to sq. km - multiply by 2.590  
 Sq. km to sq. miles - multiply by .3861

## Specific Gravity of Liquids

Specific gravity is the ratio of chemical weight per gallon divided by the weight of water per gallon.

Liquid	Temp °F	Specific Gravity
Water (1 cu. Ft. weighs 62.41 lb)	50	1.00
Brine (Sodium Chloride 25%)	32	1.20
Pennsylvania Crude Oil	80	0.85
Fuel Oil No. 1 and 2	85	0.95
Gasoline	80	0.74
Kerosene	85	0.82
Lubricating Oil SAE 10-20-30	115	0.94

Liquid	Temp °F	Specific Gravity
30% Acetic Acid	68	1.04
50% Acetic Acid	68	1.05
20% Chromic Acid	68	1.16
20% Hydrogen Peroxide	68	1.07
25% Methyl Alcohol	68	0.96
10% Nitric Acid	68	1.05
20% Nitric Acid	68	1.11

Liquid	Temp °F	Specific Gravity
20% Phosphoric Acid	68	1.11
20% Sodium Hydroxide	68	1.21
50% Sodium Hydroxide	68	1.52
20% Sulphuric Acid	68	1.14
50% Sulphuric Acid	68	1.40
98% Sulphuric Acid	68	1.83

1 Gallon = 3.7854 liters

1 liter = 0.26417 gallons

**VOLUME** - Basic unit is stere (s) which is 1 cubic meter

Metric Unit	Steres	Cubic Inch	Cubic Foot	Cubic Yards
Cu. Millimeter (cu mm)	.000000001	-	-	-
Cu. Centimeter (cu cm)	.000001	.06102	-	-
Cu. Decimeter (cu dm)	.001	61.023	-	-
Desistere (ds)	.1	6102.3	3.531	.1308
Stere/Cu Meter (s/cu m)	1	61023	35.31	1.308
Decastere (dks)	10	-	353.1	13.08

### To convert

Cu. In. to Cu. Mm - multiply by 1639  
 Cu. Mm to Cu. In. - multiply by .000061  
 Cu. M to Cu. Ft - multiply by 35.31  
 Cu. In. to Cu. cm - multiply by 16.39  
 Cu. Yards to Cu. M - multiply by .7646  
 Cu. Cm. To Cu. In.- multiply by .06102  
 Cu. M to Cu. yds - multiply by 1.308

**Weight** - Basic unit is gram (g)

Metric Unit	Grams	Grains	Ounces	Pounds
Milligram(mg)	0.001	0.01543	-	-
Centigram (cg)	0.01	0.1543	-	-
Decigram (dg)	0.1	1.543	-	-
Gram	1	15.43	0.03527	-
Decagram (dkg)	10	154.3	0.3527	-
Hectogram (hg)	100	1543	3.527	0.22046
Kilogram (kg)	1000	-	35.27	2.2046
Quintal (q)	100,000	-	3527	220.46
Metric Ton (MT)	1,000,000	-	-	2204.6

### To convert

g to cg - multiply by 6.48  
 cg to g - multiply by .1543  
 Ounces to g - multiply by 31.103  
 kg to Pounds - multiply by 2.2046  
 Tons(2000#) to Metric Tons - multiply by .9078  
 Metric Tons to Tons(2000#) - multiply by 1.1023  
 g to Ounces - multiply by .03527  
 Pounds to kg - multiply by .4536

# Conversion Charts and Formulas

## Conversion Constants

To Change	To	Multiply By
Inches	Feet	0.0833
Inches	Millimeters	25.4
Feet	Inches	12
Feet	Yards	0.3333
Yards	Feet	3
Square Inches	Square Feet	0.00694
Square Feet	Square Inches	144
Square Feet	Square Yards	0.11111
Square Yards	Square feet	9
Cubic Inches	Cubic Feet	0.00058
Cubic Feet	Cubic Inches	1728
Cubic Feet	Cubic Yards	0.03703
Cubic Yards	Cubic Feet	27
Cubic Inches	Gallons	0.00433
Cubic Feet	Gallons	7.48
Gallons	Cubic Inches	231
Gallons	Cubic Feet	0.1337
Gallons	Pounds of Water	8.337
Pounds of Water	Gallons	0.12004
Ounces	Pounds	0.0625
Pounds	Ounces	16
Inches of Water	Pounds per sq. Inch	0.03609

### Flow

1 gpm	= 0.134 cu. Ft. per min.
	= 500 lb. per hr. x sp. Gr.
500lb. Per hr.	= 1 gpm / sp. Gr.
1 cu. Ft. per min. (cfm)	= 448.8 gal. Per hr. (gph)

### Pressure

1 lb. Per sq. in.	= 2.31 ft. water at 60°F
	= 2.04 in. hg at 60°F
1 ft. water at 60°F	= 0.4333 lb. Per sq. in.
	= 0.884 in. hg at 60°F
1 in. Hg at 60°F	= 0.49 lb. Per sq. in.
	= 1.13 ft. water at 60°F
1 lb. Per sq. in.	= lb. Per sq. in. gauge (psig)+ 14.7 Absolute (psia)

To Change	To	Multiply By
Inches of water	Inches of Mercury	0.0736
Inches of water	Ounces per sq. inch	0.578
Inches of water	Pounds per sq. foot	5.2
Inches of Mercury	Inches of Water	13.57
Inches of Mercury	Feet of Water	1.131
Inches of Mercury	Pounds per sq. inch	0.4898
Ounces per sq. inch	Inches of Mercury	0.17
Ounces per sq. inch	Inches of Water	1.73
Pounds per sq. inch	Inches of Water	27.71
Pounds per sq. inch	Feet of water	2.309
Pounds per sq. inch	Inches of Mercury	2.042
Pounds per sq. inch	Atmosphere	0.06805
Feet of water	Pounds per sq. inch	0.4331
Feet of water	Pounds per sq. foot	62
Feet of water	Inches of Mercury	0.8843
Atmosphere	Pounds per sq. inch	14.70
Atmosphere	Inches of Mercury	29.92
Atmosphere	Feet of water	34
Long Tons	Pounds	2240
Short Tons	Pounds	2000
Short Tons	Long Tons	0.89

### Temperature

°C	= (°F - 32) x 0.556
°F	= C(1.8) + 32

### Volume

1 gal. (US)	= 128 fl. Oz. (US)
	= 231 cu. In.
	= 0.833 gal. (Brit.)
1 cu. Ft.	= 7.48 gal. (US)

### Mass

1 lb. (avoir)	= 16 oz. (avoir)
	= 7000 grain
1 ton (short)	= 2000 lb.
1 ton (long)	= 2240 lb.