



Conversion Tables

The following conversion tables will provide a conversion between SI, metric, USA and Imperial systems.

All the tables use a multiplying factor:

Table 1 Length

From To →	millimetre	centimetre	metre	kilometre	inch	foot	yard	mile
millimetre	1	0.1	0.001	-	0.03937	-	-	-
centimetre	10	1	0.01	-	0.393701	0.032808	-	-
metre	1000	100	1	0.001	39.3701	3.28084	1.09361	-
kilometre	-	-	1000	1	-	3280.84	1093.61	0.621371
inch	25.4	2.54	-	-	1	0.083333	0.027778	-
foot	304.8	30.48	0.3048	-	12	1	0.33333	-
yard	914.4	91.44	0.9144	0.000914	36	3	1	0.000568
mile	-	-	1609.344	1.609344	-	5280	1760	1

Table 2 Area

From To →	cm ²	m ²	km ²	in ²	ft ²	yd ²	acre	mile ²
cm ²	1	0.0001	-	0.155	0.001076	0.0001196	-	-
m ²	10000	1	0.000001	1550	10.7639	1.19599	0.0002471	-
km ²	-	1000000	1	-	-	-	247.105	0.386102
in ²	6.4516	0.000645	-	1	0.006944	0.000772	-	-
ft ²	929.03	0.092903	-	144	1	0.111111	0.000023	-
yd ²	8361.27	0.836127	-	1296	9	1	0.0002066	-
acre	-	4046.86	0.004047	-	43560	4840	1	0.001562
mile ²	-	-	2.589987	-	-	-	640	1

Table 3 Mass

From To →	kg	tonne	lb	UK cwt	UK ton	US cwt	US ton
kg	1	0.001	2.20462	0.019684	0.000984	0.022046	0.001102
tonne	1000	1	2204.62	19.6841	0.984207	22.0462	1.10231
lb	0.453592	0.000454	1	0.008929	0.000446	0.01	0.0005
UK cwt	50.8023	0.050802	112	1	0.05	1.12	0.056
UK ton	1016.05	1.01605	2240	20	1	22.4	1.12
US cwt	45.3592	0.045359	100	0.892857	0.044643	1	0.05
US ton	907.185	0.907185	2000	17.8517	0.892857	20	1

Table 4 Volume and capacity

From To →	cm ³	m ³	litre (dm ³)	in ³	ft ³	yd ³	UK pint	UK gall	US pint	US gall
cm ³	1	-	0.001	0.061024	0.0000353	-	0.001760	0.00022	0.002113	0.000264
m ³	-	1	1000	61023.7	35.3147	1.30795	1759.75	219.969	2113.38	264.172
litre (dm ³)	1000	0.001	1	61.0237	0.035315	0.001308	1.75975	0.219969	2.11338	0.264172
in ³	16.3871	-	0.016387	1	0.0005787	0.0000214	0.028837	0.003605	0.034632	0.004329
ft ³	28316.8	0.028317	28.3168	1728	1	0.037037	49.8307	6.22883	59.8442	7.48052
yd ³	764555	0.764555	764.555	46656	27	1	1345.429	168.1784	1615.793	201.974
UK pint	568.261	0.0005683	0.568261	34.6774	0.020068	0.000743	1	0.125	1.20095	0.150119
UK gall	4546.09	0.0045461	4.54609	277.42	0.160544	0.005946	8	1	9.6076	1.20095
US pint	473.176	0.0004732	0.473176	28.875	0.01671	0.000619	0.832674	0.104084	1	0.125
US gall	3785.41	0.0037854	3.785411	231	0.133681	0.004951	6.661392	0.832674	8	1

Table 5 Pressure

From To →	atmos	mm Hg	mbar	bar	pascal	in H ₂ O	in Hg	psi
atmos	1	760	1013.25	1.0132	101325	406.781	29.9213	14.6959
mm Hg	0.0013158	1	1.33322	0.001333	133.322	0.53524	0.03937	0.019337
mbar	0.0009869	0.750062	1	0.001	100	0.401463	0.02953	0.014504
bar	0.9869	750.062	1000	1	100000	401.463	29.53	14.504
pascal	0.0000099	0.007501	0.01	0.00001	1	0.004015	0.0002953	0.000145
in H ₂ O	0.0024583	1.86832	2.49089	0.002491	249.089	1	0.073556	0.036127
in Hg	0.033421	25.4	33.8639	0.0338639	3386.39	13.5951	1	0.491154
psi	0.068046	51.7149	68.9476	0.068948	6894.76	27.6799	2.03602	1

Note: 1 pascal = 1 N/m²

Table 6 Volume rate of flow

From To →	L/sec (dm ³ /sec)	L/h	m ³ /s	m ³ /h	cfm	ft ³ /h	UK gall/m	UK gall/h	US gall/m	US gall/h
L/s (dm ³ /sec)	1	3600	0.001	3.6	2.118882	127.133	13.19814	791.8884	15.85032	951.019
L/h	0.000278	1	-	0.001	0.000588	0.035315	0.003666	0.219969	0.004403	0.264172
m ³ /s	1000	3600000	1	3600	2118.88	127133	13198.1	791889	15850.3	951019
m ³ /h	0.277778	1000	0.000278	1	0.588578	35.3147	3.66615	219.969	4.402863	264.1718
cfm	0.471947	1699.017	0.000472	1.699017	1	60	6.228833	373.73	7.480517	448.831
ft ³ /h	0.007866	28.3168	-	0.028317	0.016667	1	0.103814	6.228833	0.124675	7.480517
UK gall/m	0.075768	272.766	0.0000758	0.272766	0.160544	9.63262	1	60	1.20095	72.057
UK gall/h	0.001263	4.54609	-	0.004546	0.002676	0.160544	0.016667	1	0.020016	1.20095
US gall/m	0.06309	227.125	0.0000631	0.227125	0.133681	8.020832	0.832674	49.96045	1	60
US gall/h	0.001052	3.785411	-	0.003785	0.002228	0.133681	0.013878	0.832674	0.016667	1

Table 7 Power

From To →	Btu/h	W	kcal/h	kW
Btu/h	1	0.293071	0.251996	0.000293
W	3.41214	1	0.859845	0.001
kcal/h	3.96832	1.163	1	0.001163
kW	3412.14	1000	859.845	1

Table 8 Energy

From To →	Btu	Therm	J	kJ	Cal
Btu	1	0.00001	1055.06	1.055	251.996
Therm	100000	1	-	105 500	25 199 600
J	0.00094	-	1	0.001	0.2388
kJ	0.9478	0.00009478	1000	1	238.85
Cal	0.0039683	0.0039683 x 10 ⁻⁵	4.1868	-	1

Table 9 Specific heat

From To →	Btu/lb °F	J/kg °C
Btu/lb °F	1	4186.8
J/kg °C	0.00023	1

Table 10 Heat flowrate

From To →	Btu/ft ² h	W/m ²	kcal/m ² h
Btu/ft ² h	1	3.154	2.712
W/m ²	0.3169	1	0.859
kcal/m ² h	0.368	1.163	1

Table 11 Thermal conductance

From To →	Btu/ft ² h °F	W/m ² °C	kcal/m ² h °C
Btu/ft ² h °F	1	5.67826	4.88243
W/m ² °C	0.176110	1	0.859845
kcal/m ² h °C	0.204816	1.163	1

Table 12 Heat per unit mass

From To →	Btu/lb	kJ/kg
Btu/lb	1	2.326
kJ/kg	0.4299	1

Table 13 Linear velocity

From To →	ft/min	ft/s	m/s
ft/min	1	0.016666	0.00508
ft/s	60	1	0.3048
m/s	196.850	3.28084	1

Temperature conversion

Can be achieved by using the following formula:

$$^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$$

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$$

Additional information**Atmosphere - (standard reference)**

A.N.R. (Atmosphère Normale de Référence) ISO R558.

This is the agreed atmosphere to control specification values and test results, as given in ISO R554.

Pneumatic fluid power uses 1013 mbar, 20 °C, 65% RH (ISO R554).

Compressor and pneumatic tool industries prefer 1000 mbar, 20 °C, 65% RH (ISO 2787).

Aerospace, Petroleum and British Gas Industries prefer 1013 mbar, 15 °C, Dry (ISO 2533 and ISO 5024).

Fluid power users are sometimes confused by **Nm³**. This is not Newton-metres³ but refers to meters³ **ANR**, i.e. a volume of air measured against the standard or **normal** atmosphere reference.

The equivalent imperial term is S.C.F. (Standard Cubic Feet).

Litre

The symbol l is being superseded by L to avoid confusion with 1 (one).

$$1 \text{ L} = 1 \text{ dm}^3.$$

bar

$$1 \text{ bar} = 100 \text{ kPa} = 100 \text{ kN/m}^2.$$

kg/cm²

This unit is still used in some areas. The conversions are as follows:

$$1 \text{ kg/cm}^2 = 0.980665 \text{ bar} = 0.967841 \text{ atmos} = 14.2233 \text{ psi}$$