



TI-GCM-03

CM Issue 6

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 →	cm²	m²	km²	in²	ft²	yd²	acre	mile²
cm²	1	0.0001	-	0.155	0.001076	0.0001196	-	-
m²	10000	1	0.000001	1550	10.7639	1.19599	0.0002471	-
km²	-	1000000	1	-	-	-	247.105	0.386102
in²	6.4516	0.000645	-	1	0.006944	0.000772	-	-
ft²	929.03	0.092903	-	144	1	0.111111	0.000023	-
yd²	8361.27	0.836127	-	1296	9	1	0.0002066	-
acre	-	4046.86	0.004047	-	43560	4840	1	0.001562
mile²	-	-	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 →	cm³	m³	litre (dm³)	in³	ft³	yd³	UK pint	UK gall	US pint	US gall
cm³	1	-	0.001	0.061024	0.0000353	-	0.001760	0.00022	0.002113	0.000264
m³	-	1	1000	61023.7	35.3147	1.30795	1759.75	219.969	2113.38	264.172
litre (dm³)	1000	0.001	1	61.0237	0.035315	0.001308	1.75975	0.219969	2.11338	0.264172
in³	16.3871	-	0.016387	1	0.0005787	0.0000214	0.028837	0.003605	0.034632	0.004329
ft³	28316.8	0.028317	28.3168	1728	1	0.037037	49.8307	6.22883	59.8442	7.48052
yd³	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 <sub>2</sub> 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 <sub>2</sub> 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

First for Steam Solutions

EXPERTISE | SOLUTIONS | SUSTAINABILITY

Table 6 Volume rate of flow

From To →	L/sec									
	(dm³/sec)	L/h	m³/s	m³/h	cfm	ft³/h	UK gall/m	UK gall/h	US gall/m	US gall/h
L/s										
(dm³/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
m³/s	1000	3600000	1	3600	2118.88	127133	13198.1	791889	15850.3	951019
m³/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
ft³/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	0.000009478	1000	1	238.85
Cal	0.0039683	0.0039683 x 10 <sup>-6</sup>	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/ft²h	W/m²	kcal/m²h
Btu/ft²h	1	3.154	2.712
W/m²	0.3169	1	0.859
kcal/m²h	0.368	1.163	1

Table 11 Thermal conductance

From To →	Btu/ft² h °F	W/m² °C	kcal/m² h °C
Btu/ft² h °F	1	5.67826	4.88243
W/m² °C	0.176110	1	0.859845
kcal/m² 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:

°F = (°C x 1.8) + 32

°C = (°F - 32) ÷ 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 superceded by L to avoid confusion with 1 (one).  
1 L = 1 dm³.

bar

1 bar = 100 kPa = 100 kN/m².

kg/cm²

This unit is still used in some areas. The conversions are as follows:  
1 kg/cm² = 0.980665 bar = 0.967841 atmos = 14.2233 psi