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Section 13—CONVERSION TABLES

The conversion equivalents are generally based on AS. 1376-1973. In some instances the degree of rounding off has been adjusted for practical use.

Length

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
1	0.1	0.001	0.0394	0.0033	0.0011
10	1	0.01	0.3937	0.0328	0.0109
1,000	100	1	39.3701	3.2808	1.0936
25.4	2.54	0.0254	1	0.0833	0.0278
304.8	30.48	0.3048	12	1	0.3333
914.4	91.44	0.9144	36	3	1

1 kilometre = 1000 metres = 0.62137 miles

1 mile = 1609.34 metres = 1.60934 kilometres

Area

square millimetre mm ²	square centimetre cm ²	square metre m ²	square inch in ²	square foot ft ²	square yard yd ²
1	0.01	1×10^{-6}	1.55×10^{-3}	1.076×10^{-5}	1.196×10^{-6}
100	1	1×10^{-4}	0.155	1.076×10^{-3}	1.196×10^{-4}
106	10,000	1	1,550	10.764	1.196
645.16	6.4516	6.452×10^{-4}	1	6.944×10^{-3}	7.716×10^{-4}
92,903	929.03	0.093	144	1	0.111
836,127	8,361.27	0.836	1,296	9	1

1 acre = 4046.86 m^2 = 0.404686 hectare

1 hectare = $1 \times 10^4 \text{ m}^2$ = 2.471 acre

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Volume

cubic millimetre mm ³	cubic centimetre cm ³	cubic metre m ³	cubic inch in ³	cubic foot ft ³	cubic yard yd ³
1	0.001	1×10^{-9}	6.1×10^{-5}	3.531×10^{-8}	1.308×10^{-9}
1,000	1	1×10^{-6}	0.061	3.531×10^{-5}	1.308×10^{-6}
1×10^9	1×10^6	1	61,024	35.31	1.308
16,387	16.39	1.639×10^{-5}	1	5.787×10^{-4}	2.143×10^{-5}
2.832×10^7	2.832×10^4	0.0283	1,728	1	0.037
7.646×10^8	7.646×10^5	0.7646	46,656	27	1

Liquid Measure

cubic metre m ³	litre l	millilitre mL	Imp gallon Imp gal	U.S. gallon U.S. gal	cubic foot ft ³
1	1,000	1×10^6	220	264.2	35.3147
0.001	1	1,000	0.22	0.2642	0.0353
1×10^{-6}	0.001	1	2.2×10^{-4}	2.642×10^{-4}	3.53×10^{-5}
0.00455	4.546	4,546	1	1.201	0.1605
0.00378	3.785	3,785	0.8327	1	0.1337
0.0283	28.317	28,317	6.2288	7.4805	1

1 U.S. Barrel = 42 U.S. Gallons (petroleum measure) = 34.97 Imp. Gallons = 0.159 m^3

1 litre $1 \times 10^6 \text{ mm}^3 = 1 \times 10^3 \text{ cm}^3$ or 1 cubic decimetre (1 dm^3)

1 litre = 1.76 U.K. Pints = 2.133 U.S. Pints

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Velocity

metre per second m/s	foot per second ft/s	metre per minute m/min	foot per minute ft/min	kilometre per hour km/h	mile per hour mile/h
1	3.281	60	196.85	3.6	2.2369
0.305	1	18.288	60	1.0973	0.6818
0.017	0.055	1	3.281	0.06	0.0373
0.005	0.017	0.305	1	0.0183	0.01136
0.278	0.911	16.667	54.68	1	0.6214
0.447	1.467	26.822	88	1.6093	1

Mass

kilogram kg	pound lb	hundredweight cwt	tonne t	ton	U.S. Ton sh ton
1	2.205	0.0197	0.001	9.84×10^{-4}	0.0011
0.454	1	0.0089	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}
50.802	112	1	0.0508	0.05	0.056
1,000	2,204.60	19.684	1	0.9842	1.1023
1,016	2,240	20	1.0161	1	1.102
907.2	2,000	17.857	0.9072	0.8929	1

Mass Flow Rate

kilogram per second kg/s	pound per second lb/s	kilogram per hour kg/h	pound per hour lb/hr	ton per hour ton/h	tonne per hour t/h
1	2.205	3,600	7,936.64	3.5431	3.6
0.454	1	1633	3,600	1.607	1.633
2.78×10^{-4}	6.12×10^{-4}	1	2.205	9.84×10^{-4}	0.001
1.26×10^{-4}	2.78×10^{-4}	0.454	1	4.46×10^{-4}	4.54×10^{-4}
0.282	0.622	1,016	2,240	1	1.016
0.278	0.612	1,000	2,204.60	0.9842	1

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Volumetric Rate of Flow

litre per second l/s	litre per minute l/m	cubic metre per hour m ³ /h	cubic foot per hour ft ³ /h	cubic foot per minute ft ³ /min	Imp. gallon per minute Imp.gal/min	U.S. gallon per minute U.S. gal/min	U.S. barrel per day U.S. barrel/d (petroleum)
1	60	3.6	127.133	2.1189	13.2	15.85	543.439
0.017	1	0.06	2.1189	0.0353	0.22	0.264	9.057
0.278	16.667	1	35.3147	0.5886	3.666	4.403	150.955
0.008	0.472	0.0283	1	0.0167	0.104	0.125	4.275
0.472	28.317	1.699	60	1	6.229	7.48	256.475
0.076	4.546	0.2728	9.6326	0.1605	1	1.201	41.175
0.063	3.785	0.2271	8.0209	0.1337	0.833	1	34.286
0.002	0.11	0.0066	0.2339	0.0039	0.024	0.029	1

Force

newton N	kilonewton kN	kilogram force* kgf	pound force lbf
1	0.001	0.102	0.225
1,000	1	101.97	224.81
9.807	0.0098	1	2.205
4.448	0.0044	0.454	1

* The kilogram force is sometimes called the kilopound (kp)

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PRESSURE AND LIQUID HEAD

newton per square metre N/m ² (Pa)	kilopascal kPa	bar bar	kilogram force per square centimetre kgf/cm ²	pound force per square inch lbf/in ²	foot of water ft.H ₂ O	metre of water mH ₂ O	millimetre of mercury mm Hg	inch of mercury in Hg
1	0.001	1 x 10 ⁻⁵	1.02 x 10 ⁻⁵	1.45 x 10 ⁻⁴	3.35 x 10 ⁻⁴	1.02 x 10 ⁻⁴	0.0075	2.95 x 10 ⁻⁴
1,000	1	0.01	1.02 x 10 ⁻²	0.145	0.335	0.102	7.5	0.295
100,000	100	1	1.02	14.5	33.52	10.2	750.1	29.53
98,067	98.07	0.981	1	14.22	32.81	10	735.6	28.96
6,895	6.895	0.069	0.0703	1	2.31	0.703	51.72	2.036
2,984	2.984	0.03	0.0305	0.433	1	0.305	22.42	0.882
9,789	9.789	0.098	0.1	1.42	3.28	1	73.42	2.891
133.3	0.133	0.0013	0.0014	0.019	0.045	0.014	1	0.039
3,386	3.386	0.0338	0.0345	0.491	1.133	0.345	25.4	1

1 Pascal = 1 newton per square metre (1Pa = 1N/m²)

1 mm Hg is also known as the name 'torr'

The International standard atmosphere (1 atm) = 101325 pascals or 1.01325 bar. This is equal to 1.03323 kgf/cm² or 14.6959 lbf/in².

1 millibar = 100 pascal (1 mb = 100 Pa)

Energy, Work Head

joule J	kilojoule kJ	megajoule MJ	foot pound force ft lbf	British thermal unit B.t.u.	therm	kilowatt hour KWh
1	0.001	1 x 10 ⁻⁶	0.737	9.48 x 10 ⁻⁴	9.48 x 10 ⁻⁹	2.78 x 10 ⁻⁷
1,000	1	0.001	737.56	0.9478	9.48 x 10 ⁻⁶	2.78 x 10 ⁻⁴
1 x 10 ⁶	1,000	1	737,562	947.82	9.48 x 10 ⁻³	0.2778
1.356	1.36 x 10 ⁻³	1.36 x 10 ⁻⁶	1	1.28 x 10 ⁻³	1.28 x 10 ⁻⁸	3.77 x 10 ⁻⁷
1,055.10	1.0551	1.05 x 10 ⁻³	778.17	1	1 x 10 ⁻⁵	2.931 x 10 ⁻⁴
1.0551 x 10 ⁸	105,510	105.51	7.78 x 10 ⁷	100,000	1	29.307
3.6 x 10 ⁶	3,600	3.6	2.65 x 10 ⁶	3,412.10	0.03412	1

1 joule = 1 newton metre

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Power

Watt	kilogram force metre per second	metric horsepower	foot pound force per second	horsepower
W	kgf m/s		ft lbf/s	hp
1	0.102	0.00136	0.738	0.0013
9.806	1	0.0133	7.233	0.0131
735.5	75	1	542.476	0.9863
1.356	0.138	1.84×10^{-3}	1	1.82×10^{-3}
745.7	76.04	1.0139	550	1

1 watt = 1 joule per second = 1 newton metre per sec.

Density $1 \text{ g/cm}^3 = 1000 \text{ kg/m}^3 = 0.0361 \text{ lb/in}^3$
 $1 \text{ kg/m}^3 = 0.001 \text{ g/cm}^3 = 0.0624 \text{ lb/ft}^3$

Specific Volume $1 \text{ cm}^3/\text{g} = 0.001 \text{ m}^3/\text{kg} = 27.68 \text{ in}^3/\text{lb}$
 $1 \text{ m}^3/\text{kg} = 1000 \text{ cm}^3/\text{g} = 16.0185 \text{ ft}^3/\text{lb}$