

*Conversion Factors*

## Length

mm	m	km	inch	foot	yard	mile
1	<u>0.001</u>	<u>0.000 001</u>	0.039 370	0.003 281	0.001 094	0.000 001
<u>1 000</u>	1	<u>0.001</u>	39.370 08	3.280 840	1.093 613	0.000 621
<u>1 000 000</u>	<u>1 000</u>	1	39 370.08	3 280.840	1 093.613	0.621 371
<u>25.4</u>	<u>0.025 4</u>	0.000 025	1	0.083 333	0.027 778	0.000 016
<u>304.8</u>	<u>0.304 8</u>	0.000 305	<u>12</u>	1	0.333 333	0.000 189
<u>914.4</u>	<u>0.914 4</u>	0.000 914	<u>36</u>	3	1	0.000 568
<u>1 609 344</u>	<u>1 609.344</u>	<u>1.609 344</u>	<u>63 360</u>	<u>5 280</u>	<u>1 760</u>	1

Underlined values are exact

## Area

mm <sup>2</sup>	m <sup>2</sup>	hectare	in <sup>2</sup>	ft <sup>2</sup>	yd <sup>2</sup>	acre
1	0.000 001	©	0.001 550	0.000 011	0.000 001	©
<u>1 000 000</u>	1	<u>0.000 1</u>	1 550.003	10.763 91	1.195 990	0.000 247
©	<u>10 000</u>	1	©	107 639.1	11 959.90	2.471 054
<u>645.16</u>	0.000 645	©	1	0.006 944	0.000 772	©
<u>92 903.04</u>	0.092 903	0.000 009	<u>144</u>	1	0.111 111	0.000 023
836 127.4	0.836 127	0.000 084	<u>1 296</u>	9	1	0.000 207
©	4 046.856	0.404 686	<u>6 272 640</u>	<u>43 560</u>	<u>4 840</u>	1

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## Volume

m <sup>3</sup>	litre	in <sup>3</sup>	ft <sup>3</sup>	fluid ounce	UK pint	UK gall	US gall
1	<u>1 000</u>	61 023.7	35.314 7	35 195	1 759.75	219.969	264.172
<u>0.001</u>	1	61.023 7	0.035 31	35.195	1.759 75	0.219 97	0.264 17
0.000 02	0.016 39	1	0.000 58	0.576 74	0.028 84	0.003 60	0.004 33
0.028 32	28.316 8	<u>1728</u>	1	996.615	49.830 6	6.228 82	7.480 52
0.000 03	0.028 41	1.733 88	0.001 00	1	<u>0.05</u>	<u>0.006 25</u>	0.007 51
0.000 57	0.568 26	34.677 5	0.020 07	<u>20</u>	1	<u>0.125</u>	0.150 12
0.004 55	4.546 10	277.420	0.160 54	<u>160</u>	8	1	1.200 95
0.003 79	3.785 42	<u>231</u>	0.133 68	133.228	6.661 38	0.832 67	1

Underlined values are exact

## Volumetric rate of flow

m <sup>3</sup> /hr	Litre /min	litre /sec	ft <sup>3</sup> /hr	ft <sup>3</sup> /min	Barrel /day	UK gall /min	US gall /min
1	16.666 7	0.277 78	35.314 7	0.588 58	150.955	3.666 15	4.402 87
<u>0.060</u>	1	0.016 67	2.118 88	0.035 31	9.057 3	0.219 97	0.264 17
<u>3.6</u>	<u>60</u>	1	127.133	2.118 88	543.44	13.198 1	15.850 3
0.028 32	0.471 95	0.007 87	1	0.016 67	4.274 6	0.103 81	0.124 68
1.699 01	28.316 8	0.471 95	<u>60</u>	1	256.47	6.228 82	7.480 52
0.006 62	0.110 41	0.001 84	0.233 94	0.003 90	1	0.024 29	0.029 17
0.272 77	4.546 09	0.075 77	9.632 6	0.160 54	41.175	1	1.200 95
0.227 13	3.785 42	0.063 09	8.020 8	0.133 68	34.286	0.832 67	1

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## Conversion Factors

## Mass

gram g	kilogram kg	ounce oz	Pound lb	h'weight cwt	UK ton	US short ton	metric tonne
1	0.001	0.035 27	0.002 20	0.000 02	©	©	©
<u>1 000</u>	1	35.274 0	2.204 62	0.019 68	0.000 98	0.001 10	<u>0.001</u>
28.349 5	0.028 35	1	<u>0.062 5</u>	0.000 56	0.000 03	0.000 03	0.000 03
453.592	0.453 59	<u>16</u>	1	0.008 93	0.000 45	<u>0.000 5</u>	0.000 45
50 802.3	50.802 3	<u>1 792</u>	<u>112</u>	1	<u>0.05</u>	<u>0.056</u>	0.050 80
©	1 016.05	<u>35 840</u>	<u>2 240</u>	<u>20</u>	1	<u>1.12</u>	1.016 05
©	907.185	<u>32 000</u>	<u>2 000</u>	17.857 1	0.892 86	1	0.907 18
<u>10<sup>6</sup></u>	<u>1 000</u>	35 274.0	2 204.62	19.684 1	0.984 21	1.102 31	1

Underlined values are exact    1 lb = 0.453 592 37 kg

## Density

g/cm <sup>3</sup> (SG)	kg/m <sup>3</sup>	lb/in <sup>3</sup>	lb/ft <sup>3</sup>
1	<u>1 000</u>	0.036 127	62.427 961
<u>0.001</u>	1	0.000 036	0.062 428
27.679 905	27 679.905	1	<u>1728</u>
0.016 018	16.018 463	0.000 579	1

Underlined values are exact

## Moment of Inertia

kg.m <sup>2</sup>	kg.cm <sup>2</sup>	oz.in <sup>2</sup>	lb.in <sup>2</sup>	lb.ft <sup>2</sup>
1	<u>10 000</u>	54 674.75	3 417.172	23.730 36
<u>0.000 1</u>	1	5.467 475	0.341 717	0.002 373
0.000 018	0.182 900	1	<u>0.062 5</u>	0.000 434
0.000 293	2.926 397	<u>16</u>	1	0.006 944
0.042 140	421.401 1	<u>2304</u>	144	1

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## Force

Newton N	kilogram force kgf *	pound force lbf	Poundal pdl
	Kilopond kp		
1	0.101 972	0.224 809	7.233 01
<u>9.806 65</u>	1	2.204 623	70.931 6
4.448 22	0.453 592	1	32.174 1
0.138 255	0.014 098	0.031 081	1

Underlined values are exact

## Torque

N.m	kg.m	KW / 1000rpm	HP / 100rpm	lbf.ft	lbf.in	oz.in
1	0.102 0	0.104 7	0.140 4	0.737 6	8.850 7	141.612
<u>9.806 65</u>	1	1.026 9	1.377 2	7.233 0	86.796 2	1 388.74
9.549 3	0.973 8	1	1.341 0	7.043 2	84.518 4	1 352.29
71.20 9	7.26 1	7.45 7	1	52.52 1	630.25 4	1 0084.1
1.355 8	0.138 3	0.142 0	0.190 4	1	<u>12</u>	<u>192</u>
0.113 0	0.011 5	0.011 8	0.015 9	0.083 3	1	<u>16</u>
0.007 1	0.000 7	0.000 7	0.001 0	0.005 2	<u>0.062 5</u>	1

Underlined values are exact

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## Stress, Pressure and Liquid Head

atm	bar	N/mm <sup>2</sup>	kg/cm <sup>2</sup>	lb/in <sup>2</sup>	Head of water			Head of mercury	
					m	ft	in	mm	in
								Torr	
1	<u>1.01325</u>	0.101 3	1.033	14.696	10.332	33.90	406.8	<u>760</u>	29.92
0.986 9	1	<u>0.10</u>	1.020	14.504	10.197	33.46	401.5	750.1	29.53
9.869 2	10	1	10.20	145.04	101.97	334.6	4 015	7 501	295.3
0.967 8	0.980	0.098 1	1	14.223	10	32.81	393.7	735.6	28.96
0.068 0	0.068 9	0.006 9	0.070 3	1	0.703 1	2.307	27.68	51.72	2.036
0.096 8	0.098 1	0.009 8	<u>0.1</u>	1.422 3	1	3.281	39.37	73.56	2.896
0.029 5	0.029 9	0.003 0	0.030 5	0.433 5	0.304 8	1	<u>12</u>	22.42	0.882 7
0.002 5	0.002 5	0.000 3	0.002 5	0.036 1	<u>0.025 4</u>	0.083 3	1	1.868	0.073 6
0.001 3	0.001 3	0.000 1	0.001 4	0.019 3	0.013 6	0.044 6	0.535 2	1	0.039 4
0.033 4	0.033 9	0.003 4	0.034 5	0.491 1	0.345 3	1.133	13.60	<u>25.4</u>	1

Underlined values are exact

## Power

kilowatt				Horse power	Metric horse pwr
kW	kgf.m/sec	ft.lb/sec	BTU/h	HP	CV or PS
1	101.971 6	737.562	3 412.14	1.341 02	1.359 62
0.009 807	1	7.233 013	33.461 5	0.013 15	0.013 33
0.001 36	0.138 25	1	4.626 22	0.001 82	0.001 84
0.000 29	0.029 88	0.216 16	1	0.000 39	0.000 40
0.745 70	76.040 2	<u>550</u>	2 544.43	1	1.013 87
0.735 50	<u>75</u>	542.476	2 509.62	0.986 32	1

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heat flow rate

<b>kW</b>	<b>Btu/h</b>	<b>MJ/h</b>	<b>k cal/h*</b>	<b>cal/s*</b>
1	3 412.1	<u>3.6</u>	859.845	238.846
0.293 1	1000	1.055 1	251.996	69.999
0.277 8	947.817	1	238.846	66.346
0.001 2	3.968 3	0.004 2	1	0.277 8
0.004 2	14.286	0.015 1	3.6	1

Underlined values are exact

- \* This refers to the International Table Calorie (= 4.1868 J).
- The thermochemical calorie (= 4.184 J) is used by API and some other bodies.

Energy

<b>watt hour W.h</b>	<b>Joule J</b>	<b>kgf.m</b>	<b>Calorie cal *</b>	<b>ft.lbf</b>	<b>Btu</b>	<b>Therm</b>
1	<u>3 600</u>	367.097 8	859.845 2	2 655.223	3.412 142	0.000 034
0.000 278	1	0.101 972	0.238 846	0.737 562	0.000 948	©
0.002 724	<u>9.806 65</u>	1	2.342 278	7.233 013	0.009 295	©
<u>0.001 163</u>	<u>4.186 8</u>	0.426 935	1	3.088 025	0.003 968	©
0.000 377	1.355 818	0.138 255	0.323 832	1	0.001 285	©
0.293 071	1 055.056	107.585 7	251.995 7	778.169 1	1	<u>0.000 01</u>
29 307.1	©	©	©	©	<u>100 000</u>	1

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- \* This refers to the International Table Calorie (= 4.1868 J).
- The thermochemical calorie (= 4.184 J) is used by API and some other bodies.

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## Velocity

km/h	m/sec	ft/sec	ft/min	mile/hr
1	0.277 778	0.911 344	54.680 67	0.621 371
<u>3.6</u>	1	3.280 840	196.850 4	2.236 936
<u>1.097 28</u>	<u>0.304 8</u>	1	<u>60</u>	0.681 818
<u>0.018 288</u>	<u>0.005 08</u>	0.016 667	1	0.011 364
<u>1.609 344</u>	<u>0.447 04</u>	1.466 667	<u>88</u>	1

Underlined values are exact

## fuel consumption

km/litre	mile/litre	mile/UK gall	mile/US gall
1	0.621 371	2.824 81	2.352 15
<u>1.609 344</u>	1	4.546 09	3.785 41
0.354 006	0.219 969	1	0.832 674
0.425 144	0.264 172	1.200 95	1

Underlined values are exact