

Resource Guide and Conversion Tables

LENGTH AND DISTANCE

From/To	in	ft	mm	cm	m
in	1	0.0833	25.4	2.54	0.0254
ft	12	1	304.8	30.48	0.3048
mm	0.03937	0.00328	1	0.1	0.001
cm	0.3937	0.03281	10	1	0.01
m	39.37	3.281	1000	100	1

FORCE

From/To	lb(f)	N	ozf	kgf	gmf
lbf	1	4.4482	16	.45359	453.6
N	.22481	1	3.5967	.10197	-
ozf	.0625	.27801	1	.02835	28.35
kgf	2.205	9.80665	35.274	1	1000
gmf	2.205x10 ⁻³	-	.03527	.001	1

Note: lbf = 1 slug x 1 ft/s² N = 1 kg x 1 m/s²

TEMPERATURE

$$F = (1.8 \times C) + 32$$

$$C = .555 (F - 32)$$

GRAVITY

(Acceleration Constant)

$$G = \frac{386.1 \text{ in}}{\text{s}^2} = \frac{32.17 \text{ ft}}{\text{s}^2} = \frac{9.806 \text{ m}}{\text{s}^2}$$

TORQUE

From/To	gmf-cm	ozf-in	kgf-cm	lbf-in	N-m	ibf-ft	kgf-m
gmf-cm	1	1.388 x 10 ⁻²	10 ⁻³	8.679 x 10 ⁻⁴	9.806 x 10 ⁻⁵	7.233 x 10 ⁻⁵	10 ⁻⁵
ozf-in	72.007	1	7.200 x 10 ⁻²	6.25 x 10 ⁻²	7.061 x 10 ⁻³	5.208 x 10 ⁻³	7.200 x 10 ⁻⁴
kgf-cm	1000	13.877	1	.8679	9.806 x 10 ⁻²	7.233 x 10 ⁻²	10 ⁻²
lbf-in	1.152 x 10 ³	16	1.152	1	.113	8.333 x 10 ⁻²	1.152 x 10 ⁻²
N-m	1.019 x 10 ⁴	141.612	10.197	8.850	1	.737	.102
ibf-ft	1.382 x 10 ⁴	182	13.825	12	1.356	1	.138
kgf-m	10 ⁵	1.388 x 10 ³	100	86.796	9.806	7.233	1

INERTIA (ROTARY)

From/To	gmf-cm ²	oz-in ²	gmf-cm-s ²	kg-cm ²	lb-in ²	oz-in-s ²	lb-ft ²	kg-cm-s ²	lb-in-s ²	lb-ft-s ² or slug-ft-s ²
gm-cm ²	1	5.46 x 10 ⁻³	1.02 x 10 ⁻³	10 ⁻³	3.417 x 10 ⁻⁴	1.41 x 10 ⁻⁵	2.37 x 10 ⁻⁶	1.02 x 10 ⁻⁶	8.85 x 10 ⁻⁷	7.38 x 10 ⁻⁸
oz-in ²	182.9	1	.187	.183	.0625	2.59 x 10 ⁻³	4.34 x 10 ⁻⁴	1.86 x 10 ⁻⁴	1.61 x 10 ⁻⁴	1.35 x 10 ⁻⁵
gm-cm-s ²	980.6	5.361	1	.981	.335	1.39 x 10 ⁻²	2.33 x 10 ⁻³	10 ⁻³	8.68 x 10 ⁻⁴	7.23 x 10 ⁻⁵
kg-cm ²	1000	5.467	1.019	1	.342	1.42 x 10 ⁻²	2.37 x 10 ⁻³	1.02 x 10 ⁻³	8.85 x 10 ⁻⁴	7.38 x 10 ⁻⁵
lb-in ²	2.92 x 10 ³	16	2.984	2.925	1	4.14 x 10 ⁻²	6.94 x 10 ⁻³	2.98 x 10 ⁻³	2.59 x 10 ⁻³	2.15 x 10 ⁻⁴
oz-in-s ²	7.06 x 10 ⁴	386.1	72.0	70.62	24.13	1	.168	7.20 x 10 ⁻²	6.25 x 10 ⁻²	5.21 x 10 ⁻³
lb-ft ²	4.21 x 10 ⁵	2304	429.4	421.3	144	5.963	1	.430	.373	3.10 x 10 ⁻²
kg-cm-s ²	9.81 x 10 ⁵	5.36 x 10 ³	1000	980.6	335.1	13.887	2.327	1	.868	7.23 x 10 ⁻²
lb-in-s ²	1.129 x 10 ⁶	6.18 x 10 ³	1.152 x 10 ³	1.13 x 10 ³	386.1	16	2.681	1.152	1	8.33 x 10 ⁻²
lb-ft-s ² or slug-ft ²	1.355 x 10 ⁷	7.42 x 10 ⁴	1.38 x 10 ⁴	1.35 x 10 ⁴	4.64 x 10 ³	192	32.17	13.823	12	1

MASS

From/To	gm	kg	slug	lb(m)	oz(m)
gm	1	.001	6.852 x 10 ⁻⁵	2.205 x 10 ⁻³	.03527
kg	1000	1	6.852 x 10 ⁻²	2.205	35.274
slug	14590	14.59	1	32.2	514.72
lb(m)	453.6	.45359	.0311	1	16
oz(m)	28.35	.02835	1.94 x 10 ⁻³	0.0625	1

MATERIAL DENSITIES

From/To	oz/in ³	in/lb ³	gm/cm ³
Aluminum	1.570	0.098	2.720
Brass	4.960	0.310	8.600
Bronze	4.720	0.295	8.170
Copper	5.150	0.322	8.910
Plastic	0.640	0.040	1.110
Steel	4.480	0.280	7.750
Hard Wood	0.460	0.029	0.800
Soft Wood	0.280	0.018	0.480

ABBREVIATED TERMS

C = Celsius	kgf = kilogram force
cm = centimeter	lbf = pound force
F = Fahrenheit	lbm = pound mass
ft = foot	mm = millimeter
gm = gram	m = meter
gmf = gram force	N = Newton
in = inch	ozf = ounce force
kg = kilogram	ozm = ounce mass

