

Reference Tables

ROTARY INERTIA

To obtain a conversion from A to B, multiply by the value in the table.

A	B	kg-m ²	kg-cm ²	g-cm ²	kg-m-s ²	kg-cm-s ²	g-cm-s ²	oz-in ²	oz-in-s ²	lb-in ²	lb-in-s ²	ft-lb ²	lb-ft-s ²
kg-m ²	1	10 ⁴	10 ⁷	10 ⁷	0.10192	10.1972	1.01972x10 ⁴	5.46745x10 ⁴	1.41612x10 ²	3.41716x10 ³	8.850732	23.73025	0.73756
kg-cm ²	10 ⁻⁴	1	10 ³	10 ³	1.01972x10 ⁵	1.01972x10 ³	1.01972	5.46745	1.41612x10 ⁻²	0.341716	8.85073x10 ⁻⁴	2.37303x10 ⁻³	7.37561x10 ⁻⁵
g-cm ²	10 ⁻⁷	10 ⁻³	1	1	1.01972x10 ⁻⁸	1.01972x10 ⁻⁶	1.01972x10 ⁻³	5.46745x10 ⁻³	1.41612x10 ⁻⁵	3.41716x10 ⁻⁴	8.85073x10 ⁻⁷	2.37303x10 ⁻⁶	7.37561x10 ⁻⁸
kg-m-s ²	9.80665	9.80665x10 ⁴	9.80665x10 ⁷	9.80665x10 ⁷	1	10 ²	10 ⁵	5.36174x10 ⁵	1.388674x10 ³	3.35109x10 ⁴	86.79606	2.32714x10 ²	7.23300
kg-cm-s ²	9.80665x10 ⁻²	9.80665x10 ²	9.80665x10 ⁵	9.80665x10 ⁵	10 ⁻²	1	10 ⁵	5.36174 x10 ³	13.8874	3.35109x10 ⁻²	0.86796	2.32714	7.23300x10 ⁻²
g-cm-s ²	9.80665x10 ⁻⁵	9.80665	9.80665x10 ²	9.80665x10 ²	10 ⁻⁵	10 ⁻³	1	5.36174	1.38874 x10 ²	0.335109	8.67961x10 ⁻⁴	2.32714x10 ⁻³	7.23300x10 ⁻⁵
oz-in ²	1.82901x10 ⁻⁵	0.182901	1.82901x10 ²	1.82901x10 ²	1.86505x10 ⁻⁶	1.86505x10 ⁻⁴	0.186506	1	2.59008 x10 ⁻³	6.25 x10 ⁻²	1.61880x10 ⁻⁴	4.34028x10 ⁻⁴	1.34900x10 ⁻³
oz-in-s ²	7.06154x10 ⁻³	70.6154	7.06154x10 ⁴	7.06154x10 ⁴	7.20077x10 ⁴	7.20077x10 ⁻²	72.0077	3.86089x10 ²	1	24.13045	6.25 x10 ⁻²	0.167573	5.20833x10 ⁻⁴
lb-in ²	2.92641x10 ⁻⁴	2.92641	2.92641x10 ³	2.92641x10 ³	2.98411x10 ⁵	2.98411x10 ³	2.98411	16	4.14414 x10 ²	1	2.59008x10 ⁻³	6.94444x10 ⁻³	2.15840x10 ⁻⁴
lb-in-s ²	0.112985	1.112985x10 ³	1.112985x10 ⁶	1.112985x10 ⁶	1.15213x10 ²	1.15213	1.51213 x10 ³	6.1774 x10 ³	16	3.86088x10 ²	1	2681175	8.3333x10 ⁻²
lb-ft ²	4.21403x10 ⁻²	4.21403x10 ²	4.21403x10 ⁵	4.21403x10 ⁵	4.29711x10 ³	0.429711	4.297114	2.304 x10 ³	5.96755	144	0.372971	1	3.10809x10 ⁻²
lb-ft-s ²	1.35583	1.35582x10 ⁴	1.35582x10 ⁷	1.35582x10 ⁷	0.138255	13.82551	1.38255x10 ⁴	7.41289x10 ⁴	192	4.63306x10 ³	12	32.17400	1

TORQUE

To obtain a conversion from A to B, multiply A by the value in the table.

A	B	N-m	N-cm	dyn-cm	kg-m	kg-cm	g-cm	oz-in	ft-lb	in-lb
N-m	1	10 ²	10 ⁷	10 ⁷	0.109716	10.19716	1.019716 x10 ⁴	141.6199	0.737562	8.85074
N-cm	10 ²	1	10 ⁵	10 ⁵	1.019716 x10 ³	0.1019716	1.019716 x10 ²	1.41612	7.37562 x10 ⁻³	8.85074 x10 ⁻²
dyn-cm	10 ⁻⁷	10 ⁻⁵	1	1	1.019716 x10 ⁻⁸	1.019716 x10 ⁻⁶	1.019716 x10 ⁻³	1.41612 x10 ⁻⁵	7.2562 x10 ⁻⁸	8.85074 x10 ⁻⁷
kg-m	9.80665	980665x10 ²	9.80665 x10 ⁷	9.80665 x10 ⁷	1	10 ²	10 ⁵	1.38874 x10 ³	7.23301	86.79624
kg-cm	9.80665x10 ⁻²	9.80665	9.80665 x10 ⁵	9.80665 x10 ⁵	10 ⁻²	1	10 ³	13.8874	7.23301 x10 ⁻²	0.86792
g-cm	9.80665x10 ⁻⁵	9.80665x10 ⁻³	9.80665x10 ²	9.80665x10 ²	10 ⁻⁵	10 ⁻³	1	1.38874 x10 ⁻²	7.23301 x10 ⁻⁵	8.679624 x10 ⁻⁴
oz-in	7.06155x10 ⁻³	0.706155	7.06155 x10 ⁴	7.06155 x10 ⁴	7.20077 x10 ⁻⁴	7.20077 x10 ⁻²	72.077	1	5.20833 x10 ⁻³	6.250 x10 ⁻²
ft-lb	1.35582	1.35582x10 ²	1.35582 x10 ⁷	1.35582 x10 ⁷	0.1382548	13.82548	1.382548 x10 ⁴	192	1	12
in-lb	0.113	11.2985	1.12985 x10 ⁶	1.12985 x10 ⁶	1.15212 x10 ⁻²	1.15212	1.15212 x10 ³	16	8.33333 x10 ⁻²	1

COMMON MATERIAL DENSITIES

Material	oz/in ³	gm/cm ³
Aluminum (cast or hard drawn)	1.54	2.66
Brass (cast or rolled)	4.80	8.30
Bronze (cast)	4.72	8.17
Copper (cast or hard drawn)	5.15	8.91
Plastic	0.64	1.11
Steel (hot or cold rolled)	4.48	7.75
Wood (hard)	0.46	0.80
Wood (soft)	0.28	0.58

COEFFICIENTS OF SLIDING FRICTION

Materials in contact	μ
Steel on Steel (dry)	0.58
Steel on Steel (lubricated)	0.15
Aluminum on Steel	0.45
Copper on Steel	0.36
Brass on Steel	0.44
Plastic on Steel	0.20
Linear Bearings	0.001