

DENSITY (MASS/VOLUME)

Unit	kg m ⁻³	g cm ⁻³	lb ft ⁻³	lb in ⁻³	lb gal ⁻³	slug ft ⁻³
kg m ⁻³	1	10 ⁻³	62.42796 x 10 ⁻³	0.036128 x 10 ⁻³	0.0100224	1.94032 x 10 ⁻³
g cm ⁻³	10	1	62.42796	0.036128	10.0224	1.94032
lb ft ⁻³	16.01846	0.01601846	1	0.0576704 x 10 ⁻³	0.160544	0.031081
lb in ⁻³	27679.9	27.6799	1728	1	277.42	53.708
lb gal ⁻³	99.7764	0.099764	6.228843	0.00360465	1	-
slug ft ⁻³	515.379	0.515379	32.17405	0.018619	-	1

- 1 g cm⁻³ = 1 kg dm⁻³ = 1kg 1⁻³ The value of the litre as defined in 1901 is 1.000028 dm³. In 1964 the XII CGPM ruled that for practical purposes the cubic decimetre can be called the litre. The values in the above tables are based on this decision
- 1 gal = 1.20095 US gal; 1 Us gal = 0.832675 gal

FORCE

Unit	N	lbf	pdl	kgf	UK tonf
N	1	0.224809	7.233011	0.101971621	0.100361 x 10 ⁻³
lbf	4.448222	1	32.17405	0.453602	0.446429 x 10 ⁻³
pdl	0.138255	0.031081	1	0.0140961	0.01388 x 10 ⁻³
kgf	9.80655	2.204622	70.931607	1	0.984207 x 10 ⁻³
UK tonf	9964.0173	2240	72069672	1016.047	1

- The force unit lbf, kgf, tonf, all contain the standard value of the free fall acceleration due to gravity, g_n = 32.17405 ft s⁻², 9.80665 m s⁻² eg the force to support 1 kg (mass) is 1 kgf = 9.80665 N
- The kgf is also known as the kilopond (kp)

PRESSURE - LOADING - STRESS

Unit	N m ⁻² (Pa)	kgf mm ²	lbf in ⁻²	lbf ft ⁻²	tonf in ⁻²	MN m ⁻² (MPa)
N m ⁻²	1	0.101972 x 10 ⁶	0.145038 x 10 ⁻³	0.0208854	64.7488 x 10 ⁻⁹	10 ⁻⁶
kgf mm ²	9.80665 x 10 ⁶	1	1422.334	204516.1	0.634971	9.80665
lbf in ⁻²	6894.761	0.70307 x 10 ⁻³	1	144	0.446429 x 10 ⁻³	6.894761 x 10 ⁻³
lbf ft ⁻²	47.8803	4.88243 x 10 ⁻⁶	6.9444 x 10 ⁻³	1	3.1002 x 10 ⁻⁶	47.8803 x 10 ⁻⁶
tonf ²	15.4443 x 10 ⁶	1.57488	2240	322560	1	15.4443
MN m ⁻²	10 ⁶	0.101972	145.0377	20885.43	64.7488 x 10 ⁻³	1

- 10 MN m⁻² = 1 hectobar (h bar) = 10 MPa = 10 N mm⁻²
- pz = 1 sthene m⁻² (sn m⁻²) = 10³ Pa
- 1 atm = 1.01325 bar = 760 mm Hg = 1013.25 m bar = 0.101325 MN m⁻²