

<i>Symbol</i>	<i>meaning</i>
MN/m	mega newton per meter (note: this is displayed in SI unit mode)
klbf/in	thousand pound force per inch (note: this is displayed in English unit mode)
MPa	mega pascal
psi	pound per square inch
Pa	pascal (Note: 1,000,000 Pa = 1 MPa)
K	stiffness
E	Young's modulus
G	shear modulus
SI	Symbol International (metric)

1 newton = 0.2248 lbf
 1 mega newton (MN) = 224800 lbf
 1 pound force (lbf) = 4.448222 newton (N)
 1 pound force per square inch (psi) = 0.006894757 pascals (Pa)
 1 meter = 39.37 inches

Convert Stiffness MN/m to Stiffness lbf/in (note: displays value in klbf/in)

1 MN/m * 5710.44 = 5710.44 lbf/in
 22.8 MN/m * 5710.44 = 130,198.03 lbf/in = 130.198 klbf/in

Convert modulus MPa to modulus psi

1 MPa * 145.0377 = 145.0377 psi
 95 MPa * 145.0377 = 13,778.581 psi

Stiffness formula or equation, force/deflection =

13.6 lbf (force) / 0.0001 (inch deflection) = 13.6 / 0.0001 = 136,000 lbf/in
 (136,000 lbf * 4.45 * 39.37) / 1,000,000 = 23,820,672 / 1,000,000 = 23.82 MN/m
 136,000 lbf/in = 23.82 MN/m

Convert stiffness (MN/m) to Young's modulus (E)

$E = \text{stiffness (MN/m)} \times (1 - \text{Poisson's Ratio}^2) / 0.1011555$
 $E = 18.9 \times (1 - 0.35^2) / 0.1011555 = 16.58475 / 0.1011555 = 163.95302 \text{ MPa}$

Convert stiffness (MN/m) to shear modulus (G)

$G = \text{stiffness (MN/m)} \times (1 - \text{Poisson's Ratio}) / 0.202311$
 $G = 18.9 \times (1 - 0.35) / 0.202311 = 12.285 / 0.202311 = 60.723341 \text{ MPa}$

Convert stiffness to CBR

Note: Factor pre-determined from established relationship

Convert stiffness (MN/m) to Young's modulus (Mpa) / (factor) = CBR

Convert CBR to Young's modulus (Mpa) via CBR X (factor)

**Note: Poisson's Ratio is pre-determined for particular soil via lab.
 Get Poisson's Ratio from Soil or Material Office.**

**CBR to modulus factor generally pre-determined for particular soil.
 Get factor from Soil or Material Office.**