

## Metric Conversion Chart

| To Convert From                        | To                             | Multiply By  |
|--|--------------------------------|--|
| <b>Angle</b>                           |                                |  |
| degree                                 | radian (rad)                   | 0.01745329   |
| radian (rad)                           | degree                         | 57.295780  |
| <b>Area</b>                            |                                |  |
| foot <sup>2</sup>                      | square meter (m <sup>2</sup> ) | 0.09290304   |
| inch <sup>2</sup>                      | square meter (m <sup>2</sup> ) | 0.0064516 x 10 <sup>-2</sup>                         |
| circular mil                           | square meter (m <sup>2</sup> ) | 0.00005067075 x 10 <sup>-5</sup>                     |
| sq. centimeter (cm <sup>2</sup> )      | square inch (in <sup>2</sup> ) | 0.15500030   |
| square meter (m <sup>2</sup> )         | foot <sup>2</sup>              | 10.763910  |
| square meter (m <sup>2</sup> )         | inch <sup>2</sup>              | 1550.0030  |
| square meter (m <sup>2</sup> )         | circular mil                   | 1973523000.0   |
| <b>Temperature</b>                     |                                |  |
| degree Fahrenheit                      | degree Celsius                 | $t^{\circ}\text{C} = (t^{\circ}\text{F} - 32) / 1.8$ |
| degree Celsius                         | degree Fahrenheit              | $t^{\circ}\text{F} = 1.8t^{\circ}\text{C} + 32$      |
| <b>Force</b>                           |                                |  |
| pounds - force (lbf)                   | newtons (N)                    | 4.4482220  |
| <b>Length</b>                          |                                |  |
| foot (ft)                              | meter (m)                      | 0.30480  |
| inch (in)                              | meter (m)                      | 0.02540  |
| mil                                    | meter (m)                      | 0.002540 x 10 <sup>-3</sup>                          |
| inch                                   | micrometer (μm)                | 25400.0  |
| millimeters                            | inch (in)                      | 0.039370   |
| meter (m)                              | foot (ft)                      | 3.280840   |
| meter (m)                              | inch (in)                      | 39.370080  |
| meter (m)                              | mil                            | 39370.0080   |
| micrometer (μm)                        | inch (in)                      | 0.039370080 x 10 <sup>-3</sup>                       |
| <b>Volume</b>                          |                                |  |
| foot <sup>3</sup>                      | cubic meter (m <sup>3</sup> )  | 0.028316850  |
| inch <sup>3</sup>                      | cubic meter (m <sup>3</sup> )  | 0.016387060 x 10 <sup>-3</sup>                       |
| cubic centimeter (cm <sup>3</sup> )    | cubic inch (in <sup>3</sup> )  | 0.061023740  |
| cubic meter (m <sup>3</sup> )          | foot <sup>3</sup>              | 35.314660  |
| cubic meter (m <sup>3</sup> )          | inch <sup>3</sup>              | 61023.760  |
| gallon (U.S. liquid)                   | cubic meter (m <sup>3</sup> )  | 0.0037854120   |
| <b>Section Properties</b>              |                                |  |
| section modulus S (in <sup>3</sup> )   | S (m <sup>3</sup> )            | 0.016387060 x 10 <sup>-3</sup>                       |
| moment of inertia I (in <sup>4</sup> ) | I (m <sup>4</sup> )            | 0.00041623140 x 10 <sup>-3</sup>                     |
| modulus of elasticity E (psi)          | E (Pa)                         | 6894.7570  |
| section modulus S (m <sup>3</sup> )    | S (in <sup>3</sup> )           | 61023.740  |
| moment of inertia I (m <sup>4</sup> )  | I (in <sup>4</sup> )           | 2402510.0  |
| modulus of elasticity E (Pa)           | E (psi)                        | 0.014503770 x 10 <sup>-2</sup>                       |

## Metric Conversion Chart (Cont.)

| To Convert From                               | To   | Multiply By                     |
|---|--|---------------------------------|
| <b>Bending Moment or Torque</b>               |  |                                 |
| lbf • ft                                      | newton meter (N•m)                             | 1.3558180                       |
| lbf • in                                      | newton meter (N•m)                             | 0.11298480                      |
| N•m   | lbf • ft                                       | 0.73756210                      |
| N•m   | lbf • in                                       | 8.8507480                       |
| <b>Mass</b>                                   |  |                                 |
| ounce (avoirdupois)                           | kilogram (kg)                                  | 0.028349520                     |
| pound (avoirdupois)                           | kilogram (kg)                                  | 0.45359240                      |
| ton (short, 2000 lb)                          | kilogram (kg)                                  | 907.18470                       |
| ton (long, 2240 lb)                           | kilogram (kg)                                  | 1016.0470                       |
| kilogram (kg)                                 | ounce (avoirdupois)                            | 35.273960                       |
| kilogram (kg)                                 | pound (avoirdupois)                            | 2.2046220                       |
| kilogram (kg)                                 | ton (short, 2000 lb)                           | 0.0011023110                    |
| kilogram (kg)                                 | ton (long, 2240 lb)                            | 0.98420640 x 10 <sup>-3</sup>   |
| <b>Mass Per Unit Length</b>                   |  |                                 |
| lb/ft   | kilogram per meter (kg/m)                      | 1.4881640                       |
| lb/in   | kilogram per meter (kg/m)                      | 17.857970                       |
| kilogram per meter (kg/m)                     | lb/ft  | 0.67196890                      |
| kilogram per meter (kg/m)                     | lb/in  | 0.55997410                      |
| <b>Mass Per Unit Volume</b>                   |  |                                 |
| lb/ft <sup>3</sup>                            | kilogram per cubic meter (kg/m <sup>3</sup> )  | 16.018460                       |
| lb/in <sup>3</sup>                            | kilogram per cubic meter (kg/m <sup>3</sup> )  | 27679.90                        |
| kilogram per cubic meter (kg/m <sup>3</sup> ) | lb/ft <sup>3</sup>                             | 0.062427970                     |
| kilogram per cubic meter (kg/m <sup>3</sup> ) | lb/in <sup>3</sup>                             | 0.03612730 x 10 <sup>-3</sup>   |
| lb/ft <sup>3</sup>                            | lb/in <sup>3</sup>                             | 1728.0                          |
| <b>Mass Per Unit Area</b>                     |  |                                 |
| lb/ft <sup>2</sup>                            | kilogram per square meter (kg/m <sup>2</sup> ) | 4.8824280                       |
| kg/m <sup>2</sup>                             | pound per square foot (lb/ft <sup>2</sup> )    | 0.20481610                      |
| <b>Pressure or Stress</b>                     |  |                                 |
| lbf/in <sup>2</sup> (psi)                     | pascal (Pa)                                    | 6894.7570                       |
| kip/in <sup>2</sup> (ksi)                     | pascal (Pa)                                    | 6894757.0                       |
| lbf/in <sup>2</sup> (psi)                     | megapascals (MPa)                              | 0.0068947570                    |
| pascal (Pa)                                   | pound-force per square inch (psi)              | 0.0014503770 x 10 <sup>-1</sup> |
| pascal (Pa)                                   | kip per square inch (ksi)                      | 0.0014503770 x 10 <sup>-4</sup> |
| megapascals (MPa)                             | lbf/in <sup>2</sup> (psi)                      | 145.03770                       |
| <b>Metric Symbols</b>                         |  |                                 |
| m = meter                                     | N = newton                                     |                                 |
| cm = centimeter                               | kN = kilonewton                                |                                 |
| mm = millimeter                               | Pa = pascal                                    |                                 |
| µm = micrometer                               | MPa = megapascal                               |                                 |
| kg = kilogram                                 |  |                                 |