

## Conversion Factors

AREA	
1 square inch	= 6.4516 cm <sup>2*</sup>
1 square foot	= 929.0304 cm <sup>2*</sup>
1 square yard	= 0.83612736 cm <sup>2*</sup>
1 acre	= 4.046.8654 m <sup>2*</sup>
	= 0.40468564 hectare
1 hectare (ha)	= 2.4710538 acres
1 square mile	= 2.5899881 km <sup>2</sup>

VOLUME	
1 bbl (petroleum U.S.)	= 42 gallons (U.S)
	= 0.158987 m <sup>3</sup>
1 cubic foot	= 28.316847 dm <sup>3</sup>
1 cubic yard	= 0.76455486 m <sup>3</sup>
1 acre foot	= 1.233.4818 m <sup>3</sup>
1 gallon (Imperial)	= 4.54609 L*
1 gallon (U.S.)	= 3.785412 L
1 quart (Imperial)	= 1.136522 L
1 quart (U.S.)	= 0.94635264 L

LENGTH	
1 inch	= 25.4 millimetres*
1 foot	= 12 inches
	= 0.3048 metre*
1 yard	= 3 feet
	= 0.9144 metre*
1 mile	= 1,760 yard
	= 1.609344 kilometres*
1 British nautical mile	= 1.8532 kilometres*
1 international nautical mile	= 1.852 kilometres

TEMPERATURE	
Degrees Fahrenheit (°F)	= (°C x 9/5) + 32*
Degrees Centigrade/Celsius (°C)	= (°F - 32) x 5/9
Degrees Kelvin (°K)	= °C + 273.15*
Degrees Rankine (°R)	= °F + 459.67
Degrees Rankine (°R)	= °K x 9/5

MASS	
1 pound (avoirdupois)	= 0.45359237 kg
1 ounce (avoirdupois)	= 28.349523 g
1 grain	= 64.79891 mg*
1 tonne (t)	= 1.000 kg*
1 long ton	= 1.016.0469 kg
1 short ton	= 907.18474 kg

SPEED	
1 mile per hour	= 1.609344 km/hr*
1 foot per second	= 0.3048 m/s*

DENSITY	
1 pound per cubic foot	= 16.01846 kg/m <sup>3</sup>
1 pound per cubic inch	= 27.67990 Mg/m <sup>3</sup>
1 long ton per cubic yard	= 1,328.939 kg/m <sup>3</sup>
1 short ton per cubic yard	= 1,186.553 kg/m <sup>3</sup>

PRESSURE	
1 psi	= 6.894757 kPa
1 standard atmosphere	= 101.325 kPa*
1 bar	= 100 kPa*

FORCE	
1 kilogram (force)	= 1 kilopond
	= 9.80665 newtons*
1 pound (force)	= 4.448222 newtons

**Important Disclaimer:** Conversion Factors are provided as a reference only. Accuracy is not guaranteed.

\*denotes exact conversion

## Conversion Factors

ENERGY	
1 Btu <sub>60/61°F</sub>	= 1,054.615 J
1 Btu (IT)	= 1,055.06 J
1 foot-pound	= 1.355818 J
1 horsepower-hour	= 2.684520 MJ
1 kilowatt-hour	= 3.6 MJ*
	= 3,414 Btu (Int)

POWER	
1 Btu <sub>60/61</sub> per hour	= 0.2929486 W
1 foot-pound per hour	= 0.3766161 mW
1 horsepower (boiler)	= 9.0950 kW
1 horsepower (electric)	= 746 W*
1 horsepower (hydraulic)	= 746.043 W
1 horsepower (brake)	= 745.69999 W

OIL VOLUME CORRECTION FACTORS	
1 bbl (60°F) = (0.1589873 x CF) m <sup>3</sup> (15°C)	
API Gravity	Correction Factor (CF)
0-6	0.9997
7-35	0.9996
36-51	0.9995
52-64	0.9994
65-78	0.9993
79-91	0.9992
92-99	0.9991

NATURAL GAS LIQUID VOLUME	
Ethane: 1 bbl	= 0.157976 m <sup>3</sup>
Propane: 1 bbl	= 0.15873 m <sup>3</sup>
Butane: 1 bbl	= 0.15881 m <sup>3</sup>
<i>Propane, butane and ethane converted from 60°F to 15°C, at equilibrium pressure.</i>	

NATURAL GAS VOLUME	
1 cubic foot (14.73 psia, 60°F)	= 0.02832784 m <sup>3</sup> (101.325 kPa 15°C)

PIPE PRESSURE	
psig	MPa
200	1.378951
400	2.757903
600	4.136854
800	5.515806
1,000	6.894757
1,200	8.273708
1,500	0.342136

PETROLEUM SPECIFIC GRAVITY (15.6°C)		
°API	Specific Gravity	bbl/tonne
25	0.904	6.98
26	0.898	7.02
27	0.893	7.06
28	0.887	7.22
29	0.882	7.15
30	0.876	7.19
31	0.871	7.24
32	0.865	7.28
33	0.86	7.33
34	0.855	7.37
35	0.85	7.42
36	0.845	7.46
37	0.84	7.51
38	0.835	7.55
39	0.83	7.6
40	0.825	7.64
41	0.82	7.69
42	0.816	7.73

**Important Disclaimer:** Conversion Factors are provided as a reference only. Accuracy is not guaranteed.

\*denotes exact conversion

## Conversion Factors

HEATING VALUES		SPECIFIC GRAVITY	
ammonia	= 22.315 GJ/tonne	ammonia	0.77
aviation gasoline	= 33.518 MJ/L	asphaltic bitumens	-0.1
aviation turbo fuel	= 35.934 MJ/L	aviation gasolines	-0.08
benzene	= 41.914 GJ/tonne	benzene	0.879
butane (liquid)	= 29.475 GJ/m <sup>3</sup>	butane	0.599
coal	= imported bituminous - 29.527 GJ/tonne	crude oils	-0.17
	= Canadian bituminous - 29.993 GJ/tonne	diesel oils	-0.1
	= sub-bituminous - 19.763 GJ/tonne	ethane	0.446
	= lignite - 15.345 GJ/tonne	ethylene	0.61
coke	= 28.830 GJ/tonne	fuel oils	-0.07
coke oven gas	= 18.614 MJ/L	gas oils	-0.08
crude oil	= 5.81 MMBtu/bbl	kerosenes	-0.06
	= 38.512 MJ/L	lubricating oils	-0.1
	= 38.512 GJ/m <sup>3</sup>	methanol	0.7924
diesel fuel	= 38.675 MJ/L	motor gasolines	-0.08
electricity	= 3.6 MJ/kWh	naphtha	0.885
ethane (liquid)	= 18.36 GJ/m <sup>3</sup>	n-pentane	0.62624
ethylene	= 49.469 GJ/tonne	propane	0.531
heavy fuel oil	= 41.727 MJ/L	propylene	0.5139
kerosene	= 37.676 MJ/L	sulfur	2.06
light fuel oil	= 38.675 MJ/L	toluene	0.866
methanol	= 22.322 GJ/tonne	xylene	0.86
motor gasoline	= 34.656 MJ/L		
naphtha	= 34.656 GJ/m <sup>3</sup>		
natural gas - 1 MMBtu/Mcf	= 37.229 kJ/L		
	= 37.229 MJ/m <sup>3</sup>		
pentanes-plus	= 35.17 GJ/m <sup>3</sup>		
petroleum coke	= 42.376 MJ/L		
propane (liquid)	= 25.53 GJ/m <sup>3</sup>		
propylene	= 25.53 GJ/m <sup>3</sup>		
still gas	= 41.727(1) MJ/L		
sulfur	= 9.337 GJ/tonne		
toluene	= 42.433 GJ/tonne		
xylene	= 42.987 GJ/tonne		

**Important Disclaimer:**  
Conversion Factors are provided as a reference only. Accuracy is not guaranteed.