

# Conversion Factors

## Conversion Factors

- PHYSICAL DIMENSIONS - VOLUME						
U.S. CUSTOMARY UNITS					S.I. UNIT	OTHER METRIC UNIT
cubic inch (in. <sup>3</sup> )	US gallon (US gal)	Imp.gallon (Imp gal)	cubic foot (ft. <sup>3</sup> )	barrel* (bbl)	cubic meter (m <sup>3</sup> )	liter (l)
1	0.00433	0.00360	0.000579	0.000103	0.00001639	0.01639
231	1	0.8327	0.1337	0.0238	0.003785	3.785
277.42	1.2009	1	0.1606	0.0286	0.004546	4.546
1728	7.481	6.229	1	0.1780	0.02832	28.32
9702	42	34.97	5.615	1	0.15897	158.97
61.024	264.17	220	35.31	6.2898	1	1000
61.024	0.2642	0.2198	0.0353	0.00630	0.001	1

\*By trade custom, one barrel petroleum oil is equal to 42 US gal.

CONVERSION TABLE - CAPACITY							
U. S. CUSTOMARY UNITS					S.I. UNIT	OTHER METRIC UNITS	
Millions of US gallons per day (MGD)	US gallons per min (gpm)	Imp. gallons per min (lgpm)	cubic feet per sec (cfs)	*barrels per hr (bph)	cubic meters per sec (m <sup>3</sup> /s)	liters per min (l/min)	cubic meters per hr (m <sup>3</sup> /hr)
1	694.4	578	1.547	992	0.0438	2628	157.72
0.00144	1	0.8327	0.002228	1.4286	63.08x10 <sup>-6</sup>	3.785	0.2271
0.00173	1.2009	1	0.00268	1.7156	75.77x10 <sup>-6</sup>	4.5454	0.2728
0.64636	448.86	373.8	1	641.23	2.832 x 10 <sup>-2</sup>	1699	101.952
0.00100	0.7000	0.5829	0.00156	1	44.166x10 <sup>-4</sup>	2.6495	0.1590
22.824	15.852	13.188	35.316	22.643	1	60.000	3.600
0.000380	0.2642	0.2198	0.000586	0.3774	16.67x10 <sup>-6</sup>	1	0.0600
0.00634	4.4028	3.666	0.00981	6.2898	2.777x10 <sup>-4</sup>	16.667	1

\*By trade custom, one barrel petroleum oil is equal to 42 US gal.  
 $gpm = \frac{0.1247 \times lb/hr}{w}$  when  $w =$  density, lb/cu ft

CONVERSION TABLE-MASS, WEIGHT AND FORCE							
Definitions:							
1. Mass is absolute, the pound (lb) and kilogram (kg) are most commonly used units, the kilogram is the SI unit.							
U.S. CUSTOMARY UNITS (avoirdupois)					S.I. UNIT	OTHER METRIC UNITS	
grain (gr)	ounce (oz)	pound (lb)	short ton	long ton	kilogram (kg)	gram (g)	metric ton
1	0.002286	-	-	-	-	0.0648	-
437.5	1	0.0625	-	-	0.02835	28.35	-
7 000	16	1	-	-	0.4536	453.6	-
-	-	2 000	1	.8929	907.2	-	0.9072
-	-	2 240	1.12	1	1016	-	1.016
15 432	35.27	2.205	-	-	1	1 000	0.001
15.432	0.03527	0.002205	-	-	0.001	1	-
-	-	2205	1.102	0.9842	1000	1 000 000	1

CONVERSION TABLE-POWER					
U.S. CUSTOMARY UNITS			S.I. UNIT	OTHER METRIC UNITS	
foot-pounds per sec. (ft-lb/sec)	horsepower (hp)	British thermal units per sec (Btu/sec)	watts (W)	kilowatts (kW)	metric horsepower
1	0.00182	0.001285	1.356	0.001356	0.00184
550	1	0.7068	7.457 x 10 <sup>2</sup>	0.7457	1.014
778.2	1.415	1	1.055 x 10 <sup>3</sup>	1.055	1.434
0.7376	1.341 x 10 <sup>-3</sup>	9.478 x 10 <sup>-4</sup>	1	0.001	0.00136
737.6	1.341	0.9478	1000	1	1.360
542.5	0.9863	0.6971	7.355 x 10 <sup>2</sup>	0.7355	1

### CONVERSION TABLE-PRESSURE

Units and symbols:

pounds per square inch (psi)  
 pascal (Pa) = 1 N/m (SI unit)  
 kilograms per square centimeter (kg/cm<sup>2</sup>)  
 bar

1 psi = 0.0703 kg/cm<sup>2</sup> = 6894.76 N/m<sup>2</sup> = 6.894 kPa  
 1 kg/cm<sup>2</sup> = 14.22 psi = 9.80665 x 10<sup>4</sup> N/m<sup>2</sup> = 98.0665 kPa  
 1 atmosphere = 14.7 psi = 1.0332 kg/m<sup>2</sup> = 10.13 x 10<sup>4</sup> = 101.3 kPa  
 1 metric atmosphere = 98.0665 kPa  
 1 pascal = 1.45 x 10<sup>4</sup> psi = 1.02 x 10<sup>5</sup> kg/cm<sup>3</sup>  
 1 bar = 10<sup>5</sup> Pa = 100 kPa