

## TABLA DE UNIDADES

### LONGITUD

1 cm = 0.39370 in  
 1 cm = 0.03281 ft  
 1 cm = 1.09361 yd  
 1 yd =  $9.144 \times 10^{-1}$  m  
 1 m = 39.3700 in  
 1 m = 3.28084 ft  
 1 km = 0.62137 mi  
 1 km = 1000 m  
 1 mm = 0.03937 in  
 1 in = 0.025400 m  
 1 in = 2.5400 cm  
 1 in = 25.400 mm  
 1 ft = 0.3048 m  
 1 ft = 30.4800 cm  
 1 ft = 12.000 in  
 Furlong = 201.17 m  
 Legua nau = 48.88 cm  
 Milla nau = 1852.00 m  
 Milla nau = 1.852 km  
 1 milla = 1609.3440 m  
 1 milla = 1.6093440 km  
 1 micra =  $1 \times 10^{-6}$  m  
 Armstrong =  $1 \times 10^{-12}$  cm  
 Armstrong =  $1 \times 10^{-10}$  m

### ÁREA

1 m<sup>2</sup> = 10000 cm<sup>2</sup>  
 1 m<sup>2</sup> = 1.1959 yd<sup>2</sup>  
 1 m<sup>2</sup> = 10.76391 ft<sup>2</sup>  
 1 m<sup>2</sup> = 1550 in<sup>2</sup>  
 1 m<sup>2</sup> =  $1 \times 10^6$  mm<sup>2</sup>  
 1 cm<sup>2</sup> = 0.1550 in<sup>2</sup>  
 1 cm<sup>2</sup> =  $1.076391 \times 10^{-3}$  ft<sup>2</sup>  
 1 cm<sup>2</sup> =  $1.1959 \times 10^{-4}$  yd<sup>2</sup>  
 1 cm<sup>2</sup> =  $100 \times 10^{-4}$  m<sup>2</sup>  
 1 cm<sup>2</sup> = 100 mm<sup>2</sup>  
 1 km<sup>2</sup> =  $1 \times 10^6$  m<sup>2</sup>  
 1 km<sup>2</sup> = 247.1049 acres  
 1 mi<sup>2</sup> = 2.5899 km<sup>2</sup>  
 Ha = 0.01 km<sup>2</sup>  
 1 ft<sup>2</sup> = 0.093 m<sup>2</sup>  
 1 ft<sup>2</sup> = 144 in<sup>2</sup>  
 1 ft<sup>2</sup> = 0.11 yd<sup>2</sup>  
 1 ft<sup>2</sup> = 923.03 cm<sup>2</sup>  
 1 yd<sup>2</sup> = 9.000 ft<sup>2</sup>  
 1 yd<sup>2</sup> = 1296 in<sup>2</sup>  
 1 yd<sup>2</sup> = 0.836 m<sup>2</sup>  
 1 yd<sup>2</sup> = 8361.21 cm<sup>2</sup>

### VOLUMEN

1 cm<sup>3</sup> = 0.06182 in<sup>3</sup>  
 1 cm<sup>3</sup> =  $3.531 \times 10^{-5}$  ft<sup>3</sup>  
 1 cm<sup>3</sup> =  $1 \times 10^{-6}$  m<sup>3</sup>  
 1 cm<sup>3</sup> =  $1.308 \times 10^{-6}$  yd<sup>3</sup>  
 1 cm<sup>3</sup> = 1 ml  
 1 m<sup>3</sup> = 35.31 ft<sup>3</sup>  
 1 m<sup>3</sup> = 61024 in<sup>3</sup>  
 1 m<sup>3</sup> =  $1 \times 10^6$  cm<sup>3</sup>  
 1 m<sup>3</sup> = 1000 cm<sup>3</sup>  
 1 m<sup>3</sup> = 1.308 yd<sup>3</sup>

1 m<sup>3</sup> = 219.959 gal Brit  
 1 m<sup>3</sup> = 264.17205 gal US  
 1 m<sup>3</sup> = 1000 L  
 1 ft<sup>3</sup> = 28316.84 cm<sup>3</sup>  
 1 ft<sup>3</sup> = 0.0283 m<sup>3</sup>  
 1 ft<sup>3</sup> = 1728 in<sup>3</sup>  
 1 ft<sup>3</sup> =  $2.831 \times 10^7$  mm<sup>3</sup>  
 1 ft<sup>3</sup> =  $2.831684 \times 10^{-2}$  m<sup>3</sup>  
 1 ft<sup>3</sup> = 28.31684 L  
 1 ft<sup>3</sup> = 7.481 gal US  
 1 L =  $1 \times 10^{-3}$  m<sup>3</sup>  
 1 L =  $3.531 \times 10^{-2}$  ft<sup>3</sup>  
 1 L = 61.02374 in<sup>3</sup>  
 1 L = 0.2642 gal US  
 1 L = 1000 ml  
 1 L = 1 dm<sup>3</sup>  
 1 L = 1000 cm<sup>3</sup>  
 1 gal US = 3.78541 L  
 1 gal US = 0.1337 ft<sup>3</sup>  
 1 gal US =  $2.31 \times 10^2$  in<sup>3</sup>  
 1 gal US =  $3.785 \times 10^{-3}$  m<sup>3</sup>  
 1 gal Brit = 4.54609 L  
 1 in<sup>3</sup> =  $5.787 \times 10^{-4}$  ft<sup>3</sup>  
 1 in<sup>3</sup> =  $4.239 \times 10^{-3}$  gal US  
 1 in<sup>3</sup> =  $1.639 \times 10^{-2}$  L  
 1 in<sup>3</sup> =  $1.639 \times 10^{-5}$  m<sup>3</sup>  
 1 Ba US = 119.237 L  
 1 Ba Brit = 164 L  
 1 Ba pet = 42 gal US  
 1 Ba pet = 158.987 L  
 1 peck = 8.809 L  
 1 Quart = 0.9463 L  
 Pinta US = 0.4731 L  
 Onza fluido = 29.55 ml

### TIEMPO

1 año = 365.2422 días  
 1 año =  $31.556 \times 10^6$  seg  
 1 día = 24 h  
 1 día = 86400 seg  
 1 hora = 3600 seg  
 1 Hz = 1 s<sup>-1</sup>

### MASA

1 Kg = 1000 g  
 1 Kg = 2.20462 lb  
 1 Kg = 0.0197 quintal (cwt)  
 1 Kg = 0.001 ton  
 1 Kg = 0.06852 slug  
 1 lb = 16 onza  
 1 lb = 0.45359 Kg  
 1 lb = 453.59 g  
 1 lb = 0.0089 quintal (cwt)  
 1 lb =  $4.54 \times 10^{-4}$  ton  
 1 lb =  $7 \times 10^3$  granos  
 1 ton = 1000 Kg  
 1 ton = 2204.4 lb  
 1 ton = 19.684 quintal  
 1 ton corta = 907.1874 Kg  
 1 ton Brit = 1016.0459 Kg  
 Onza = 28.34952 g

Onza =  $6.25 \times 10^{-2}$  lb  
 Quilate = .2 g  
 Grano = 0.0648 g

### FUERZA

Dina =  $2.248 \times 10^{-6}$  lbf  
 Dina =  $1 \times 10^{-5}$  N  
 Dina =  $7.233 \times 10^{-5}$  pdl  
 Dina =  $1.020 \times 10^{-3}$  gr  
 Dina =  $1.020 \times 10^{-6}$  Kg  
 N =  $1 \times 10^5$  Dina  
 N = 0.2248 lbf  
 N = 7.233 pdl  
 N = 102 gr  
 N = 0.1020 Kg  
 1 lbf =  $4.448 \times 10^5$  Dina  
 1 lbf = 4.448 N  
 1 lbf = 32.17 pdl  
 1 lbf = 453.6 gr  
 1 lbf = 0.4536 Kg  
 pdl =  $1.383 \times 10^{-1}$  Dina  
 pdl = 0.1383 N  
 pdl =  $3.108 \times 10^{-2}$  lbf  
 pdl = 14.10 gr  
 pdl =  $1.410 \times 10^{-2}$  Kg  
 Kg<sub>f</sub> =  $9.807 \times 10^5$  Dina  
 Kg<sub>f</sub> = 9.807 N  
 Kg<sub>f</sub> = 2.205 lbf  
 Kg<sub>f</sub> = 70.93 pdl  
 Kg<sub>f</sub> = 1000 gr

### ENERGÍA

Btu =  $1.055 \times 10^{10}$  erg  
 Btu = 778.1693 ft \* lbf  
 Btu =  $3.929 \times 10^{-4}$  Hp \* hr  
 Btu = 1055 J  
 Btu = 252 cal  
 Btu =  $2.930 \times 10^{-4}$  KW \* hr  
 Btu =  $6.585 \times 10^{21}$  eV  
 Btu =  $6.585 \times 10^{15}$  MeV  
 Btu =  $1.174 \times 10^{-14}$  Kg<sub>f</sub>  
 Btu =  $7.074 \times 10^{12}$  uma  
 erg =  $9.481 \times 10^{-11}$  Btu  
 erg =  $97.376 \times 10^{-8}$  ft \* lbf  
 erg =  $3.725 \times 10^{-14}$  Hp \* hr  
 erg =  $1 \times 10^{-7}$  J  
 erg =  $2.389 \times 10^{-8}$  cal  
 erg =  $2.778 \times 10^{-14}$  KW \* hr  
 cal =  $3.968 \times 10^{-3}$  Btu  
 cal =  $4.186 \times 10^7$  erg  
 cal = 3.087 ft \* lbf  
 cal =  $1.559 \times 10^{-6}$  Hp \* hr  
 cal = 4.186 J  
 cal =  $1.163 \times 10^{-6}$  KW \* hr  
 cal =  $4.129 \times 10^{-2}$  L \* atm  
 1 Kcal = 1000 cal  
 1 J = 1 N \* m  
 1 J =  $9.481 \times 10^{-4}$  Btu  
 1 J =  $1 \times 10^7$  erg  
 1 J = 0.7376 ft \* lbf  
 1 J =  $3.725 \times 10^{-7}$  Hp \* hr

1 J = 0.2389 cal  
 1 J =  $2.778 \times 10^{-7}$  KW \* hr  
 1 J =  $9.9 \times 10^{-3}$  L \* atm  
 1 J =  $6.2415 \times 10^{12}$  MeV  
 1 J = W \* s  
 1 KJ = 1000 J  
 Ft \* lbf =  $1.285 \times 10^{-3}$  Btu  
 Ft \* lbf = 1.356 J  
 Ft \* lbf = 0.3239 cal  
 1 MeV =  $1 \times 10^6$  eV  
 1 L \* bar = 100 J  
 1 L \* atm = 24.23 cal  
 1 ft<sup>3</sup> \* atm = 2.7195 Btu  
 KW \* hr =  $3.6 \times 10^6$  J  
 KW \* hr = 860 Kcal  
 KW \* hr = 3414 Btu  
 W \* s = 1 J

### PRESIÓN

atm =  $1.013 \times 10^6$  Dina / cm<sup>2</sup>  
 atm = 406.8 in H<sub>2</sub>O  
 atm = 760 mm Hg  
 atm = 760 torr  
 atm = 1.013 bar  
 atm = 76 cm Hg  
 atm =  $1.013 \times 10^5$  N / m<sup>2</sup>  
 atm = 14.70 lbf / in<sup>2</sup>  
 atm = 2116 lbf / ft<sup>2</sup>  
 atm = 14.696 psi  
 atm = 101325 Pa  
 atm = 101.325 KPa  
 bar = 0.9869 atm  
 bar = 100 KPa  
 bar =  $1.415 \times 10^{-3}$  psia  
 bar =  $1 \times 10^5$  N / m<sup>2</sup>  
 in H<sub>2</sub>O =  $2.458 \times 10^{-3}$  atm  
 Dina / cm<sup>2</sup> =  $9.869 \times 10^{-2}$  atm  
 lbf / in<sup>2</sup> =  $6.805 \times 10^{-2}$  atm  
 lbf / in<sup>2</sup> = 0.87 Kg<sub>f</sub>

### POTENCIA

KW = 1.341 Hp  
 KW = 1000 W  
 KW = 0.9478 Btu / s  
 KW = 737.6 ft \* lbf / s  
 W = 1 J / s  
 W = 0.7376 ft \* lbf / s  
 W = 0.102 Kg<sub>f</sub> \* m / s  
 W = 0.2389 cal / s  
 Hp = 0.7457 KW  
 Hp = 745.7 W  
 Hp = 550 ft \* lbf / s  
 Hp = 76.04 Kg<sub>f</sub> \* m / s  
 Hp<sub>H2O</sub> = 746.043 W  
 Hp<sub>caldera</sub> = 9809.50 W  
 1 cv = 75 Kg<sub>f</sub> \* m / s  
 ft \* lbf / s = 1.356 W  
 ft \* lbf / s = 0.138 Kg<sub>f</sub> \* m / s  
 ft \* lbf / s =  $1.82 \times 10^{-3}$  Hp  
 Kg<sub>f</sub> \* m / s = 9.806 W  
 Kg<sub>f</sub> \* m / s = 7.233 ft \* lbf / s

$$\text{ft} \cdot \text{lb}_f / \text{s} = 0.0131 \text{ Hp}$$

### VISCOSIDAD

$$\begin{aligned} 1 \text{ posie} &= 1 \text{ g} / \text{cm} \cdot \text{s} \\ 1 \text{ posie} &= 100 \text{ cp} \\ 1 \text{ posie} &= 6.72 \times 10^{-2} \text{ lb} / \text{ft} \\ 1 \text{ posie} &= 0.1 \text{ Kg} / \text{m} \cdot \text{s} \\ 1 \text{ posie} &= 242 \text{ lb} / \text{ft} \cdot \text{s} \\ 1 \text{ cp} &= 0.01 \text{ poise} \\ 1 \text{ cp} &= 6.72 \times 10^{-4} \text{ lb} / \text{ft} \\ 1 \text{ cp} &= 1 \times 10^{-3} \text{ Pa} \cdot \text{s} \\ 1 \text{ Kg} / \text{m} \cdot \text{s} &= 10 \text{ poise} \\ 1 \text{ lb} / \text{ft} \cdot \text{s} &= 1.488 \text{ Kg} / \text{m} \cdot \text{s} \\ 1 \text{ cS} &= 1 \times 10^{-6} \text{ m}^2 / \text{s} \end{aligned}$$

### TEMPERATURA

$$\begin{aligned} ^\circ\text{C} &= (^\circ\text{F} - 32) / 1.8 \\ ^\circ\text{C} &= ^\circ\text{K} - 273.15 \\ ^\circ\text{C} &= (5/9) (^\circ\text{R} - 492) \\ ^\circ\text{K} &= ^\circ\text{C} + 273.15 \\ ^\circ\text{K} &= ((^\circ\text{F} - 32) / 1.8) + 273 \\ ^\circ\text{R} &= 460 + ^\circ\text{F} \\ ^\circ\text{R} &= 1.8 (^\circ\text{K} - 273.15) + 492 \\ ^\circ\text{R} &= (1.8^\circ\text{C}) + 492 \\ ^\circ\text{F} &= (1.8^\circ\text{C}) + 32 \\ ^\circ\text{F} &= 1.8 (^\circ\text{K} - 273.15) + 32 \\ ^\circ\text{F} &= ^\circ\text{R} - 460 \end{aligned}$$

### EQUIVALENCIAS DE TEMPERATURA

$$\begin{aligned} 1 ^\circ\text{C} &= 1.8 ^\circ\text{F} \\ 1 ^\circ\text{C} &= 1 ^\circ\text{K} \\ 1 ^\circ\text{C} &= 1.8 ^\circ\text{R} \\ 1 ^\circ\text{F} &= 0.5 ^\circ\text{C} \\ 1 ^\circ\text{F} &= 0.5 ^\circ\text{K} \\ 1 ^\circ\text{F} &= 1 ^\circ\text{R} \\ 1 ^\circ\text{K} &= 1.8 ^\circ\text{F} \\ 1 ^\circ\text{K} &= 1.8 ^\circ\text{R} \\ 1 ^\circ\text{K} &= 0.5 ^\circ\text{C} \end{aligned}$$

### CONSTANTE DE LOS GASES

$$\begin{aligned} R &= 1.987 \text{ cal} / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 1.987 \text{ Btu} / (\text{lb}_{\text{mol}})(^\circ\text{R}) \\ R &= 10.73 (\text{psia})(\text{ft}^3) / (\text{lb}_{\text{mol}})(^\circ\text{R}) \\ R &= 1545 (\text{ft})(\text{lb}_f) / (\text{lb}_{\text{mol}})(^\circ\text{R}) \\ R &= 8.314 (\text{KPa})(\text{m}^3) / (\text{Kg}_{\text{mol}})(\text{K}) \\ R &= 8314 (\text{KPa})(\text{cm}^3) / (\text{Kg}_{\text{mol}})(\text{K}) \\ R &= 8.314 \text{ J} / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 82.06 (\text{atm})(\text{cm}^3) / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 62356 (\text{torr})(\text{cm}^3) / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 0.08206 (\text{atm})(\text{L}) / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 21.9 (\text{inHg})(\text{ft}^3) / (\text{Lb}_{\text{mol}})(^\circ\text{R}) \\ R &= 0.7302 (\text{atm})(\text{ft}^3) / (\text{Lb}_{\text{mol}})(^\circ\text{R}) \\ R &= 83.14 (\text{bar})(\text{cm}^3) / (\text{g}_{\text{mol}})(\text{K}) \\ R &= 62.31 (\text{mmHg})(\text{L}) / (\text{g}_{\text{mol}})(\text{K}) \end{aligned}$$