

# TABLA DE CONVERSIÓN DE UNIDADES

## ÁREA

$$1 \text{ m}^2 = 10.764 \text{ ft}^2$$

$$1 \text{ ft}^2 = 0.092903 \text{ m}^2$$

$$1 \text{ pulg}^2 = 6.4516 \times 10^{-4} \text{ m}^2$$

## MASA

$$1 \text{ Kg} = 2.2046 \text{ lbm}$$

$$1 \text{ Lbm} = 0.45359 \text{ Kg}$$

## VOLUMEN

$$1 \text{ m}^3 = 35.315 \text{ ft}^3$$

$$1 \text{ ft}^3 = 0.028317 \text{ m}^3$$

$$1 \text{ gal} = 0.13368 \text{ ft}^3$$

$$1 \text{ litro} = 1000 \text{ cm}^3$$

## DENSIDAD

$$1 \text{ Lbm/ft}^3 = 16.019 \text{ kg/m}^3$$

$$1 \text{ kg/m}^3 = 0.062428 \text{ Lbm/ft}^3$$

## FUERZA

$$1 \text{ N} = 1 \text{ kg.m/s}^2 = 0.2481 \text{ lbf}$$

$$1 \text{ lbf} = 4.4482 \text{ N}$$

## PRESIÓN

$$1 \text{ Pa} = 1 \text{ N/m}^2 = 1 \times 10^{-5} \text{ bar} = 1.4504 \times 10^{-4} \text{ Psia} = 9.8692 \times 10^{-6} \text{ atm} = 0.020886 \text{ Lbf/ft}^2$$

$$1 \text{ bar} = 10^5 \text{ Pa} = 0.98692 \text{ atm} = 14.504 \text{ psia} = 2088.6 \text{ lbf/ft}^2$$

$$1 \text{ lbf/in}^2 \text{ (psia)} = 144 \text{ lbf/ft}^2 = 6894.8 \text{ Pa} = 6.8948 \times 10^{-2} \text{ bar} = 0.068046 \text{ atm}$$

$$1 \text{ atm} = 101.325 \text{ kPa} = 14.696 \text{ psia} = 1.0133 \text{ bar} = 2116.2 \text{ lbf/ft}^2$$

## ENERGÍA

$$1 \text{ J} = 1 \text{ N.m} = 1 \text{ kg.m}^2/\text{s}^2$$

$$1 \text{ Kj} = 1 \text{ Kw.s} = 0.94783 \text{ Btu} = 0.23885 \text{ kcal} = 737.56 \text{ lbf.ft}$$

$$1 \text{ Btu} = 1.0550 \text{ Kj} = 0.25200 \text{ kcal} = 778.16 \text{ lbf.ft}$$

$$1 \text{ kcal} = 4.1868 \text{ Kj} = 3.9684 \text{ Btu} = 3088.0 \text{ lbf.ft}$$

$$1 \text{ Kwh} = 3.60 \times 10^3 \text{ Kj} = 2655.2 \times 10^3 \text{ lbf.ft} = 3412.2 \text{ Btu} = 859.86 \text{ kcal/h}$$

$$1 \text{ lbf.ft} = 1.285 \times 10^{-3} \text{ Btu} = 1.3558 \times 10^{-3} \text{ Kj}$$

## POTENCIA (ENERGÍA POR UNIDAD DE TIEMPO)

$$1 \text{ W} = 1 \text{ J/s}$$

$$1 \text{ W} = 3.4122 \text{ Btu/h} = 0.85987 \text{ kcal/h} = 1.34102 \times 10^{-3} \text{ hp}$$

$$1 \text{ Btu/h} = 0.29307 \text{ W} = 0.25200 \text{ kcal/h} = 3.9300 \times 10^{-4} \text{ hp}$$

$$1 \text{ kcal/h} = 1.1630 \text{ W} = 3.9683 \text{ Btu/h} = 1.5595 \times 10^{-3} \text{ hp} = 0.85778 \text{ lbf.ft/s}$$

$$1 \text{ horsepower (hp)} = 550 \text{ lbf.ft/s} = 2544.5 \text{ Btu/h} = 745.70 \text{ W}$$

$$1 \text{ lbf.ft/s} = 4.6262 \text{ Btu/h} = 1.3558 \text{ W} = 1.8182 \times 10^{-3} \text{ hp}$$

$$1 \text{ Tonelada de Refrigeración} = 12000 \text{ Btu/h} = 12660 \text{ KJ/h} = 3.5168 \text{ Kw}$$

## ENERGÍA ESPECÍFICA, ENTALPÍA ESPECÍFICA

$$1 \text{ KJ/Kg} = 0.42992 \text{ Btu/lbm} = 0.23885 \text{ kcal/Kg} = 334.55 \text{ lbf.ft/lbm}$$

$$1 \text{ Btu/lbm} = 2.3260 \text{ KJ/Kg} = 0.55556 \text{ kcal/Kg} = 778.16 \text{ lbf.ft/lbm}$$

$$1 \text{ kcal/Kg} = 4.1868 \text{ KJ/Kg} = 1.800 \text{ Btu/lbm} = 1400.7 \text{ lbf.ft/lbm}$$

$$1 \text{ lbf.ft/lbm} = 2.9891 \times 10^{-3} \text{ KJ/Kg} = 1.2851 \times 10^{-3} \text{ Btu/lbm} = 7.1394 \times 10^{-4} \text{ kcal/Kg}$$

## POTENCIA (ENERGÍA POR UNIDAD DE ÁREA)

$$1 \text{ W/m}^2 = 0.31700 \text{ Btu/(h.ft}^2) = 0.85986 \text{ kcal/(h.m}^2)$$

$$1 \text{ Btu/(h.ft}^2) = 3.1546 \text{ W/m}^2 = 2.7125 \text{ kcal/(h.m}^2)$$

$$1 \text{ kcal/(h.m}^2) = 1.1630 \text{ W/m}^2 = 0.36867 \text{ Btu/(h.ft}^2)$$

## ENTROPÍA

$$1 \text{ KJ/Kg K} = 0.52657 \text{ Btu/lbm } ^\circ\text{R} = 0.23885 \text{ kcal/K}$$

$$1 \text{ Btu/lbm } ^\circ\text{R} = 1.8991 \text{ KJ/ K} = 0.45359 \text{ kcal/ K}$$

$$1 \text{ kcal/K} = 4.1868 \text{ KJ/ K} = 2.2047 \text{ Btu/lbm } ^\circ\text{R}$$

## ENTROPÍA ESPECÍFICA, CALOR ESPECÍFICO, CONSTANTE DE LOS GASES

$$1 \text{ KJ/Kg K} = 0.23885 \text{ Btu/Lbm } ^\circ\text{R} = 0.23885 \text{ kcal/Kg K}$$

$$1 \text{ Btu/Lbm } ^\circ\text{R} = 4.1868 \text{ KJ/ Kg K} = 1.0000 \text{ kcal/ Kg K}$$

$$1 \text{ kcal/ Kg K} = 4.1868 \text{ KJ/ Kg K} = 1.0000 \text{ Btu/ Lbm } ^\circ\text{R}$$

## TEMPERATURA

$$T, (\text{K}) = 5/9 T(\text{R}) = 5/9 (T, ^\circ\text{F} + 459.67) = T, ^\circ\text{C} + 273.15$$

$$T, \text{R} = 9/5 T, \text{K} = 9/5 (T, ^\circ\text{C} + 273.15) = T, ^\circ\text{F} + 459.67$$

$$T, ^\circ\text{F} = 9/5 (T, ^\circ\text{C} + 32)$$

$$T, ^\circ\text{C} = 5/9 (T, ^\circ\text{F} - 32)$$

**FUENTE:** Principios de Termodinámica para Ingenieros - John Howell y Richard Buckius, Apéndice B. pág 595.