

$$[N/m^2] = \text{Joule}$$

$$[Pa \cdot m^3] = \text{Joule}$$

PRESION	atm	mm Hg	Pa = N/m ²	KPa	MPa	lb/plg ² = psi	lb/plc ²	bar	Kg/m ²	Kg/cm ²
1 Atmósfera	1	760	1,013 x 10 ⁵	1,013 x 10 ³	0,013	14,70	2116	1,013	10330	1,033
1 mm Hg	1,320 x 10 ⁻⁴	1	133,32	0,1333	1,33 x 10 ⁻⁴	1,934 x 10 ⁻²	2,785	1,333 x 10 ⁻³	13,598	1,360 x 10 ⁻³
1 Pascal = 1 Newton/m ²	9,869 x 10 ⁻⁴	7,5 x 10 ⁻³	1	0,001	1 x 10 ⁻⁴	1,450 x 10 ⁻⁴	2,089 x 10 ⁻³	1 x 10 ⁻³	0,1019	1,019 x 10 ⁻³
1 KiloPascal	9,869 x 10 ⁻³	7,5	1000	1	0,001	0,145	20,886	0,01	101,9	1,019 x 10 ⁻²
1 MegaPascal	9,869	7500	1 x 10 ⁶	1000	1	145,04	20886	10	1,019 x 10 ⁴	10,19
1 lb/plg ² = 1 psi	6,805 x 10 ⁻²	51,72	6894,73	6,895	6,895 x 10 ⁻³	1	144,01	6,895 x 10 ⁻³	703,1	7,031 x 10 ⁻³
1 lb/plc ²	4,725 x 10 ⁻⁴	0,359	47,878	4,788 x 10 ⁻³	4,788 x 10 ⁻³	6,940 x 10 ⁻³	1	4,788 x 10 ⁻⁴	4,882	4,882 x 10 ⁻⁴
1 bar	0,9869	750	1 x 10 ⁵	100	0,1	14,504	2088,6	1	10198	1,0198
1 Kg/m ²	9,689 x 10 ⁻³	7,350 x 10 ⁻²	9,814	9,814 x 10 ⁻³	9,814 x 10 ⁻⁴	1,422 x 10 ⁻²	0,2048	9,806 x 10 ⁻³	1	1 x 10 ⁻⁴
1 Kg/cm ²	0,9689	735	98140	98,14	9,814 x 10 ⁻³	14,223	2048	0,9806	1 x 10 ⁴	1

ENERGIA TRABAJO - CALOR	BTU	hp - h	pie - lbf	m - Kgf	J = W · s = N · m	W - h	KJ = KPa - m ³	Cal	KCal	KW - h
1 Unidad Térmica Británica	1	3,929 x 10 ⁻⁴	777,9	107,55	1055	0,2931	1,055	252,0	0,252	2,931 x 10 ⁻⁴
1 Caballo de Fuerza - h	2545	1	1,980 x 10 ⁶	2,737 x 10 ³	2,635 x 10 ⁶	745,94	2684,98	6,414 x 10 ³	641,44	3,7459
1 pie - lbf	1,285 x 10 ⁻³	5,051 x 10 ⁻⁷	1	0,1383	1,356	3,766 x 10 ⁻⁴	1,356 x 10 ⁻³	0,3239	3,239 x 10 ⁻⁴	3,766 x 10 ⁻⁷
1 m - Kgf	9,298 x 10 ⁻³	3,654 x 10 ⁻⁶	7,2307	1	9,807	2,724 x 10 ⁻³	9,807 x 10 ⁻³	2,3429	2,343 x 10 ⁻³	2,724 x 10 ⁻⁶
1 Joule = 1 watt · s = 1 Newton · m	9,481 x 10 ⁻⁴	3,725 x 10 ⁻⁷	0,7376	0,1020	1	2,779 x 10 ⁻⁴	0,001	0,2389	2,389 x 10 ⁻⁴	2,779 x 10 ⁻⁷
1 Watt - h	3,413	1,341 x 10 ⁻³	2655	367,28	3600	1	3,6	860,08	0,8601	0,001
1 Kilojoule = 1 KPa - m ³	0,9481	3,725 x 10 ⁻⁴	737,6	102	1000	0,2779	1	238,9	0,2389	2,779 x 10 ⁻⁴
1 Caloría	3,968 x 10 ⁻³	1,559 x 10 ⁻⁶	3,087	0,4268	4,187	1,163 x 10 ⁻³	4,187 x 10 ⁻³	1	0,001	1,163 x 10 ⁻⁶
1 Kilocaloría	3,9683	1,559 x 10 ⁻³	3087	426,8	4187	1,1631	4,1866	1000	1	1,163 x 10 ⁻³
1 Kilowatt - h	3413	1,341	2,655 x 10 ⁶	3,673 x 10 ³	3,600 x 10 ⁶	1000	3600	8,601 x 10 ³	860,08	1

POTENCIA	BTU/h	pie - lbf/s	m - Kgf/s	m - Kgf/h	hp	Cal/s	Kcal/s	W = J/s	KW
1 BTU/h	1	0,2161	2,982 x 10 ⁻³	107,4	3,929 x 10 ⁻⁴	7,093 x 10 ⁻²	7,000 x 10 ⁻³	0,2930	2,930 x 10 ⁻⁴
1 Pie - lbf/s	4,628	1	0,138	497,61	1,818 x 10 ⁻³	0,3239	3,239 x 10 ⁻³	1,356	1,356 x 10 ⁻³
1 m - Kgf/s	33,49	7,2368	1	3600	1,316 x 10 ⁻³	2,3447	2,345 x 10 ⁻³	9,8118	9,812 x 10 ⁻³
1 m - Kgf/h	9,303 x 10 ⁻³	2,010 x 10 ⁻³	2,778 x 10 ⁻⁴	1	3,656 x 10 ⁻⁴	6,514 x 10 ⁻⁴	6,514 x 10 ⁻⁴	2,726 x 10 ⁻³	2,726 x 10 ⁻⁶
1 Caballo de Fuerza (hp)	2545	550	76	2,736 x 10 ³	1	178,2	0,1782	745,7	0,7457
1 Caloría/s	14,29	3,087	0,4265	1535,16	5,613 x 10 ⁻³	1	0,001	4,186	4,186 x 10 ⁻³
1 Kilocaloría/s	14290	3087	426,5	1,535 x 10 ⁶	5,613	1000	1	4186	4,186
1 Watt = 1 Joule/s	3,413	0,7376	0,1019	366,84	1,341 x 10 ⁻³	0,2389	2,389 x 10 ⁻⁴	1	0,001
1 Kilowatts	3413	737,6	101,9	3,668 x 10 ⁶	1,341	238,9	0,2389	1000	1

CONDUCCION (k)	BTU/h pie °F = BTU/h pie °R	Kcal/h m °C = Kcal/h m K	Cal/s cm °C = Cal/s cm K	Watts/m °C = Watts/m K	Watts/cm °C = Watts/cm K	Watts/plg °F = Watts/plg °R	hp/plc °F = hp/plc °R
1 BTU/h pie °F = 1 BTU/h pie °R	1	1,4882	4,134 x 10 ⁻³	1,7303	1,730 x 10 ⁻²	2,442 x 10 ⁻³	3,929 x 10 ⁻⁴
1 Kcal/h m °C = 1 Kcal/h m K	0,6719	1	2,800 x 10 ⁻³	1,1630	1,163 x 10 ⁻³	1,641 x 10 ⁻³	2,640 x 10 ⁻⁴
1 Cal/s cm °C = 1 Cal/s cm K	241,9	360	1	418,68	4,1868	5,9072	9,504 x 10 ⁻³
1 Watts/m °C = 1 Watts/m K	0,5779	8,6004	2,389 x 10 ⁻³	1	0,01	1,411 x 10 ⁻³	2,271 x 10 ⁻⁴
1 Watts/cm °C = 1 Watts/cm K	57,79	8,600 x 10 ⁴	0,2389	100	1	1,4112	2,271 x 10 ⁻²
1 Watts/plg °F = 1 Watts/plg °R	40,96	60,96	0,1693	70,86	0,7086	1	1,609 x 10 ⁻³
1 hp/plc °F = 1 hp/plc °R	2545	3787,47	10,52	4403,61	44,04	62,14	1

CONVECCION (h)	BTU/h pie ² °F = BTU/h pie ² °R	Kcal/h m ² °C = Kcal/h m ² K	Cal/s cm ² °C = Cal/s cm ² K	Watts/m ² °C = Watts/m ² K	Watts/cm ² °C = Watts/cm ² K	Watts/plg ² °F = Watts/plg ² °R	hp/plc ² °F = hp/plc ² °R
1 BTU/h pie ² °F = 1 BTU/h pie ² °R	1	4,81	1,355 x 10 ⁻⁴	5,680	5,680 x 10 ⁻⁴	2,040 x 10 ⁻³	3,940 x 10 ⁻⁴
1 Kcal/h m ² °C = 1 Kcal/h m ² K	0,2048	1	2,775 x 10 ⁻⁵	1,1633	1,163 x 10 ⁻⁴	4,178 x 10 ⁻⁴	8,069 x 10 ⁻⁵
1 Cal/s cm ² °C = 1 Cal/s cm ² K	7380	3,601 x 10 ⁴	1	4,192 x 10 ⁴	4,1918	15,06	2,9077
1 Watts/m ² °C = 1 Watts/m ² K	0,1760	0,8589	2,385 x 10 ⁻⁵	1	0,0001	5,90 x 10 ⁻⁴	6,934 x 10 ⁻⁵
1 Watts/cm ² °C = 1 Watts/cm ² K	1760	8588,8	0,2385	10000	1	3,5904	0,6934
1 Watts/plg ² °F = 1 Watts/plg ² °R	490	2391,2	6,640 x 10 ⁻²	2783,2	0,2783	1	0,1931
1 hp/plc ² °F = 1 hp/plc ² °R	2538,07	1,239 x 10 ⁴	0,3439	1,442 x 10 ⁴	1,4416	5,1777	1

R
1,9872 Cal/gmol K
8,3144 J/gmol K
8,3144 KJ/Kgmol K
82,057 atm cm ³ /gmol K
8,205 x 10 ⁻² atm l/gmol K
62,361 mmHg l/gmol K
8,314 x 10 ⁻³ bar l/gmol K
8,314 x 10 ⁻³ bar m ³ /Kgmol K
8,478 x 10 ⁻² (Kg/cm ²) l/gmol K
1,314 atm plc ³ /lbmol K
998,9 mmHg plc ³ /lbmol K
1,9872 BTU/lbmol °R
7,805 x 10 ⁻⁴ hp - h/lbmol °R
5,819 x 10 ⁻⁴ KW - h/lbmol °R
0,7302 atm plc ³ /lbmol °R
555 mmHg plc ³ /lbmol °R
10,73 psia plc ³ /lbmol °R
1545 (lb/plc ²) plc ³ /lbmol °R

DENSIDAD DEL AGUA

62,5 lb/plc ³
3,617 x 10 ⁻³ lb/plg ³
1000 Kg/m ³
1 g/cm ³

g
9,8 m/s ²
1,2701 x 10 ¹⁰ m/h ²
1,2701 x 10 ¹⁰ Km/h ²
986 cm/s ²
1,2701 x 10 ¹⁰ cm/h ²
32,2 pie/s ²
4,18 x 10 ¹⁰ pie/h ²
9,8 Kg m/Kgf s ²
1,2701 x 10 ¹⁰ Kg m/Kgf h ²
980 g cm/gf s ²
1,2701 x 10 ¹⁰ g cm/gf h ²

POTENCIA DE DIEZ

10 ⁻¹⁸	Atto	a
10 ⁻¹⁵	Femto	f
10 ⁻¹²	Pico	p
10 ⁻⁹	Nano	n
10 ⁻⁶	Micro	μ
10 ⁻³	Milli	m
10 ⁻²	Centi	c
10 ⁻¹	Deci	d
UNIDAD		
10 ¹	Deca	Da
10 ²	Hecto	H
10 ³	Kilo	K
10 ⁶	Mega	M
10 ⁹	Giga	G
10 ¹²	Tera	T

NOTAS

Viscosidad Absoluta	μ poise
Viscosidad Cinemática	γ stoke
γ = μ/ρ	
1 Stoke = 1 cm ² /s	
Presión	1 KJ/m ² = 0,1458 psi
Longitud de Onda	λ
1 Angstrom = 10 ⁻¹⁰ m	

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TABLA DE CONVERSIONES

SISTEMA INTERNACIONAL
MKS
Kg - m - s

SISTEMA INGLES
Pie - lb - s

FUERZA
 $F = M L/t^2$

Newton = 1 Kg m/s²
dina = 1 g cm/s²
poundal = 1 lb pie/s²

MASA
 $M = F t^2/L$

slug = 1 lbf s²/pie

LONGITUD	m	cm	Km	plg	pie	milla
1 Metro	1	100	0,001	39,37	3,281	6,214 x 10 ⁻⁴
1 Centimetro	0,01	1	1 x 10 ⁻⁵	0,3937	3,281 x 10 ⁻²	6,214 x 10 ⁻⁵
1 Kilometro	1000	1 x 10 ⁵	1	3,937 x 10 ⁴	3,281	0,6214
1 Pulgada	2,540 x 10 ⁻²	2,540	2,540 x 10 ⁻⁵	1	8,333 x 10 ⁻²	1,578 x 10 ⁻³
1 Pie	0,3048	30,48	3,048 x 10 ⁻⁴	12 "	1	1,894 x 10 ⁻⁴
1 Milla Terrestre	1609	1,609 x 10 ⁵	1,609	6,336 x 10 ⁴	5280	1

AREA	m ²	cm ²	Km ²	plg ²	pie ²	ha
1 Metro ²	1	1 x 10 ⁴	1 x 10 ⁻⁶	1550	10,76	1 x 10 ⁻⁴
1 Centimetro ²	1 x 10 ⁻²	1	1 x 10 ⁻¹⁰	0,1550	1,076 x 10 ⁻³	1 x 10 ⁻⁸
1 Kilometro ²	1 x 10 ⁶	1 x 10 ¹⁰	1	1,550 x 10 ⁸	1,076 x 10 ⁷	100
1 Pulgada ²	6,452 x 10 ⁻⁴	6,452	6,452 x 10 ⁻¹⁰	1	6,944 x 10 ⁻³	6,452 x 10 ⁻⁴
1 Pie ²	9,290 x 10 ⁻²	929	9,290 x 10 ⁻⁸	144	1	9,290 x 10 ⁻²
1 Hectarea	10000	1 x 10 ⁸	0,01	1,550 x 10 ⁷	1,076 x 10 ³	1

VOLUMEN	m ³	cm ³ = ml	l	pie ³	plg ³	gal	bbl
1 Metro ³	1	1 x 10 ⁶	1000	35,31	6,102 x 10 ⁴	264,2	6,29
1 Centimetro ³ = 1 Mililitro	1 x 10 ⁻⁶	1	0,001	3,531 x 10 ⁻⁵	6,102 x 10 ⁻²	2,642 x 10 ⁻⁴	6,29 x 10 ⁻⁶
1 Litro	0,001	1000	1	3,531 x 10 ⁻³	61,02	0,2642	6,29 x 10 ⁻³
1 Pie ³	2,832 x 10 ⁻²	2,832 x 10 ⁴	28,32	1	1728	7,4802	0,1781
1 Pulgada ³	1,639 x 10 ⁻⁵	16,39	1,639 x 10 ⁻²	5,787 x 10 ⁻⁴	1	4,330 x 10 ⁻³	1,031 x 10 ⁻⁴
1 Galón (EUA)	3,785 x 10 ⁻³	3785	3,785	0,1337	230,97	1	2,381 x 10 ⁻¹
1 Barril	0,15898	158980	158,98	5,6152	9700,74	42	1

DENSIDAD	Kg/m ³	g/cm ³ = Kg/l	lb/pie ³	lb/plg ³	slug/pie ³
1 Kg/m ³	1	0,001	6,243 x 10 ⁻²	3,613 x 10 ⁻³	1,940 x 10 ⁻³
1 g/cm ³ = 1 Kg/l	1000	1	62,43	3,613 x 10 ⁻²	1,940
1 lb/pie ³	16,02	1,602 x 10 ⁻²	1	5,787 x 10 ⁻⁴	3,108 x 10 ⁻²
1 lb/plg ³	2,768 x 10 ⁴	27,68	1728	1	53,71
1 slug/pie ³	515,4	0,5154	32,17	1,862 x 10 ⁻²	1

CAUDAL	m ³ /h	cm ³ /s	pie ³ /s	pie ³ /h	bbl/h	gpm
1 Metro ³ /hora	1	277,78	9,811 x 10 ⁻³	35,32	6,2988	4,4092
1 Centimetro ³ /seg	3,600 x 10 ⁻³	1	3,531 x 10 ⁻³	0,1271	2,268 x 10 ⁻³	1,587 x 10 ⁻³
1 Pie ³ /segundo	101,93	2,832 x 10 ⁴	1	3600	641,19	448,83
1 Pie ³ /hora	2,831 x 10 ⁻¹	7,8658	2,778 x 10 ⁻¹	1	0,1783	0,1248
1 Barril/hora	0,1588	44,10	1,560 x 10 ⁻³	5,6074	1	0,7
1 Galón/minuto	0,2268	63,0005	2,228 x 10 ⁻³	8,0106	1,429	1

MASA	Kg	g	oz	lb	ton	slug
1 Kilogramo	1	1000	35,27	2,205	1,102 x 10 ⁻³	6,852 x 10 ⁻²
1 Gramo	0,001	1	3,527 x 10 ⁻²	2,205 x 10 ⁻³	1,102 x 10 ⁻⁶	6,852 x 10 ⁻⁵
1 Onza	2,835 x 10 ⁻²	28,35	1	6,250 x 10 ⁻³	3,125 x 10 ⁻³	1,943 x 10 ⁻³
1 Libra	0,4536	453,6	16	1	0,0005	3,108 x 10 ⁻²
1 Tonelada Corta	907,2	9,072 x 10 ⁵	3,2 x 10 ⁴	2000	1	62,16
1 Slug	14,59	1,459 x 10 ⁴	514,8	32,17	1,609 x 10 ⁻¹	1

VELOCIDAD	m/s	cm/s	Km/h	pie/s	pie/h
1 Metro/segundo	1	100	3,6	3,281	11811,6
1 Centimetro/seg	0,01	1	3,6 x 10 ⁻²	3,281 x 10 ⁻³	118,116
1 Kilometro/hora	0,2778	27,78	1	0,9113	3280,68
1 Pie/segundo	0,3048	30,48	1,097	1	3600
1 Pie/hora	8,466 x 10 ⁻⁵	8,500 x 10 ⁻³	3,048 x 10 ⁻⁴	2,778 x 10 ⁻⁴	1

VISCOSIDAD ABSOLUTA	Poise = g/cm s	cp	Kg/m s = Pa - s	Kg/m h	lb/pie s	lb/pie h
1 Poise = 1 g/cm s	1	100	0,1	360	6,720 x 10 ⁻³	242
1 Centipoise	0,01	1	1 x 10 ⁻³	3,60	6,720 x 10 ⁻⁴	2,42
1 Kg/m s = 1 Pa - s	10	1000	1	3600	0,6720	2420
1 Kg/m h	2,778 x 10 ⁻³	0,2778	2,778 x 10 ⁻⁴	1	1,867 x 10 ⁻⁴	0,6720
1 lb/pie s	14,88	1488	1,488	5357	1	3600
1 lb/pie h	4,133 x 10 ⁻³	0,4133	4,133 x 10 ⁻⁴	1,488	2,778 x 10 ⁻⁴	1

CALOR ESPECIFICO Cp - Cv	BTU/lb °R = Cal/g K	KJ/Kg K = KJ/Kg °R	J/Kg K = J/Kg °R
1 BTU/lb °R = 1 Cal/g K = 1 Kcal/Kg K	1	4,1876	4187,6
1 BTU/lb °F = 1 Cal/g °C = 1 Kcal/Kg °C	1	1	1000
1 KJ/Kg K = 1 KJ/Kg °R	0,2388	1	1000
1 J/Kg K = 1 J/Kg °R	2,388 x 10 ⁻⁴	0,001	1

TEMPERATURA	°F → T	°R → T	°C → T	K → T
Δ°F = Δ°R	°F = °F	°F = °R - 460	°F = °C * 1,8 + 32	°F = K * 1,8 - 460
Δ°C = ΔK	°R = °F + 460	°R = °R	°R = °C * 1,8 + 492	°R = 1,8 K
Δ°C = 1,8 Δ°F	°C = (°F - 32) (5/9)	°C = (°R - 492) (5/9)	°C = °C	°C = K - 273
ΔK = 1,8 Δ°R	K = (5/9) (°F + 460)	K = (5/9) °R	K = °C + 273	K = K