

Conversion tables

Pressure

| | 1 bar =10 ⁵ $\frac{N}{m^2}$ | 1 at =1 $\frac{kp}{cm^2}$ | poundal sq.ft. | poundal sq.in. =Psi | 1 atm. =760 Torr =760 mmHg | Mercury column | | Water column | |
|------------------------|---|------------------------------|-----------------------|---------------------------|----------------------------------|--------------------|------------------------|-----------------------|-----------------------|
| | | | | | | mm Hg =Torr | micron | in Hg | m WS |
| 1 Pa=1N/m ² | 1•10 ⁻⁵ | 1,02•10 ⁻⁵ | 0,0209 | 1,45•10 ⁻⁴ | 9,87•10 ⁻⁶ | 0,0075 | 7,5 | 2,95•10 ⁻⁴ | 1,02•10 ⁻⁴ |
| 1 bar | 1 | 1,0197 | 2089 | 14,504 | 0,9869 | 750 | 7,5•10 ⁻⁵ | 29,5 | 10,20 |
| 1 at | 0,980665 | 1 | 2048 | 14,22 | 0,96784 | 735,56 | 7,355•10 ⁻⁵ | 29,0 | 10,00 |
| 1 lb/sq.ft | 0,479•10 ⁻³ | 0,4882•10 ⁻³ | 1 | 6,944•10 ⁻³ | 0,4725•10 ⁻³ | 0,359 | 359 | 0,0141 | 4,88•10 ⁻³ |
| 1 lb/sq.in=Psi | 0,06895 | 0,07031 | 144 | 1 | 0,06805 | 51,7 | 5,17•10 ⁻⁴ | 2,04 | 0,703 |
| 1 atm | 1,013 | 1,033 | 2120 | 14,7 | 1 | 760 | 7,6•10 ⁻⁵ | 29,9 | 10,33 |
| 1 mmHg(Torr) | 1,33•10 ⁻³ | 1,36•10 ⁻³ | 2,78 | 0,0193 | 1,316•10 ⁻³ | 1 | 1000 | 0,0394 | 0,0136 |
| 1 micron | 1,33•10 ⁻⁶ | 1,36•10 ⁻⁶ | 2,78•10 ⁻³ | 1,93•10 ⁻⁵ | 1,316•10 ⁻⁶ | 1•10 ⁻³ | 1 | 3,94•10 ⁻⁵ | 1,36•10 ⁻⁵ |
| 1 in Hg | 0,0339 | 0,0345 | 70,7 | 0,491 | 0,0334 | 25,4 | 2,54•10 ⁻⁴ | 1 | 0,345 |
| 1 m WS | 0,0981 | 0,1 | 205 | 1,422 | 0,0968 | 73,6 | 7,36•10 ⁻⁴ | 2,90 | 1 |

Work, energy, heat quantity

| | 1 kcal | 1 kp m | Btu =British thermal unit | ft. pdl | 1 kWh | Horsepower-hour (PS h) | | ton-day of refrigeration | 1 Joule =N m =W s |
|-----------|-------------------------|-----------------------|---------------------------------|-----------------------|------------------------|-----------------------------------|--|--------------------------------|-------------------------|
| | | | | | | Metric 75 $\frac{kp\ m}{s\ h}$ | Imperial 550 $\frac{ft\ \cdot\ lb}{s\ h}$ | | |
| 1 kcal | 1 | 427,0 | 3,968 | 3088 | 1,163•10 ⁻³ | 1,581•10 ⁻³ | 1,560•10 ⁻³ | 13,779•10 ⁻⁶ | 4,19•10 ³ |
| 1 kpm | 2,342•10 ⁻³ | 1 | 9,294•10 ⁻³ | 7,233 | 2,723•10 ⁻⁶ | 3,704•10 ⁻⁶ | 3,653•10 ⁻⁶ | 32,270•10 ⁻⁶ | 9,807 |
| 1 Btu | 0,252 | 107,59 | 1 | 778,0 | 0,293•10 ⁻³ | 0,398•10 ⁻³ | 0,393•10 ⁻³ | 3,472•10 ⁻⁶ | 1,055•10 ³ |
| 1 ft. pdl | 0,3238•10 ⁻³ | 0,13826 | 1,285•10 ⁻³ | 1 | 0,377•10 ⁻⁶ | 0,512•10 ⁻⁶ | 0,505•10 ⁻⁶ | 4,462•10 ⁻⁹ | 42,139•10 ⁻³ |
| 1 kWh | 860 | 367,1•10 ³ | 3412,8 | 2,655•10 ⁵ | 1 | 1,360 | 1,341 | 11,850•10 ⁻³ | 3,6•10 ⁶ |
| 1 PSh | 632,3 | 270•10 ³ | 2509 | 1,953•10 ⁵ | 0,7353 | 1 | 0,9863 | 8,713•10 ⁻³ | 2,65•10 ⁵ |
| 1 hph | 641,1 | 273,7•10 ³ | 2545 | 1,980•10 ⁵ | 0,7457 | 1,014 | 1 | 8,834•10 ⁻³ | 2,68•10 ⁵ |
| 1 ton-day | 72,57•10 ³ | 30,99•10 ⁶ | 288•10 ³ | 224,1•10 ⁵ | 84,39 | 114,78 | 113,2 | 1 | 304•10 ⁶ |
| 1 J | 0,239•10 ⁻³ | 0,102 | 0,948•10 ⁻³ | 23,73 | 0,278•10 ⁻⁶ | 0,378•10 ⁻⁶ | 0,372•10 ⁻⁶ | 3,280•10 ⁻⁹ | 1 |

1 erg=1 dyn cm=10⁻⁷ Nm; 1 kJ=103 J; 1 Dyn=1 Newton

ft.pdl=foot poundal (poundal=force which gives an English pound an acceleration of 1 foot/s²)

Power, energy flux, heat flow, refrigerating capacity

| | 1 $\frac{kcal}{h}$ | 1 $\frac{kp\ m}{s}$ | Btu/h | 1kcal/s= British theor. unit of refrigeration | 1 kW= 1 kJ/s | Pferdestärke (PS) | | ton of refrigeration US | ton of refrigeration British |
|-----------|--------------------|------------------------|------------------------|--|------------------------|--------------------------------|---|-------------------------------|------------------------------------|
| | | | | | | Metric 75 $\frac{kp\ m}{s}$ | Imperial 550 $\frac{ft\ \cdot\ lb}{s}$ | | |
| 1 kcal/h | 1 | 0,1186 | 3,968 | 0,278•10 ⁻³ | 1,163•10 ⁻³ | 1,581•10 ⁻³ | 1,560•10 ⁻³ | 0,331•10 ⁻³ | 0,299•10 ⁻³ |
| 1 kp m/s | 8,4312 | 1 | 33,455 | 2,342•10 ⁻³ | 9,804•10 ⁻³ | 13,333•10 ⁻³ | 13,150•10 ⁻³ | 2,792•10 ⁻³ | 2,520•10 ⁻³ |
| 1 Btu/h | 0,252 | 29,89•10 ⁻³ | 1 | 0,07•10 ⁻³ | 0,293•10 ⁻³ | 0,398•10 ⁻³ | 0,393•10 ⁻³ | 0,083•10 ⁻³ | 75,310•10 ⁻³ |
| 1 kcal/s | 3600 | 427,0 | 14,285•10 ³ | 1 | 4,186 | 5,693 | 5,615 | 1,190 | 1,078 |
| 1 kW | 860 | 102,0 | 3414 | 0,2389 | 1 | 1,360 | 1,341 | 0,2846 | 0,2572 |
| 1 PS | 632,3 | 75 | 2509 | 0,1756 | 0,736 | 1 | 0,9863 | 0,2094 | 0,1891 |
| 1 hp | 641,1 | 76,04 | 2545 | 0,1781 | 0,7455 | 1,014 | 1 | 0,2123 | 0,21227 |
| 1 ton(US) | 3024 | 358,2 | 12,0•10 ³ | 0,831 | 3,513 | 4,776 | 4,711 | 1 | 0,9037 |
| 1 Br. ton | 3340 | 396,9 | 13,26•10 ³ | 0,9277 | 3,888 | 5,287 | 5,214 | 1,1045 | 1 |

Temperature

| | °C (Celsius) | K (Kelvin) | °F (Fahrenheit) |
|-----------------|---------------------------------|---|---|
| °C (Celsius) | 1 | K = X _C + 273,15 | °F = $\frac{X_C}{0,56} + 32$ |
| K (Kelvin) | °C = X _K - 273,15 | 1 | °F = $\frac{(X_K - 273,15)}{0,56} + 32$ |
| °F (Fahrenheit) | °C = 0,56 (X _F - 32) | K = [0,56 (X _F - 32) + 273,15] | 1 |

Entropy-difference, specific heat capacity

| Δs | $\frac{kJ}{kgK}$ | $\frac{kcal}{kg^{\circ}C}$ | $\frac{Btu}{pound^{\circ}F}$ |
|-------------|------------------|----------------------------|------------------------------|
| 1 kJ/kgK | 1 | 0,239 | 0,239 |
| 1 kcal/kg°C | 4,19 | 1 | 1 |
| 1 Btu/lb°F | 4,19 | 1 | 1 |

Enthalpy-difference, latent heat

| Δh | $\frac{kJ}{kgK}$ | $\frac{kcal}{kg^{\circ}C}$ | $\frac{Btu}{pound^{\circ}F}$ |
|------------|------------------|----------------------------|------------------------------|
| 1 kJ/kg | 1 | 0,239 | 0,43 |
| 1 kcal/kg | 4,19 | 1 | 1,8 |
| 1 Btu/lb | 2,33 | 0,556 | 1 |

heat transition and transfer coefficient

| k, α | $\frac{J}{m^2sK} = \frac{W}{m^2K}$ | $\frac{kJ}{m^2hK}$ | $\frac{kcal}{m^2h^{\circ}C}$ | $\frac{Btu}{sq.ft.h^{\circ}F}$ |
|---------------------------|------------------------------------|--------------------|------------------------------|--------------------------------|
| 1 J/m ² sK | 1 | 3,60 | 0,860 | 0,1761 |
| 1 kJ/m ² hK | 0,278 | 1 | 0,239 | 0,0489 |
| 1 kcal/m ² h°C | 1,163 | 4,1868 | 1 | 0,2050 |
| 1 Btu/ft ² h°F | 5,680 | 20,40 | 4,880 | 1 |

Thermal conductivity coefficient

| λ | $\frac{J}{msK} = \frac{W}{mK}$ | $\frac{kJ}{mhK}$ | $\frac{kcal}{mh^{\circ}C}$ | $\frac{Btu}{ft.h^{\circ}F}$ |
|---------------------------|--------------------------------|------------------|----------------------------|-----------------------------|
| 1 J/msK | 1 | 3,60 | 0,860 | 0,578 |
| 1 kJ/mhK | 0,278 | 1 | 0,239 | 0,1605 |
| 1 kcal/mh°C | 1,163 | 4,19 | 1 | 0,6719 |
| 1 Btu/ft ² h°F | 1,730 | 6,23 | 1,488 | 1 |

$\frac{cal}{cm^2s^{\circ}C} = 41,868 \frac{J}{m^2sK} = 150,7 \frac{kJ}{m^2hK} = 36000 \frac{kcal}{m^2h^{\circ}C} = 7380 \frac{Btu}{sq.ft.h^{\circ}F}$ $\frac{cal}{cms^{\circ}C} = 41868 \frac{J}{msK} = 1,507 \frac{kJ}{mhK} = 360 \frac{kcal}{mh^{\circ}C} = 242 \frac{Btu}{ft.h^{\circ}F}$

All data without guarantee