CONVERSION US · UK · METRIC · SI UNITS FOR THERMAL ENGINEERS

FLUIDS & FLOW

Velocity

1 m/s	=	3,281 ft/s
1 m/s	=	196,9 ft/min | FPM
1 FPM	=	5,080·10-3 m/s
1 ft/sec.	=	0,3048 m/s
1 Knot	=	1,853 km/h
		1 Nautical Mile / hour

Volume Flow

1 m³/h	=	0,5885 CFM | ft³/min
1 CFM	=	1,699 m³/h

For ideal gasses :
Standard cubicfeet per Minute (SCFM) / 70°F / 1 Atm. abs.
Normal cubicmeter per hour (m_n ³/h) / 0°C / 1 Atm. abs.

1 SCFM luft	=	1,577	m_n ³/h Air (only)

Mass Flow

1 kg/h	=	2,205 lb/h
1 lb/h	=	0,4536 kg/h

Pressure

1 bar	=	14,50 psi
1 bar	=	100,0 kPa
1 bar	=	0,9869 Atm.
1 mbar	=	0,7501 mmHg | Torr
1 mbar	=	10,20 mmWG
1 mbar	=	100,0 Pa
1 psi | lbf/in²	=	6,895·10-2 bar
1 psi | lbf/in²	=	6,804·10-2 Atm.
1 psi | lbf/in²	=	6,895 kPa

Kinematic Viscosity

1 cSt	=	1,076·10-5 ft²/s
1 cSt	=	1,000·10-6 m²/s
1 ft²/s	=	9,290·104 cSt
1 ft²/s	=	9,290·10-2 m²/s

Dynamic Viscosity

1 Pa·s	=	1.000	cP
1 Pa·s	=	0,6720	lb/(ft·s)
1 cP	=	1,000·10-3	Pa·s | Ns/m²
1 cP	=	1,000·10-3	kg/(m·s)
1 lb/(ft·s)	=	1,488	Pa·s
1 lb/(ft·s)	=	1488	cP | mPa·s

HEAT

Temperature

°C | Celsius	=	5 · (°F – 32) / 9
°F | Fahrenheit	=	32 + 9 · °C / 5

Heat Content & Energy

1 kJ | kN·m	=	0,9478 Btu
1 kJ | kN·m	=	0,2388 Kcal
1 Btu	=	1,055 kJ
1 Btu	=	0,2520 Kcal
1 kcal	=	4,187 kJ
1 kcal	=	3,968 Btu
1 kWh	=	3600 kJ
1 kWh	=	859,8 Kcal

Heat Load

1 kW	=	3412 Btu/h
1 kW	=	859,8 Kcal/h
1 Btu/h	=	2,931·10-4 kW
1 Btu/h	=	0,2520 Kcal/h
1 kcal/h	=	1,163·10-3 kW
1 kcal/h	=	3,968 Btu/h
1 Boiler HP	=	9,81 kW
1 Boiler HP	=	15,65 kg steam /h

Specific Heat

1 kJ/(kg·K)	=	0,2388 Btu/(lb·°F)
1 kJ/(kg·K)	=	0,2388 kcal/(kg·°C)
1 Btu/(lb·°F)	=	4,187 kJ/(kg·K)
1 kcal/(kg·°C)	=	4,187 kJ/(kg·K)

Conductivity

1 W/(m·K)	=	0,8598 kcal/(m·h·°C)
1 W/(m·K)	=	0,5778 Btu/(ft·h·°F)
1 kcal/(m·h·°C)	=	1,163 W/(m·K)
1 Btu/(ft·h·°F)	=	1,731 W/(m·K)

Heat Transmission

1 W/(m²·K)	=	0,8598 kcal/(m²·h·°C)
1 W/(m²·K)	=	0,1761 Btu/(ft²·h·°F)
1 kcal/(m²·h·°C)	=	1,163 W/(m²·K)
1 Btu/(ft²·h·°F)	=	5,679 W/(m²·K)

Evaporation Heat

1 kJ/kg	=	0,430 Btu/lb
1 Btu/lb	=	2,326 kJ/kg