PREFIXES , CONVERSION ,FACTORS

Category: Technologie
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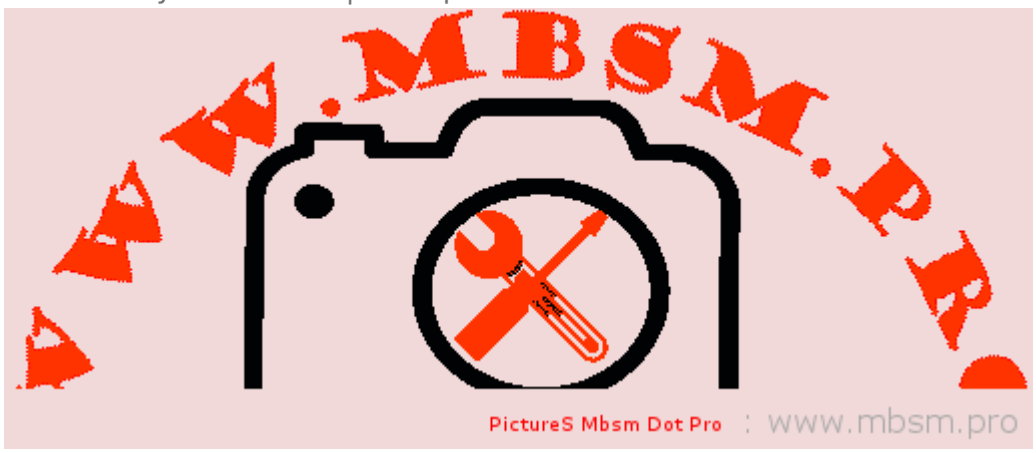

Prefixes

Units can be used as such or in multiples or fractions of ten:

PREFIX		POWER OF TEN
T	tera	10^{12}
G	giga	10^{9}
M	mega	10^{6}
k	kilo	10^{3}
h	hecto	10^{2}
da	deca	10^{1}
d	deci	10^{-1}
c	centi	10^{-2}
m	milli	10^{-3}
m	micro	10^{-6}
n	nano	10^{-9}
P	pico	10^{-12}
f	femto	10^{-15}
a	atto	10^{-18}

1 m = 100 cm = 1000 mm

1 m^2 = 10 000 cm^2 = 10^6 mm^2

1 m^3 = 10^6 cm^3 = 10^9 mm^3

1 Mg m^{-3} = 10^3 kg m^{-3} = 1 g cm^{-3}
1 kPa = 10 mbar
1 joule = 0.2388 cal

1 watt = 1 J s-1 = 0.8598 kcal h^{-1}

1 W m^{-2} = 0.8598 kcal m^{-2} h^{-1}

1 W m^{-2} = 1.433 × 10^{-3} cal cm^{-2} min^{-1}
1 Hp = 745.7 W
1 W = 0.001431 Hp

Water flow (m^3 s^{-1}) = 0.55 × Pump power (W)/Pressure (kPa)

Water flow (litre s^{-1}) = 5.43 × Pump power (kilowatts)/pressure (bars)
Brake Horsepower is the horsepower for an electric motor. Do not use for fuel-powered engines.

Conversion factors

Temperature

Standard unit: degree Celsius (°C)

degree Fahrenheit (°F)	°C = (°F-32) 5/9
kelvin(s) (K)	K = °C +273.15

Pressure (air pressure, vapour pressure)

Standard unit: kilopascal (kPa)

millibar (mbar)	1 mbar = 0.1 kPa
Bar	1 bar = 100 kPa
centimetre of water (cm)	1 cm of water = 0.09807 kPa
millimetre of mercury (mm Hg)	1 mm hg = 0.1333 kPa
atmosphere (atm)	1 atm =101.325 kPa
pound per square inch (psi)	1 psi = 6.896 kPa

Wind speed

Standard unit: metre per second (m s^{-1})

kilometre per day (km day^{-1})	1 km day^{-1} = 0.01157 m s^{-1}
nautical mile/hour (knot)	1 knot = 0.5144 m s^{-1}
foot per second (ft s^{-1})	1 ft s^{-1} = 0.3048 m s^{-1}

Radiation

Standard unit: megajoule per square metre and per day (MJ m^2 day^{-1}) or as equivalent evaporation in mm per day (mm day^{-1})

equivalent evaporation (mm/day)	1 mm day^{-1} = 2.45 MJ m^{-2} day^{-1}
joule per cm^2 per day (J cm^{-2} day^{-1})	1 J cm^{-2} day^{-1} = 0.01 MJ m^{-2} day^{-1}
calorie per cm^2 per day (cal cm^{-2} day^{-1})	1 cal = 4.1868 J = 4.1868 10-6 MJ

watt per m^2 ($W\ m^{-2}$)	1 cal cm^{-2} day^{-1} = 4.1868 10^{-2} MJ m^{-2} day^{-1} 1 W = 1 J s^{-1} 1 W m^{-2} = 0.0864 MJ m^{-2} day^{-1}

Physical properties

Properties of Water

T	r_w	l
°C	Mg m^{-3}	kJ mol^{-1}
0	0.99987	45.0
4	1.00000	44.8
10	0.99973	44.6
20	0.99823	44.1
30	0.99568	43.7
40	0.99225	43.4

> T = *temperature,* r_w = *density of water and l = latent heat of vaporization*

Properties of gases at P_b = 101.3 kPa barometric pressure

T	r
°C	mol m^{-3}
0	44.6
5	43.8
10	43.0
15	42.3
20	41.6
25	40.9
30	40.2
35	39.5
40	38.9

> T= *temperature and* r = *density*

Black body emittance ($W\ m^{-2}$) as a function of subzero temperature (°C)

°C	0.0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
-14	256	255	255	255	254	254	253	253	253	252
-13	260	259	259	258	258	258	257	257	257	256

-12	264	263	263	262	262	262	261	261	260	260
-11	268	267	267	267	266	266	265	265	265	264
-10	272	271	271	271	270	270	269	269	269	268
-9	276	276	275	275	274	274	274	273	273	272
-8	280	280	279	279	279	278	278	277	277	276
-7	284	284	284	283	283	282	282	282	281	281
-6	289	288	288	287	287	287	286	286	285	285
-5	293	293	292	292	291	291	291	290	290	289
-4	298	297	297	296	296	295	295	294	294	294
-3	302	302	301	301	300	300	299	299	298	298
-2	306	306	306	305	305	304	304	303	303	302
-1	311	311	310	310	309	309	308	308	307	307
0	316	315	315	314	314	313	313	312	312	311