

- = 6.290 American barrels
- = 1000 litres
- 1 American barrel = 42 American gallons
- = 34.97 Imperial gallons
- = 0.1590 cubic metre
- = 159.0 litres
- 1 American gallon = 3.785 litres
- 1 Imperial gallon = 4.546 litres

Mass

- 1 long ton = 2240 pounds
- = 1.12 short tons
- = 1.016 tonnes
- 1 short ton = 2000 pounds
- = 0.8929 long ton
- = 0.9072 tonne
- 1 tonne = 2205 pounds
- = 1.102 short tons
- = 0.9842 long ton
- = 1000 kilograms
- = 1 megagram
- 1 pound = 0.4536 kilogram
- 1 kilogram = 2.205 pounds

Energy

- 1 British thermal unit = 1054 joules
- 1 kilowatthour = 3412 British thermal units
- = 3,600,000 joules
- 1 quad = 1 quadrillion British thermal units
- = 10^{15} British thermal units
- = 1054 petajoules
- = 1054×10^{15} joules

Power

- 1 kilowatt = 3,600,000 joules/hour
- = 1.341 Imperial horsepower
- 1 Imperial horsepower = 745.7 watts
- 1 British thermal unit/hour = 0.2931 watt

TEMPERATURE

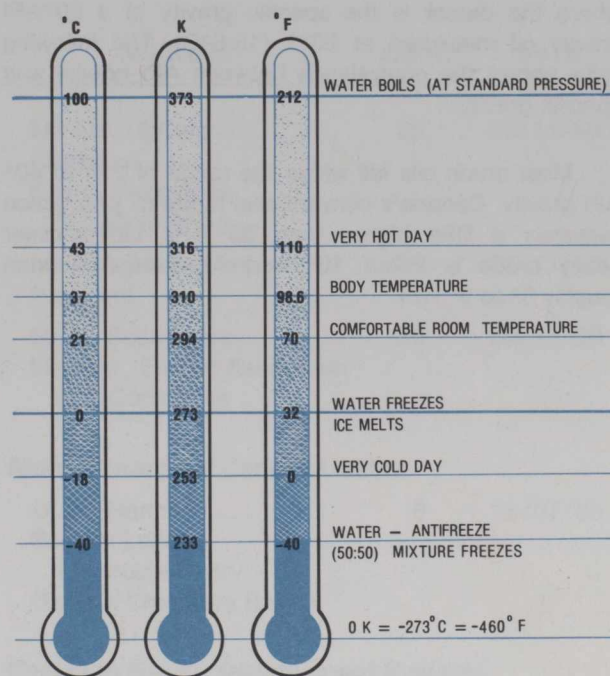
Temperature is that property of systems which determines if they are in thermodynamic equilibrium, two systems being in equilibrium when their temperatures (measured on the same scale) are equal. Temperature can be specified in various arbitrary and empirical ways based upon changes in volume, length, electrical resistance and so forth. Not surprisingly, an interesting variety of temperature scales has been devised of which three are of concern here — the Fahrenheit, Celsius (centigrade) and Kelvin scales. The correspondence among these three scales is illustrated in Figure A-1, the mathematical relationships being:

$$F = \frac{9C}{5} + 32$$

$$C = \frac{5}{9}(F-32)$$

$$K = C + 273.16$$

Figure A-1: A COMPARISON OF THE FAHRENHEIT, CELSIUS AND KELVIN TEMPERATURE SCALES



Source: After Pedde *et al*, 1978, p. 4.

Although the Kelvin scale is the one adopted in the SI scheme, its use is nonetheless limited to scientific matters and most temperatures are measured in degrees Celsius. Zero on the Kelvin scale (-273.16°C) is termed the *absolute zero of temperature*, with the third law of thermodynamics telling us that no system can be taken to a temperature of absolute zero (that is, to a state characterized by the complete absence of heat).

PETROLEUM SPECIFIC GRAVITY

The specific gravity of any liquid is the dimensionless ratio of the density of that liquid to the density of water, measured at a standard temperature of 4°C . If the specific gravity of a liquid is less than one, that liquid will float on water; if more than one, it will sink. Crude oils have a specific gravity normally falling in the range of 0.80 to 0.97, which corresponds to 8.0 to 6.6 barrels per tonne. Taking an approximate world average for the specific gravity of all crude oils produced, one tonne of crude is about equal to 7.3 barrels.