

Temperature

Temperature is a measure of how hot or cold something is. On a molecular level, if the movement of the atoms and molecules of an object is more intense, the object's temperature is higher. A lower temperature corresponds with a less intense movement of the atoms and molecules.

If the movement of an object's particles becomes more intense, the particles need more room for moving about and the object expands. This thermal expansion can be useful when measuring temperatures.

The Celsius temperature scale

Symbol: θ ("Theta") Unit: $^{\circ}\text{C}$ (degree celsius)

0 $^{\circ}\text{C}$ was chosen to be the temperature at which water freezes.

100 $^{\circ}\text{C}$ was chosen to be the temperature at which water boils.

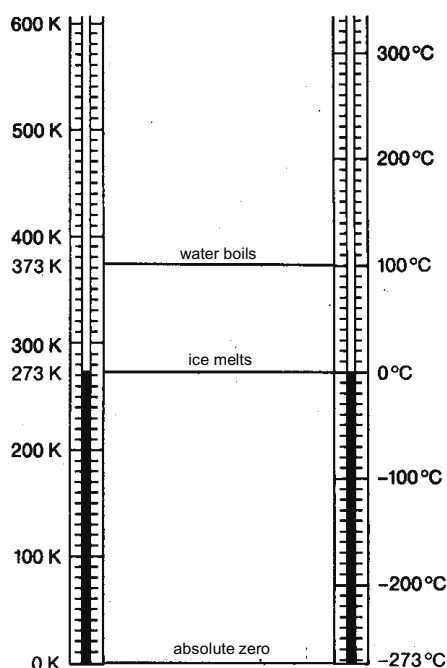
The Kelvin temperature scale

Symbol: T Unit: K (Kelvin)

0 K was chosen to be the lowest possible temperature. At absolute zero the molecules and atoms cease to move. This is the case at -273.15°C .

The increments were chosen to be the same as in the Celsius scale.

Comparison of the two temperature scales



Converting $^{\circ}\text{C}$ to Kelvin:

$$^{\circ}\text{C} + 273.15 \rightarrow \text{K}$$

Examples:

$$0 \text{ K} = -273.15^{\circ}\text{C}$$

$$0^{\circ}\text{C} = 273.15 \text{ K}$$

A difference in temperature can be given in $^{\circ}\text{C}$ or in K (the increments are equal).

Example:

An increase in temperature

from 15 $^{\circ}\text{C}$ to 18 $^{\circ}\text{C}$ is 3 $^{\circ}\text{C}$

from 288 K to 291 K is 3 K