

Enthalpy is a measure of the total energy of a thermodynamic system. It includes the internal energy, which is the energy required to create a system, and the amount of energy required to make room for it by displacing its environment and establishing its volume and pressure.

The enthalpy of a homogeneous system is defined as:

$$H = U + pV$$

where

H is the enthalpy of the system

U is the internal energy of the system

p is the pressure of the system

V is the volume of the system.

In thermodynamics, the internal energy is the total energy contained by a thermodynamic system. It is the energy needed to create the system but excludes the energy to displace the system's surroundings, any energy associated with a move as a whole, or due to external force fields. Internal energy has two major components, kinetic energy and potential energy.

The internal energy (U) is the sum of all forms of energy ( $E_i$ ) intrinsic to a thermodynamic system:

$$U = \sum_i E_i$$

It is the energy needed to create the system. It may be divided into potential energy ( $U_{pot}$ ) and kinetic energy ( $U_{kin}$ ) components:

$$U = U_{pot} + U_{kin}$$