

Energy

E n e r g y - is the capacity to move matter from one place to another **O R** to change matter from one state to another. The unit of measure is the joule (J).

a.) **K i n e t i c** - Energy of movement. Converted to other types of energy (sound, heat, friction).

Calculating KE-

$$KE = \text{Mass} \times \text{Velocity}^2 / 2$$

b.) P o t e n t i a l- E n e r g y o f p o s i t i o n .

S t o r e d e n e r g y , w h i c h c a n b e r e l e a s e d
(c o n v e r t e d) w h e n m a t t e r m o v e s .

Gravitational PE = Weight X Height

**= Mass X Gravitational acceleration
X height**

Types of Energy

Mechanical

Thermal

Chemical

Electrical

Electromagnetic

Nuclear

Energy Conversion

A change from one form of energy to another.

Most forms of energy can be converted to another form.

Heat energy is a common form of energy that “shows up” during conversion.

Energy is only “seen” during conversion.

The loss in potential energy is equal to the gain in kinetic energy PROVIDED that other forces, other than gravity, are absent.

Conservation of Energy (1st Law)

When one form of energy is converted to another form, **NO ENERGY IS LOST**

The Law of Conservation of Energy

Energy can neither be created or destroyed

Energy can **ONLY** change forms (or into matter).

The law DOES NOT state:

That any one energy type is conserved.

It does not state that the sum of PE + KE is conserved.

It says the TOTAL energy is conserved.

From start to finish. ALL ENERGY
MUST BE ACCOUNTED FOR.

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You can NOT have a
“perpetual- Motion” machine

<http://www.walter-fendt.de/ph14e/ncradle.htm>