Units of Energy

Base Unit

Unit used to measure a single quantity of matter.

3.00 m rope
Quantity Unit Label
m is the base unit for length

Derived Unit

Unit created by combining base units together

$V = \frac{m}{s}$ ← meter
← second
(Velocity)

Imperial vs. Metric Units

Imperial Units

United States units

Volume: cups, quarts, gal
Temperture: °F
Length: Feet, yd, mile

Metric Units

Science Units

Volume: Liter (L)
Temperture: °C
Length Meter (m)

Base Units

Meter	m	length
Second	s	time
Mol	mol	amount
Ampre	Amp	electrical current
Kelvin	K	Particle Speed
Atmosphere	atm	Pressure
Candela	Cd	Brightness
kilogram gram	kg g	Mass

Energy of Movement : Joule (J) - Derived Unit

Kinetic Energy

Energy of Movement

$KE = \frac{1}{2} m \cdot v^2$

m = kg v = m/s

Potential Energy

Energy that could be used

$PE = m g h$

m = kg g = m/s^2 h = m (height)

Joule (J) – $\frac{kg\,m^2}{s^2}$

kg: mass
m: length
s: time

Kinetic Energy (KE)
Energy of movement

$\frac{1}{2} m \cdot V^2$

m = kg

$V = \frac{m}{s}$

$KE = \frac{1}{2} \cdot kg \cdot \left(\frac{m}{s}\right)^2$

$= \frac{1}{2} \cdot kg \cdot \frac{m}{s} \cdot \frac{m}{s}$

$= \frac{1}{2} \cdot \frac{kg \cdot m \cdot m}{s \cdot s}$

$= kgm^2/s^2 = \text{Joule (J)}$