

Forms of Energy

Chemical Energy

Chemical energy is the energy stored in materials such as food, batteries, and gasoline. The chemical make up (the arrangement of atoms and molecules) of these materials determine how much energy they store.

Examples:

Mechanical (Motion) Energy

Mechanical (motion) energy is the energy of moving objects. A soaring soccer ball, flying bird, a spinning wind turbine are all examples of motion energy.

Sound is evidence of mechanical (motion) energy. Sound is a vibration or wave of air molecules caused by the motion of an object.

Examples:

Elastic (Stored Mechanical) Energy

Elastic energy is the energy stored in objects when they are stretched, compressed, twisted, or bent. Objects such as our skin, metal springs, trampolines, and rubber bands resist being stretched out of shape. As a stretched rubber band or a compressed spring is released, elastic energy is released to cause a change. As a tightly wound rubber band connected to a toy paddle boat is released, the boat paddle turns in water, moving the boat forward.

Examples:

Thermal Energy

Particles – the atoms and molecules making up all matter – are in constant motion. Thermal energy is the collective energy (kinetic and potential) a substance or system has due to this constant motion. The higher the temperature, the faster the atoms and molecules that make up the substance move and the more thermal energy that substance has. Thermal energy of a substance takes into account the amount of matter. The greater the amount of matter, the more thermal energy a substance has. This is why an iceberg contains more thermal energy than a cup of boiling water.

Heat is thermal energy that is being transferred.

Examples:

Radiant Energy

Radiant energy moves in waves. Radiant energy includes visible light, x-rays, infrared radiation, microwaves, ultraviolet light, and radio waves. Light, ultraviolet, and infrared energy are particularly important to living things. Without light energy there would be no life on Earth. Sunlight energy warms the Earth, keeping temperature suitable for living things. Sunlight provides the energy plants need to make food.

Examples:

Electrical Energy

Electrical energy is the energy in the movement of electric charges (electrons).

Examples:

Gravitational Potential Energy

Gravitational potential energy is the energy something has due to its place or position. Water in a reservoir behind a hydropower dam or a sled sitting at the top of a hill has gravitational potential energy. When things fall, their gravitational potential energy makes something happen. For example, falling water spins turbines and falling sleds move kids down hills.

Examples: