

8.40A ENERGY TERMS

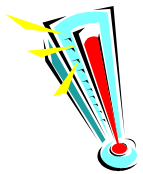
Energy is the ability to do work and transfer heat. It comes in the form of light, heat, electricity, chemical, mechanical, and nuclear energy.



Energy is classified as:

1. Kinetic energy is matter that has energy because of its mass and speed. The electromagnetic spectrum is a form of kinetic energy as wavelengths of sound, light and radiation.

Heat refers to the total kinetic energy of all moving atoms, ions, or molecules in a substance.

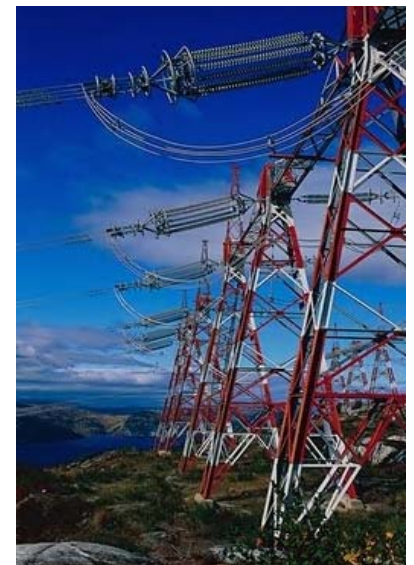


Temperature is a measure of the average speed of those particles.

2. Potential energy is stored energy that has the potential to do work.

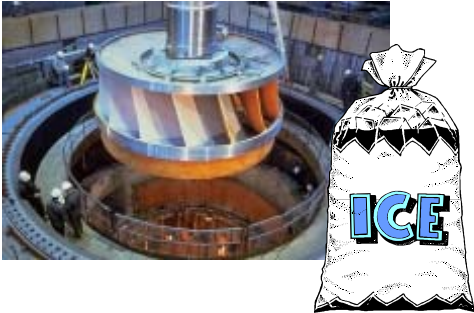
High quality energy is organized or concentrated to perform useful work.

Low-quality energy is dispersed and disorganized and has little ability to do work.



8.40B

Entropy is a measure of the disorder of energy. The more disorder the less useful it is.



For example: The molecules in ice are more orderly and have lower entropy than steam that requires more energy to obtain a highly dispersed state.

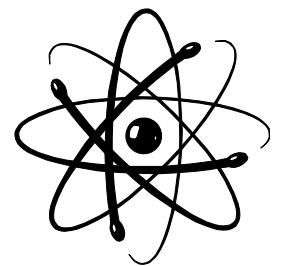
Physical Change - results in a change of shape, size, form, etc. without alteration chemically. Eggs, milk, butter and flour are just a mixture.



Chemical Change - chemical reactions have altered the composition of mixtures or compounds.

With the addition of heat, the batter is changed into a cake.

Nuclear Change - nuclei of certain isotopes change into one or more different isotopes.



Radioactive decay is a type of nuclear change where unstable isotopes are emitted as fast-moving or high-energy radiation or both.

Radioisotopes can be used to estimate the age of carbon-containing matter, as tracers for pollution detection, agriculture, industry and medicine.