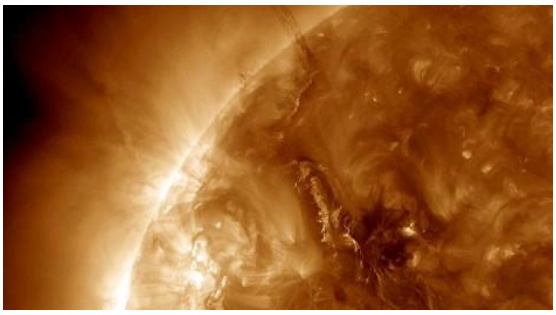
HEAT



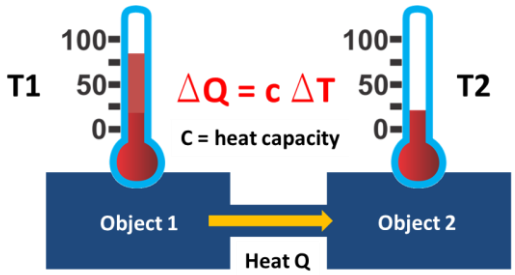
Heat is the transfer of energy from a body of matter to another body through thermal interactions.

The universe is composed of energy and matter (which by the way is a condensed form of energy). Energy cannot be created or destroyed but can take many forms and change from one type of form to another type.

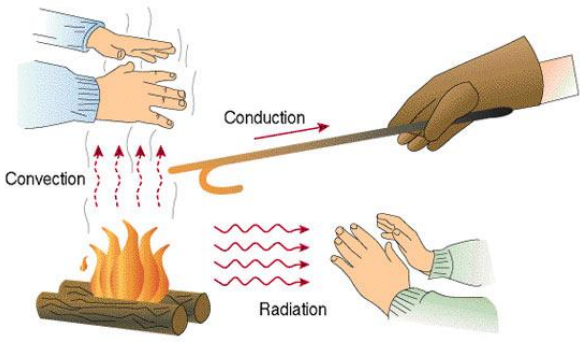
Matter itself holds internal energy in its particles which are in constant motion. An isolated body retains its internal energy. Anywhere in the universe where matter exists, there will be a measurable amount of energy in form of heat.

Whenever an “energized” particle contacts a less energized particle, a “thermal transfer” will occur from the “hot” particle to the “cold” particle until both particles reach n middle energy level called “thermal equilibrium “.

The “energized” particle applies a force to the “less energized” particle by increasing its rate of vibration, so that the particle will require more space, and leave the balance where it was before being energized.



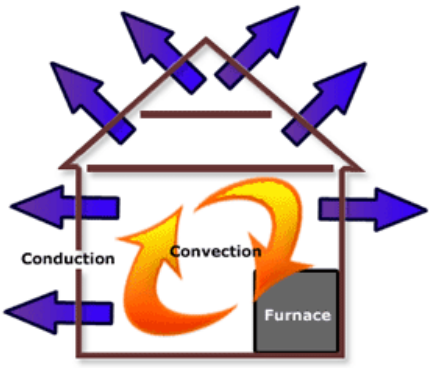
At the same time, a “heat loss” will occure that will release at different “Bosons” energy called “phonons”. The energy transfer process is accomplished in two basic ways: by conduction (enthalpy) or by radiation (entropy) .



Conduction occurs when there is a “contact” between a particle with a particle energized energized and less energy is transferred directly.

In fluids (liquids or gases) classical physics calls this phenomenon “convection”.

As molecular forces are weaker in fluids, the excitation of the particles increases the pressure on the walls of the container of the fluid, generating kinetic energy with mass particles that interact with other forces causing the motion of atoms and molecules from a cold spot to a point of greater heat.



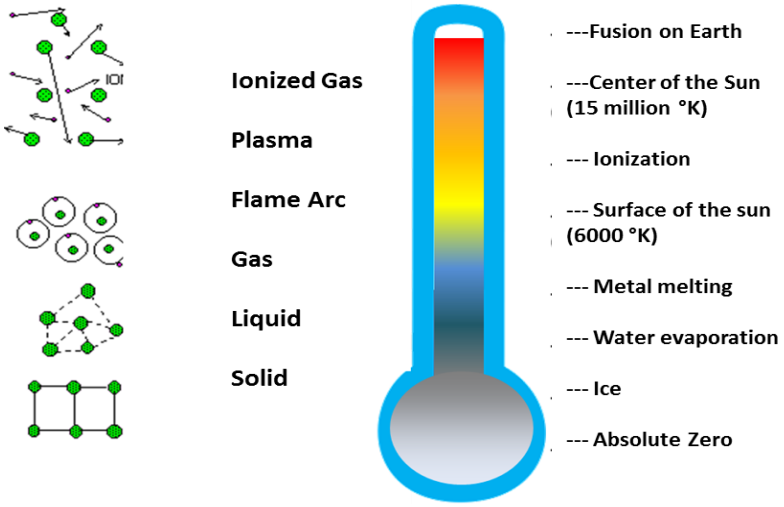
Radiation is the heat transfer via electromagnetic waves, where the phonon requires no medium for transferring energy from the emitter to absorbent. An example is the heat energy from the Sun to Earth.

The “specific heat” of a material is the ability of a unit mass of a material to absorb energy or heat to raise its temperature by 1 °. Specific heat values varies according to the density of matter.

By applying heat to a substance, it can change its physical state of matter or “phase”. Heat required to effect a change of “phase” of matter is called “latent heat”.

These turning points are melting (solid-> liquid), freezing (liquid-> solid), evaporation (liquid-> gas), condensation (gas-> liquid), sublimation (solid <-> gas) or ionization (gas-> plasma) according to the change.

To get an idea of the relationship between heat and the state of matter in a simple way we can illustrate in the following graph:



The unit of measurement of the “heat” is the same as that of “energy” and “work”: the joule, but also commonly use the “calorie”.

As the value of the calorie is so small, normally people use the value of kilocalories (1000 calories) for nutrition measurement of the body.

Source: http://www.artinaid.com/2013/04/heat/