Thermal Energy and Heat

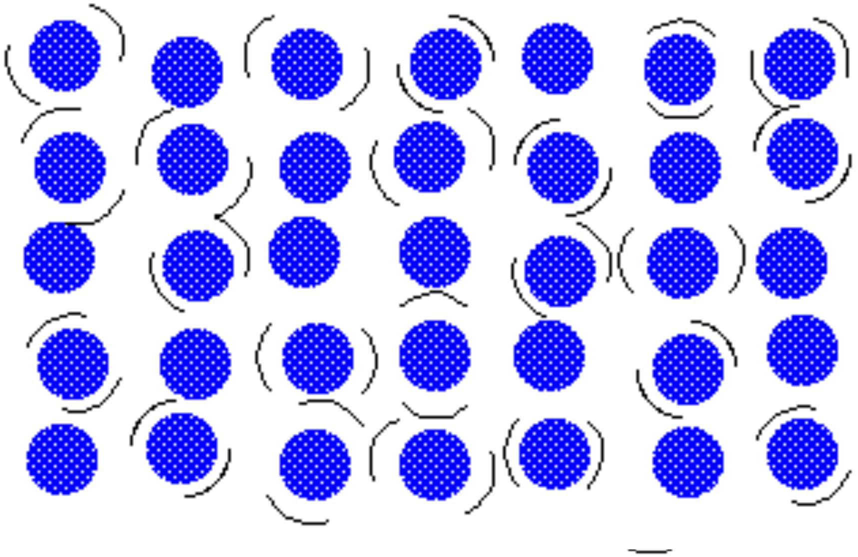
Expansion

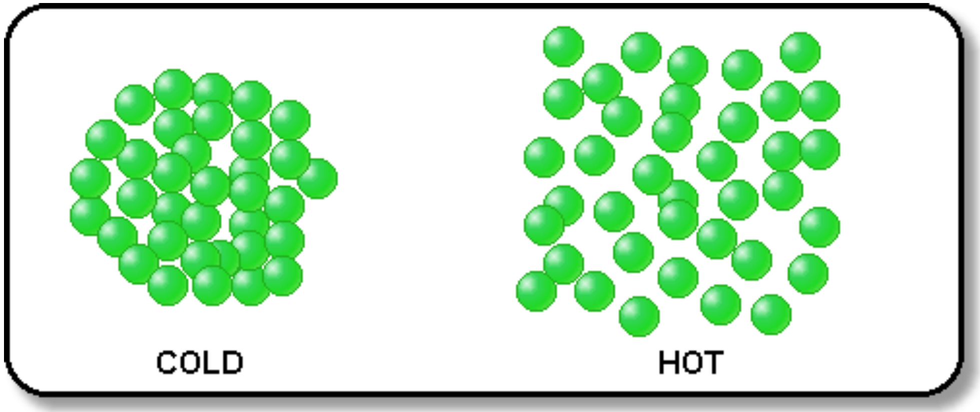
and

Contraction

Sunday, September 7, 2014

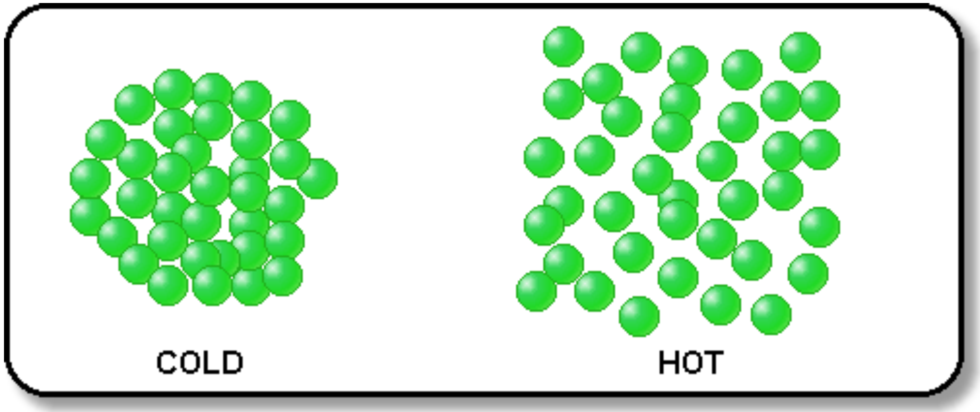
- Question – What happens to the atoms in a substance if we heat it up?





When objects are heated, the particles gain energy, move faster, and need more space so the object <u>expands</u> – increases in volume "gets bigger"

When objects are cooled, the particles lose energy, move slower, and need less space so the object contracts – decreases in volume "gets smaller"



Experiments

- Ball and Ring
- Balloon and Erlenmeyer Flask
- Sagging Wire

The amount objects expand and contract has been measured and calculated for a variety of materials.

Engineers must think about expansion and contraction before they build things because if they didn’t, their structures would be destroyed. e.g. bridges, railway ties, teeth fillings, etc.

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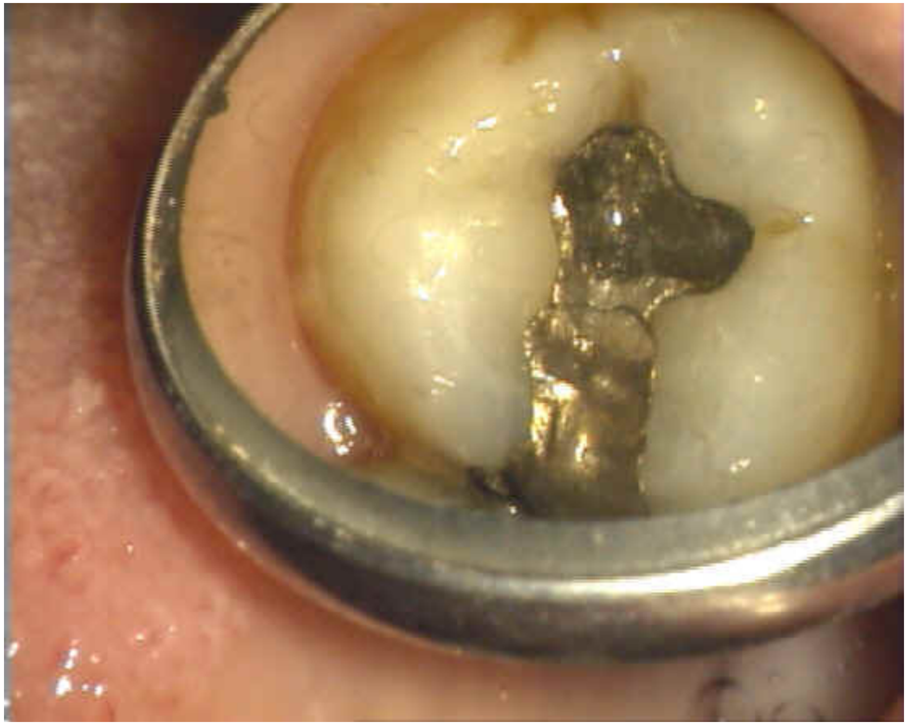

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Exception to the rules of Expansion and Contraction

Water is Weird !?

Chemically speaking, water is very weird. It doesn't behave at all like it should.

In its solid form water shouldn’t float but it does

Water should contract when it freezes but instead it expands**.**

In which season would you expect the telephone lines to sag the most? The least? Why?