

Pure Substances vs Mixtures

http://chemsite.lsrhs.net/Intro/Pure_vs_mixtures.html

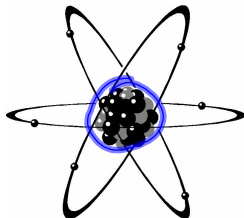
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Matter can be classified into two broad categories: pure substances and mixtures

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In order to fully understand what the difference is, we need to look at what an atom is.

Atoms are mostly empty space, with a nucleus of protons, surrounded by electrons.



Protons - Positive charge

Electrons - Negative charge

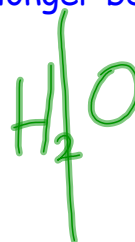
Neutrons - No charge

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The atom is the smallest bit of matter that still has the properties that allow it to do its job, whatever that job may be

For example, take a pile of paperclips and divide it in half. Keep dividing it in half until you have one left. This one paper clip can still hold papers together. If you divide it again, it will no longer be a paperclip and will no longer be able to do its job.

This paperclip represents an atom.



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Back to Pure Substances...

These exist in two different ways:

1. Elements - All the same type of atom



Periodic Table of Elements

For elements with no stable isotopes, the mass number of the isotope with the longest half-life is in parentheses.

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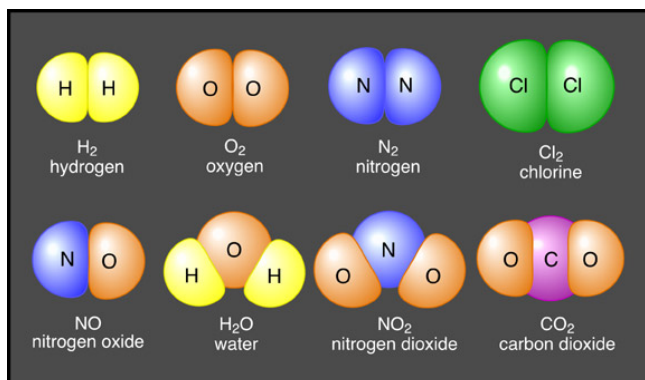
http://chemsite.lsrhs.net/Intro/the_elements_song.html

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The other type of pure substances:

2. Compounds - substances made from two or more different kinds of atoms.

Another word for this could be "molecule," which we will get to later.



Some examples of chemical compounds

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Now as for Mixtures, they also come in two different ways:

The first type of mixture is called a **"Homogeneous Mixture"**

These are mixtures which are the same throughout with identical properties everywhere in the mixture.

They are not easily separated.

We will be working with mixtures like this in Lesson 12

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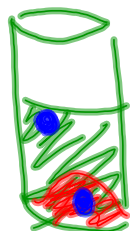
Now as for Mixtures, they also come in two different ways:

The other type is called a **"Heterogeneous Mixture"**

These are mixtures which have different properties when sampled from different areas.

Not mixing equally.

Examples of this would be sand mixed with water or peanuts mixed with raisins.



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Now what is the difference between an atom and a molecule?

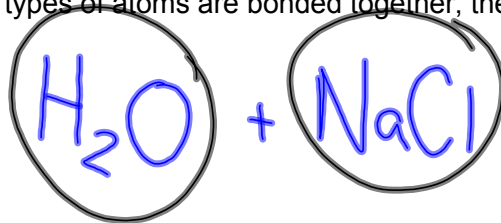
Again, atoms are the smallest piece of matter you can have that chemists can do reactions with. Each element has its own type of atom

covalent

Molecules are two or more atoms bonded together with a bond ~~is called a molecule.~~

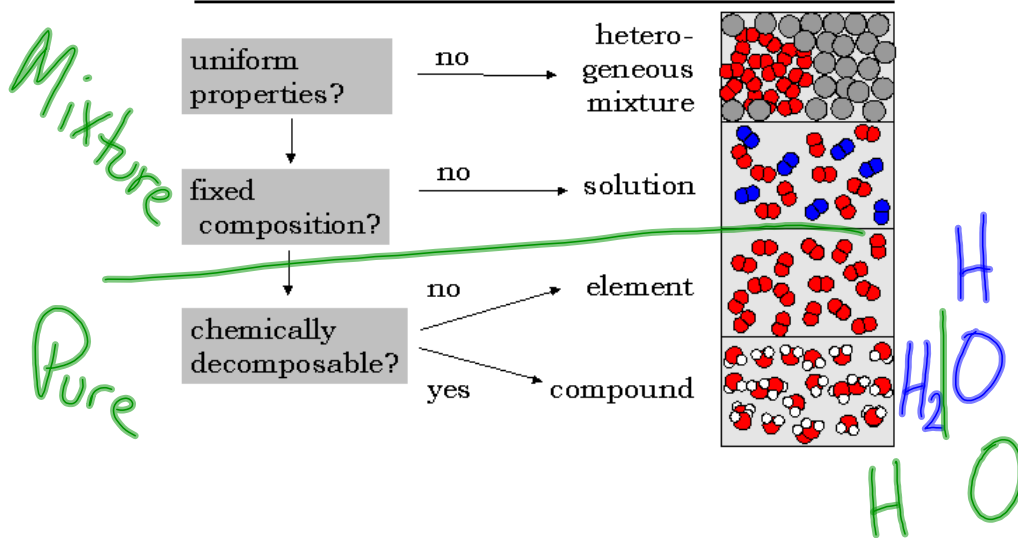
If all the atoms bonded together are of the same type the molecule formed is still an element.

If different types of atoms are bonded together, then the molecule formed is a compound



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Classification of Matter



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