

DESCRIPTION OF MATTER (mass and occupies space) **Chp 2.2**

PURE (always homogeneous)	MIXTURE (impure)									
<p>Elements – all atoms are the same</p> <p>Represented by symbols of one element</p> <p>Compounds – made from two or more elements</p> <p>Represented by symbols of two or more elements</p>	<p>homogeneous (uniform throughout – composition/properties)</p> <table border="1" data-bbox="634 459 964 737"> <tr> <td data-bbox="634 459 802 636">brass</td> <td data-bbox="802 459 964 636">sugar dissolved in water</td> </tr> <tr> <td data-bbox="634 636 802 737">air</td> <td data-bbox="802 636 964 737">tap water</td> </tr> </table>	brass	sugar dissolved in water	air	tap water	<p>heterogeneous (not uniform composition/properties)</p> <table border="1" data-bbox="997 459 1326 806"> <tr> <td data-bbox="997 459 1164 596">granite</td> <td data-bbox="1164 459 1326 596">fog (air water)</td> </tr> <tr> <td data-bbox="997 596 1164 806">dirt</td> <td data-bbox="1164 596 1326 806">fresh squeezed lemonade (pulp in it)</td> </tr> </table>	granite	fog (air water)	dirt	fresh squeezed lemonade (pulp in it)
brass	sugar dissolved in water									
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STATES OF MATTER - gas, liquid, solid **Chp 2.5**

PROPERTIES of matter **Chp 2.4 & 2.9**

<p><u>Physical (detected using the senses):</u></p> <p>Boiling point</p> <p>Melting point</p> <p>Shape</p> <p>Color</p>	<p><u>Chemical (stability):</u></p> <p>Reactivity with oxygen</p> <p>Stability in air</p> <p>Heat stability</p>
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HOW ARE PROPERTIES AND TRANSFORMATION OF MATTER STUDIED?

- **HYPOTHESIS** – TENTATIVE EXPLANATION OF AN OBSERVATION THAT CAN BE VERIFIED BY EXPERIMENT. *Experiments must be conducted under carefully controlled conditions so that they can be reproduced over and over. This separates science from pseudo science.*
- **THEORY** – AN EXPLANATION OF AN OBSERVATION THAT IS SUPPORTED BY EXPERIMENTAL DATA AND WHICH IS USED TO PREDICT OTHER OBSERVATIONS. PHYSICAL OR MATHEMATICAL MODELS ARE FREQUENTLY DERIVED FROM A THEORY. *At any time, a new experiment may be done that invalidates the theory.*
- **LAW** – A STATEMENT OF OBSERVATION OF A NATURAL PHENOMENA (Law of Conservation of Mass - “The total mass of reactants is equal to the total mass of products in a chemical reaction.”) *Laws do not ever change because they are based on observations of natural phenomena.*