



Pure Substances, Mixtures

- Pure substance: matter that has a fixed (constant) composition and unique properties. Contains only 1 type element or compound; homogeneous
- Mixture: Contains at least 2 ***PHYSICALLY*** combined compounds; can be homogeneous or heterogeneous

Homogeneous Substances

- Means same throughout
 - 1) element: only 1 type of atom
 - 2) compound: 2 or more **CHEMICALLY** combined elements (not easily separated from each other)
ex: water, CO₂
 - 3) Solution: a special kind of mixture 2 phases/parts (SOLUTE dissolves & SOLVENT does the dissolving)
ex: moist air (H₂O in Air); sterling silver (Cu in Ag...called an alloy)

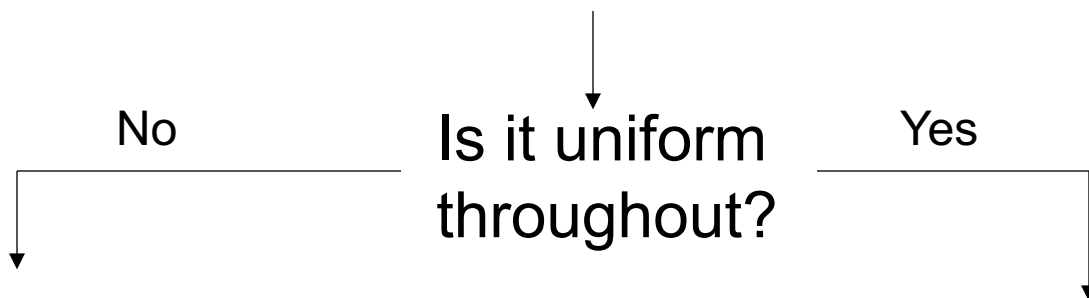
Heterogeneous matter

- Means different throughout
- Always a MIXTURE (solutions are mixtures that are NOT heterogeneous)
 - 2 or more PHYSICALLY combined substances (elements/compounds)
 - ex: air, muddy water

Classification of Matter

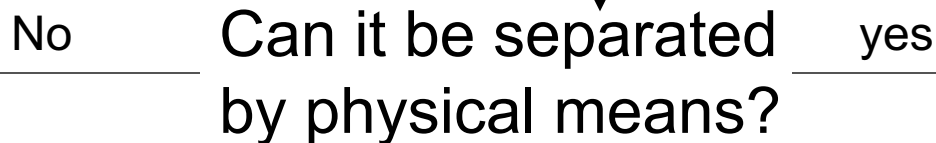
- Matter can also be classified according to its composition. Mixtures can be homogeneous or heterogeneous.
- Mixtures can be separated into pure substances, and pure substances can be either compounds or elements.

MATTER



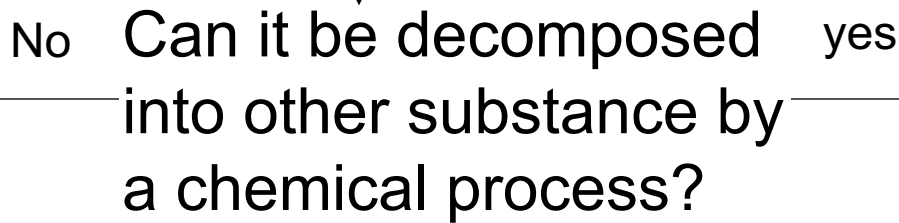
Heterogeneous mixture

Homogeneous



Pure Substance

Homogeneous Mixture (solution)



Element

Compound

Homogeneous mixtures

Homogeneous mixtures : is a mixture in which the components are evenly distributed among each other. You can't see the component parts. It has a constant composition throughout. Homogeneous mixtures are also called **SOLUTIONS**

Examples: Salt dissolved in water, sugar dissolved in water, apple juice, tea, copper (II) sulfate solution in water, alloys....

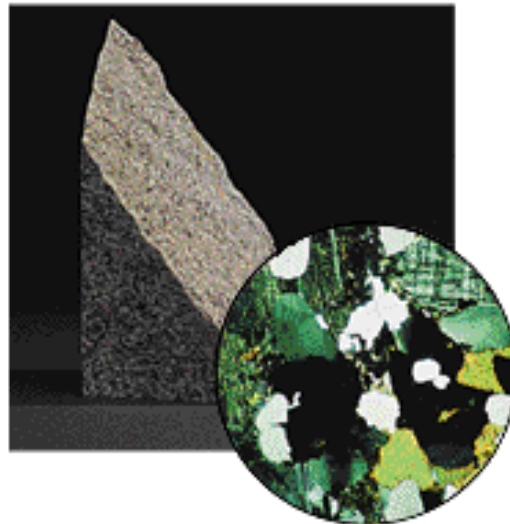


C Copper(II) sulfate (CuSO_4) in water, a homogeneous mixture (solution)

heterogeneous mixtures

Heterogeneous mixture : the components are not evenly distributed among each other. An heterogeneous mixture has **two or more distinct phases** that are usually detectable. This type of mixture does NOT have uniform properties.

Examples: Sand water, oil and water, sulfur and iron, granite,...



A Granite, a heterogeneous mixture