**PHYSICAL VS. CHEMICAL CHANGE**

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|  | **PHYSICAL CHANGE** | **CHEMICAL CHANGE** |
| **Definition** |  |  |
| **Particle Representation** |  |  |
| **Indicators** |  |  |
| **Examples** | 1. Change in state of matter  1. Change in shape 2. Change in form 3. Change in color   (e.g. painting) | Chemical Reactions |
| **Separation Techniques** | 1. Filtration 2. Chromatography 3. Magnetism 4. Distillation 5. Evaporation/Crystallization 6. Density: Centrifuging and decanting | 1. Electrolysis |

**CANNOT be separated by**

**PHYSICAL means**

**CAN be separated by**

**PHYSICAL means**

**CHEMISTRY**

**THE STUDY OF MATTER**

Anything with mass and volume

**NEURTRONS**

**PROTONS**

**ELECTRONSS**

**MIXTURE**

* Can be broken down into the pure substances/component of which it is made
* Each substance/component retains its chemical identity and properties
* Solute (the smaller quantity) is added to a solvent (greater quantity)

**HETEROGENEOUS**

* Non-uniform distribution
* Examples:
  + Trail mix
  + Italian dressing
  + Soil

**HOMOGENEOUS**

* Uniform
* Also known as SOLUTION
* Examples:
  + Alloys: Steel, Brass, Bronze, etc
  + Salt water
  + Atmospheric air

**ELEMENT**

* ONE type of atom
* Examples:
  + Sodium (Na)
  + Neon (Ne)

**IONIC**

* Made of IONIC bonds
* METAL bonds with NONMETAL through transfer of electrons
* Example: NaCl

**NUCLEUS**

**ATOM**

**MOLECULAR**

* Made of COVALENT bonds
* NONMETAL bonds with NONMETAL through sharing of electrons
* Example: H2O

**COMPOUND**

* TWO or MORE DIFFERENT different types of atoms CHEMICALLY BONDED
* Examples:
  + Sodium chloride (NaCl)
  + Water (H2O)

**PURE SUBSTANCE**

* Only way to separate into smaller units is to undergo a chemical reaction/change thus breaking chemical bonds.
* Has a specific chemical identity (formula)