

The Properties of Matter

Basic Concepts

- All objects are made up of matter
- Matter is anything that takes up space and has mass
- Properties are the specific characteristics that describe matter
 - Matter can be identified using its specific properties
- All matter has the general properties of mass, weight, volume, and density
- Other properties are physical or chemical
 - Physical: Does not change the identity of the matter
 - Chemical: Changes the matter in determining the property

- A property describes how an object looks, feels, or acts.
- The objects shown here have different kinds of properties:



Physical vs. Chemical

- Physical properties: observe without changing the identity of the substance
- Chemical properties: observe only when the identity changes
- How do you know if it is chemical or physical?
 - If it **CH**anges, it's **CH**emical

Physical properties

- Physical properties can be observed or measured without changing the identity of the matter.
- Basically, properties you notice when using one of your five senses:
 - Feel - mass, volume, texture
 - Sight - color
 - Hear
 - Smell
 - Taste

Some Physical Properties

- Boiling Point - Temperature that substance turns from a liquid to a gas
- Color
- Conductivity - How easily electrical current and heat pass through an object
- Density - Relative mass to volume
- Ductility - How easily something bends
- Freezing Point - Temperature that a substance turns from a liquid to a solid
- Hardness
- Luster - How shiny something is
- Malleability - How easily something can be flattened into a sheet
- Mass - Measure of how much matter there is
- Melting Point- Temperature that a substance turns from a solid to a liquid
- Odor
- Solubility - How easily something dissolves
- State - Solid, Liquid, Gas, etc
- Volume - Measure of how much space something takes up

Properties are constantly changing...

- Matter is constantly changing.
- Ice in your soda melts, glass breaks, paper is ripped,
- Metal rusts, Paper Burns



Chemical properties

- A common chemical property is reactivity.
 - Reactive to oxygen
 - Reactive to air
 - Reactive to water...
- Notice that chemical properties aren't EASY to observe, unlike physical properties.

Mystery Bags

