

# Classification of Matter

## Video Notes

# In this lesson, you will:

- Define element, compound, and mixture.
- Define heterogeneous mixture and homogeneous mixture.
- Classify examples of matter as elements, compounds, heterogeneous mixtures or homogeneous mixtures.

# Examples of Matter

Copper- what is it made of?

Copper Stands alone because it is only 1 element.

Water- what is it made of? Hydrogen and oxygen

Saltwater- what is it made of? Water and salt

Muddy water- what is it made of? Mud and water.

# Types of Matter

## Element

Pure substance- one kind of atom

Represented by one or two letter symbol. First letter is always capitalized and the second letter is always lowercase.

109 different elements

Periodic table contains elements and their properties. They are organized based on their properties.



# Types of Matter continued

## Compound

- Results when two or more elements are chemically combined
- Most of the time the chemical properties of the compound be different from the original chemical properties of the individual elements
  - think of Salt- Sodium Chloride...Sodium a metal that is highly reactive when it comes in contact with water, Chlorine is a non-metal gas that is toxic, but combined, it is a great addition to our diet
- Water, salt, and sugar are examples
- Represented by chemical formula
  - Shows which elements are present in the compound as well as how many atoms of element are present
- Takes a chemical reaction of some sort to separate the elements
- Elements always combine in the same proportion every time!

# Types of Matter continued

## Mixtures

Two or more substances are physically combined

Can be separated by physical means

Ex. Muddy water can be separated by pouring the mixture through a filter. The water passes through, the dirt stays in the filter....

Saltwater can be boiled. The water boils away, the salt remains.

**DO NOT** combine in the same proportions

Ex. Either a little salt with water or a lot of salt with water makes salt water

Two types of mixtures: heterogeneous or homogeneous

# Heterogeneous Matter

Two or more types of matter that are unevenly distributed and can be physically separated

Example would be trash...

This would be the muddy water

# Homogeneous Mixtures

Are also called Solutions

This would be the salt water

Sea water is an example- made up of evenly distributed parts of salt, water, and various minerals

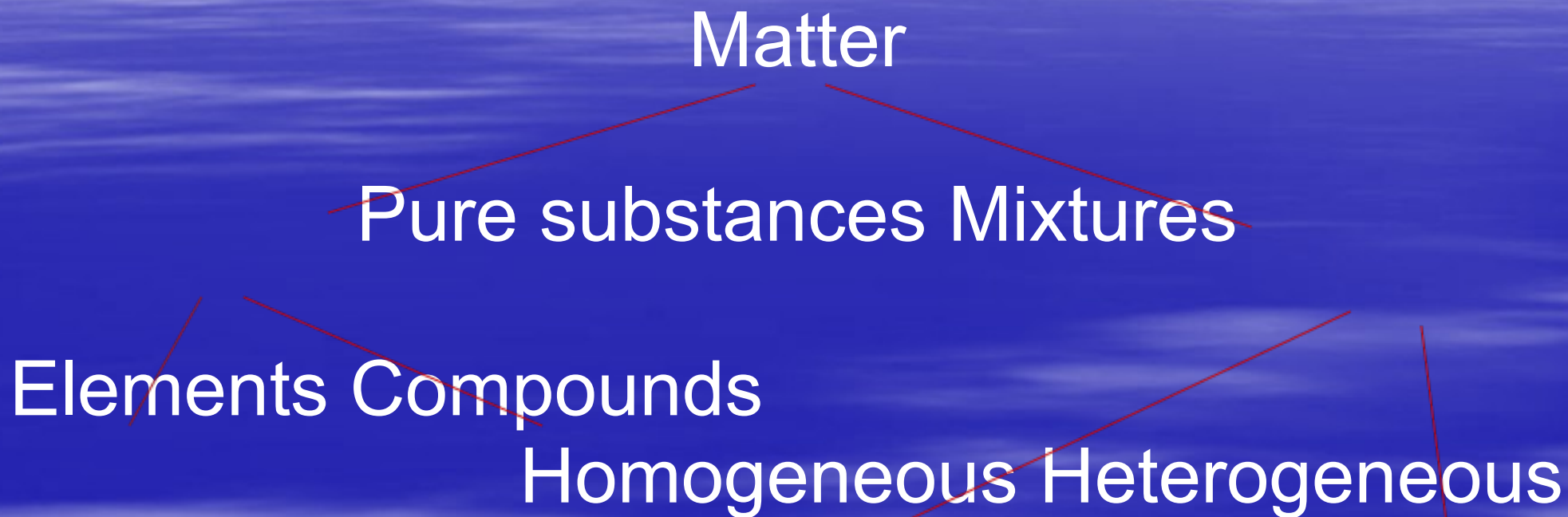
Not all solutions are liquids... Example- the gas mixture used by scuba divers

Alloys combinations of more than one type of metal- brass or bronze are examples

Elements and compounds are described as homogeneous because they are uniform throughout. The difference is mixtures can be separated, elements cannot be separated.



# Matter- How do you classify it?



# You classify for practice

Mark each substance with the appropriate abbreviation:

- E = element
- S = homogeneous mixture/solution
- C = compound
- HE = heterogeneous mixture

# Classify

- hydrogen peroxide \_\_\_\_\_
- carbon \_\_\_\_\_
- carbon dioxide \_\_\_\_\_
- carbon monoxide \_\_\_\_\_
- pizza \_\_\_\_\_
- steel \_\_\_\_\_
- salad dressing \_\_\_\_\_
- calcium \_\_\_\_\_
- rust \_\_\_\_\_
- lead \_\_\_\_\_
- apple juice \_\_\_\_\_

# Classification answers

- hydrogen peroxide c has a formula
- carbon e has a symbol
- carbon dioxide c has a formula
- carbon monoxide c has a formula
- pizza he doesn't have a set combo
- steel s alloy
- salad dressing he would appear to be a solution, but could have variations
- calcium e has a symbol
- rust c has a formula
- lead e has a symbol
- apple juice s



# Chemistry Quiz

CR1.

What is it called when a solid turns directly into a gas?

1. Melting

– Boiling

– Freezing

– sublimation

# Chemistry Quiz

CR2.

In an experiment, the variable deliberately changed by the scientist is called the:

1. The controlled variable
  - The manipulated variable
  - The responding variable

# Chemistry Quiz

1. Which of the following is NOT a symbol for an element?

2. Na

3. CO

4. S

5. He

# Chemistry Quiz

2. A \_\_\_\_\_ is made of two or more elements chemically combined.

1. Element

– Mixture

– Compound

– alloy



# Chemistry Quiz

3. Which of the following is an example of a compound?

1. Oxygen

– Pizza

– Sodium chloride

– Helium

# Chemistry Quiz

4. Which of the following is an example of a heterogeneous mixture?

1. Tea

– Oxygen

– Pizza

– water

# Chemistry Quiz

5. Which of the following always combines in definite proportions?

1. Element

- Compound
- Heterogeneous mixture
- Homogeneous mixture