Warm-Up | Elements, Compounds, and Mixtures

Lesson Objectives

By the end of this lesson, you should be able to:

- Describe elements as [ ] substances.
- Describe compounds as pure substances.
- Describe mixtures.

Science Practice: Classify matter as pure substances or mixtures by studying their [ ].

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

_____ pure substance	A. a method of separating solutions in which the solute is separated by the density or size of particles
_____ mixture	B. a type of matter that cannot be broken down into simpler components without undergoing a chemical change
_____ chromatography	C. a pure substance made up of only one type of atom
_____ element	D. a combination of pure substances that are not chemically combined
_____ heterogeneous mixture	E. a pure substance made up of two or more elements that are chemically combined
_____ compound	F. a process in which a mixture is separated using differences in boiling point between the different components of the mixture
_____ distillation	G. a mixture whose components cannot be distinguished and that appears as a single phase
_____ homogeneous mixture	H. a mixture whose components can be distinguished

© Edgenuity, Inc.

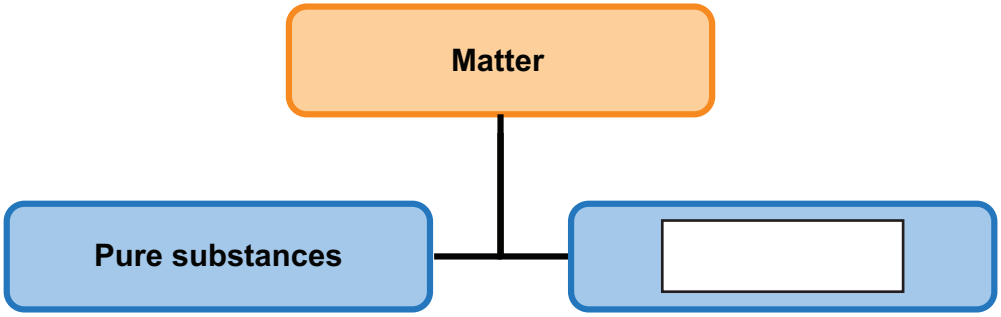
Instruction | Elements, Compounds, and Mixtures

Slide 1

Lesson Question

Slide 2

Classification of Matter



Pure Substances

A **pure substance** is a type of _____ that cannot be broken down into simpler components without undergoing a chemical change.

Examples:

- Water (H_2O)
- _____ (NaCl)

Examples of Elements

An _____ is a pure substance consisting of only one type of atom.

Examples:

- Sodium (Na)
- Chlorine (_____)
- _____ (Fe)
- Oxygen (O_2)

© Edgenuity, Inc.

Instruction | Elements, Compounds, and Mixtures

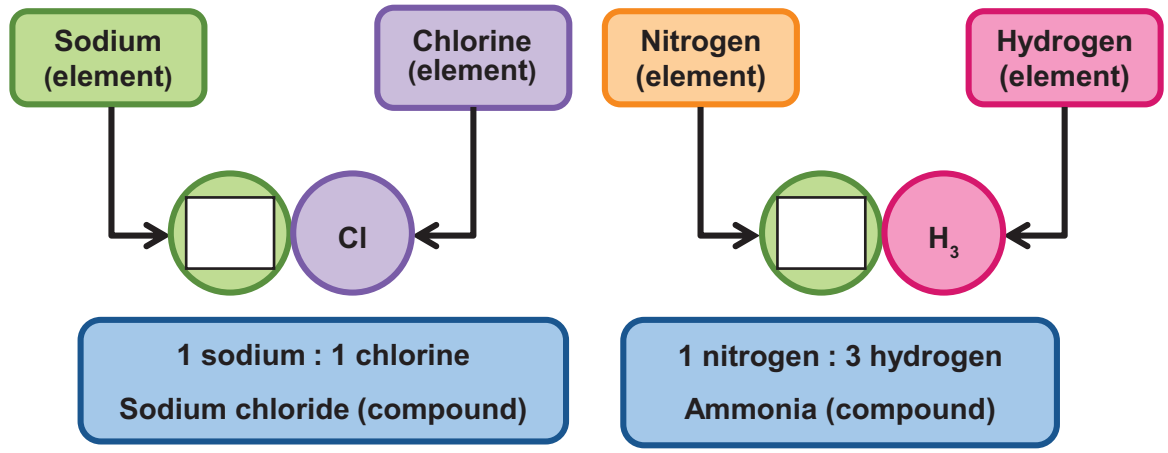
Slide 2

Compounds

A **compound** is a pure substance made up of two or more different kinds of [ ].

- Atoms cannot be separated through physical processes.
- Atoms are bonded together chemically in a [ ] ratio.

Formation of Compounds



Examples of Compounds

Examples:

- Water ([ ])
- Salt (NaCl)
- Emerald ($Be_3Al_2(SiO_3)_6$)
- [ ] (Fe_2O_3)

© Edgenuity, Inc.

Instruction | Elements, Compounds, and Mixtures

Slide 5

Mixtures

A **mixture** is a combination of two or more [ ] substances that are not chemically combined.

- Can be separated by [ ] means
- Does not have fixed [ ] between components

Types of Mixtures

A **homogeneous mixture** appears as a [ ] phase.

- Salt water

A **heterogeneous mixture** appears to consist of two or more components that are distinguishable.

- [ ]

Examples of Mixtures

Examples:

- Salt water
- Soil
- [ ]
- Steel
- Air

© Edgenuity, Inc.

Instruction | Elements, Compounds, and Mixtures

Slide 10

Separation of Mixtures

Separations use physical methods only.

- Sorting
- [ ]



Separation of Mixtures

Distillation is a process in which a mixture is separated using the differences in [ ] points of the different components of the mixture.

Example:

- Separation of gasoline from other oil components

© Edgenuity, Inc.

Instruction | Elements, Compounds, and Mixtures

Slide 10

Separation of Mixtures

Chromatography is a process in which a [ ] is separated using differences in the ability of the components of the mixture to pass through a substrate.

Example:

- Separation of [ ] in pigments

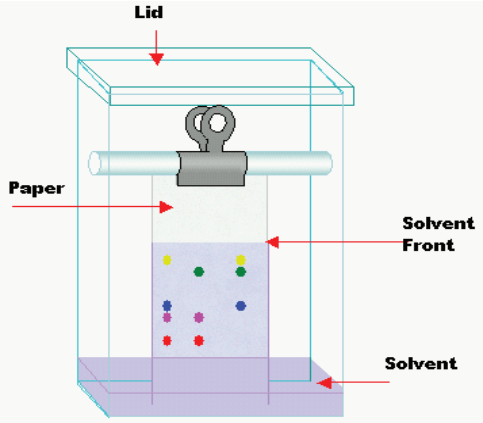


Image by Theresa Knott

Separation of Mixtures

Separation methods take advantage of the [ ] properties of the materials.

- Solubility
- Boiling point
- [ ]

© Edgenuity, Inc.

Summary | Elements, Compounds, and Mixtures

Lesson Question

What is everything on Earth made of?

Answer

Slide 2

Pure Substances

- Matter can be divided into pure substances and mixtures.
- Pure substances are either _____ or compounds.
- Elements are made up of only one type of atom.
- Compounds are made up of elements that are chemically combined.

Mixtures

- Mixtures are made up of pure substances that are not _____ combined.
- Components of a mixture are not present in a fixed ratio.
- Mixtures are either homogeneous or heterogeneous.
- Most materials are mixtures.

© Edgenuity, Inc.

Summary | Elements, Compounds, and Mixtures

Slide 2

Separation of Mixtures

- Physical changes and processes can be used to separate mixtures.
- Physical properties of pure substances are used to determine how to separate a mixture.
- Sorting, filtration, _____, distillation, chromatography, and magnetism are common methods used to separate mixtures.

Use this space to write any questions or thoughts about this lesson.

© Edgenuity, Inc.