

Science “Matters”: Compounds and Mixtures

Have you ever mixed two things together, just to see what would happen? Did you ever wish that you hadn't done what you did? Were you able to separate them back into the two things that you started with? Sometimes when you mix things together you can go back to the things that you started with. If you mixed potato chips and gummy worms together, you could always pick the gummy worms out of the potato chips if you didn't like the two of them together. Sometimes, though, something happens when you mix two things together. You make something new. You can't go back to what you started with.

Matter is an interesting thing. It is something that can change. It can change into a different phase—from solid to liquid or liquid to gas. It can change size and shape. Matter can even change its composition. Matter can be combined with other kinds of matter. What happens when matter is combined?

Sometimes when matter is combined, a mixture is formed. A mixture is two or more elements or compounds that are combined in a way that do not form chemical bonds. Mixtures do not have an exact composition. The mixture does not create a new substance. A mixture can be separated into its original pieces. One example of a mixture is concrete. Concrete is made from sand, rock and water, but the concrete in your driveway is not exactly the same as the concrete at the sidewalk in front of school.

There are two words that are used to describe mixtures: homogeneous and heterogeneous. The prefix homo- means “same”. The prefix hetero- means “different”. A homogeneous mixture is one that is the same throughout the mixture. An example of a homogeneous mixture is salt water. If you dissolve salt into a cup of water, then pour the mixture into four cups, the salt water will be the same in all four cups. A heterogeneous mixture is one that is different throughout the mixture. For example, if you mixed chocolate chips and walnuts together and poured the mixture into four cups, every cup would be different. One cup might have seven chocolate chips and four walnuts. Another cup might have five chocolate chips and six walnuts. Another cup might contain only chocolate chips or only walnuts.

There are three different kinds of mixtures: solutions, suspensions, and colloids. Solutions are homogeneous mixtures. A solution is one type of matter dissolved in a liquid or gas. A solution can be made by dissolving salt or sugar in water. Another example of a solution is water dissolved in air.

Suspensions are heterogeneous mixtures. The different pieces can be mixed together, but they will eventually settle out. An example of a suspension is oil and vinegar. They can be mixed together by shaking the two together. After a short amount of time, the oil will separate from the vinegar and rise to the top.

Name _____



Date _____

Colloids are mixtures that are similar to both solutions and suspensions. Colloids will not separate, but the particles are visible in the mixture. In a colloid, the particles can be seen when a light is shown onto the mixture. Whipped cream is a colloid of air in cream. Smoke is a colloid formed when ash is mixed in air. The milk that we buy in the grocery store is also a colloid formed by combining milk and butterfat.

Sometimes when matter is combined, something special happens. A compound is formed. You have already learned that a compound is a molecule made from two or more atoms. When the atoms join together, they form a chemical bond. A new substance is made. All compounds are homogeneous. Compounds have an exact composition that never changes. For example, water is only made by combining two hydrogen atoms with one oxygen atom. Every molecule of water is the same.

A compound does not have the same properties as the matter that formed it. The compound is a new substance with new properties. Water is a liquid and is created by combining two gases, hydrogen and oxygen. Sodium is an explosive solid and chlorine is a poisonous gas. When the two combine, they form a compound, salt, that is safe enough for us to use every day to season our food.

Name _____

Date _____

Answer the following questions after reading “Compounds and Mixtures”. Circle the correct answer.

1. Matter can change _____.
 - A. phase
 - B. composition
 - C. size
 - D. shape
 - E. all of the above.
2. _____ are not formed in a mixture.
 - A. Physical properties
 - B. Chemical bonds
 - C. Homogeneous
 - D. Colloids
 - E. Suspensions
3. A mixture _____ be separated.
 - A. will
 - B. should never
 - C. cannot
 - D. can
 - E. might
4. The prefix hetero- means _____.
 - A. molecule
 - B. first
 - C. same
 - D. colloid
 - E. different
5. There are _____ kinds of mixtures?
 - A. 2
 - B. 3
 - C. 4
 - D. 5
 - E. 10

Name _____



Date _____

6. _____ are homogeneous mixtures.
- A. Compounds
 - B. Solutions
 - C. Suspensions
 - D. Colloids
 - E. Heterogeneous
7. A solution is one type of matter dissolved in a liquid or a _____.
- A. colloid
 - B. mixture
 - C. solid
 - D. suspension
 - E. gas
8. Suspensions will eventually _____.
- A. settle out
 - B. form molecules
 - C. form compounds
 - D. evaporate
 - E. dissolve
9. The particles in a colloid are _____.
- A. mixtures
 - B. suspensions
 - C. visible
 - D. separate
 - E. invisible
10. All compounds are _____.
- A. Atoms
 - B. Mixtures
 - C. Heterogeneous
 - D. Homogeneous
 - E. Suspensions

Name _____



Date _____

“Compounds and Mixtures” Answer Key

1. E. all of the above
2. B. Chemical bonds
3. D. can
4. E. different
5. B. 3
6. B. Solutions
7. E. gas
8. A. settle out
9. C. visible
10. D. homogeneous