

Name: _____ Period: _____ Date: _____

Physical vs. Chemical Properties Worksheet

- A **physical property** is observed with the senses (or measured) and can be determined without changing the object. For example, color, shape, and odor are all examples of physical properties because they are observed using sight, touch, and smell. Mass and length are also physical properties because they are measured using a balance and ruler.
- A **chemical property** indicates how a substance reacts with something else. The original substance is fundamentally changed in observing a chemical property. For example, the ability of iron to rust is a chemical property because rust is a new substance not originally found on iron. The iron has reacted with oxygen, and the original iron metal is changed. It now exists as iron oxide, a different substance!

Directions: **Put a check mark** in the column to classify each description as either a *chemical* or *physical* property.

<u>Property Description</u>	<u>Physical Property</u>	<u>Chemical Property</u>
1. sulfur is a yellow color		
2. density of Al is 2.70 g/cm ³		
3. wood is flammable		
4. solubility (dissolving) of food coloring in water		
5. metals react with acid to form hydrogen gas		
6. oxygen supports combustion		
7. bases taste bitter		
8. the melting point of water is 0°C		
9. metals can react with water to form a gas		
10. acids can react with a base in neutralization		
11. diamonds (made from C) are very hard		
12. water's boiling point is 100°C		
13. non-metals do not conduct heat or electricity well		
14. metals are lustrous (shiny)		
15. methane gas is odorless until a chemical is added to it		
16. volume of water in a water balloon is 100 mL		
17. rust can form on the metal spokes of a bicycle		

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Physical vs. Chemical Changes Worksheet

In a physical change, the original substance still exists; *it has only changed in form* (i.e. size, shape, state of matter, etc). In addition, a physical change is always reversible – you can get back what you started with! In a chemical change, however, a completely new substance is produced – you can never get back what you started with! Energy (heat) changes typically accompany chemical changes, but can sometimes occur in physical changes as well. Do not assume a chemical change is taking place just because energy is involved! Think: Do I have a totally different substance than I started with? If so, this is always a chemical change.

Directions: Read the following statements. Classify the following as being a *physical* or *chemical* change.

1. Sodium hydroxide dissolves in water. _____
2. Hydrochloric acid reacts with potassium hydroxide to produce salt, water, and heat. _____
3. A pellet of sodium is sliced in two. _____
4. Water is heated and changed to steam. _____
5. Potassium chlorate decomposes to potassium chloride and oxygen gas. _____
6. An iron nail rusts when left out in the rain. _____
7. When placed in water, a sodium pellet catches on fire as hydrogen gas is given off and sodium hydroxide forms. _____
8. On a cold fall morning, water vapor in the atmosphere condenses into dew on the grass. _____
9. An ice cube melts on a hot summer day. _____
10. Milk sours after being kept past the expiration date. _____
11. Sugar dissolves in water. _____
12. Wood rots out in the rain. _____
13. Pancakes cook on a griddle. _____
14. Green grass making its own food. _____
15. A tire is deflated (the air is let out). _____
16. Food is digested in the stomach. _____
17. How could you show that dissolving salt in water results in a physical change? Explain! (worth 4 points)