

Chemical Properties

Have you ever watched someone blowing glass? The glass is thrust into a sizzling hot flame and melted so it can be shaped. What would happen if you held a piece of wood in a hot flame to melt it? Instead of melting, it would burst into flame. When it finished burning the wood would be gone, reduced to ash and vapors. You could smother the flame before the wood was destroyed by covering it with sand or spraying a carbon dioxide fire extinguisher. That would deprive the fire of oxygen. All

of this tells you something about the properties of glass, wood, oxygen, sand, and carbon dioxide. Wood burns. Glass, sand, and carbon dioxide don't burn. Oxygen supports **combustion** (burning). These cannot be physical properties. Physical properties are only properties that can be observed without changing the identity of a substance. Clearly, when wood burns, it is changing to something else. Combustibility, the ability to burn, is a chemical property. A **chemical property** is any characteristic of matter that enables it to change to another type

of matter. Chemical properties include combustibility, the ability to support combustion, being a metal or a nonmetal, and reactivity. Being a metal or a nonmetal has to do with whether a substance gains or loses electrons when it changes to something else. Metals lose. Nonmetals gain. Reactivity means how likely something is to turn into something else. Iron is a pretty active metal. It tends to rust. Platinum is not an active metal. It is good for jewelry. Helium is inert. It doesn't react at all!



Which of the following describes a chemical property? Which does not?

1. Blimps used to be filled with hydrogen, but hydrogen can explode.
2. Since the explosion of the Hindenburg, blimps are filled with helium which is safer.
3. Both hydrogen and helium were used in blimps because of their low density.
4. Hydrogen and helium are gases.
5. Dry ice is frozen carbon dioxide.
6. Sodium is a metal like gold, but it is never found uncombined.
7. When sodium combines with chlorine, you get table salt.
8. Pure sodium is shiny and has a silvery color.
9. If pure sodium is thrown in water, it bursts into flame.
10. It is dangerous to operate electrical equipment near an oxygen tank.