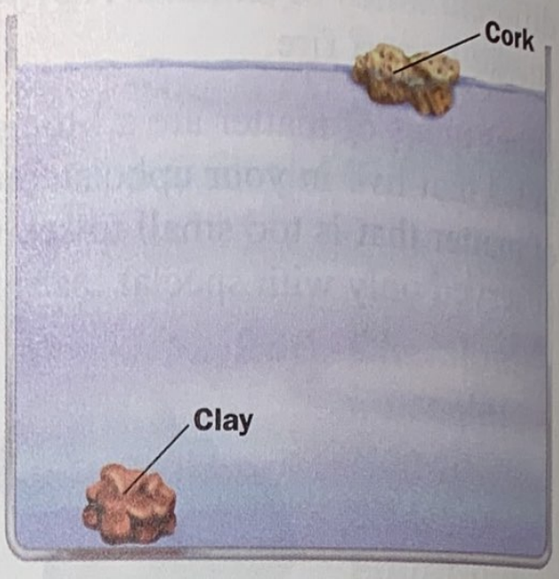
Properties of Matter

251

You know that a piece of cork is different from a piece of clay. Cork will break if you squeeze it hard, but clay will flatten or bend into a new shape. If you had a scale handy, you would find that a piece of cork weighs less than a piece of clay the same size. If you dropped both objects in water, you would see that the cork floats but the clay sinks. Characteristics like these, that help us identify or classify matter, are called **properties.**



Tendency to float or sink is a physical property of matter.

All matter has both physical properties and chemical properties. **Physical properties** are those that can be observed without changing the make-up, or identity, of the matter. For example, clay is malleable, which means it will bend or flatten when squeezed. Squeezing changes the shape of the clay but does not change what the clay is made of. Malleability is an example of a physical property. The chart below lists some common physical properties of matter.

Physical Property	What It Means
Density	The amount of matter in a given volume (mass per unit volume)
Ductility	The ability to be pulled into a thin strand, like a wire
Malleability	The ability to be pressed or pounded into a thin sheet
Boiling point	The temperature at which a substance changes from a liquid to a gas
Melting point	The temperature at which a substance changes from a solid to a liquid
Electrical conductivity	How well a substance allows electricity to flow through it
Solubility	The ability to dissolve in another substance

Chemical properties describe matter based on its ability to change into a new kind of matter with different properties. For example, paper is flammable: it is capable of burning in the presence of oxygen. Flammability is a chemical property of paper. A chemical property of iron is its tendency to rust. Rusting occurs when iron reacts with oxygen to produce iron oxide. Reactivity to acid and to water are two more examples of chemical properties.

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265 Periodic Table
269 Chemical Reactions