

► **Key Question: What makes a substance pure?
What makes a substance a mixture?**

In Section 1.1, you learned that substances, or kinds of matter, are made of particles. Most substances are made of many different kinds of particles. Some substances are made of only one kind of particle.

PURE SUBSTANCES

A **pure substance** is a substance made of one type of particle. White table sugar is a pure substance. White table sugar contains only sugar particles. All of the sugar particles have the same structure.

Here are some other pure substances:

- aluminum foil
- table salt
- distilled water

Distilled water is different from tap water. Tap water is not a pure substance. Tap water has other particles in it. Some of these substances come from the pipes. Distilled water does not have these other substances.

MIXTURES

Some substances look pure. They seem like they are made up of one kind of particle. They are really made of many different particles.

For example, think about cow's milk. Cow's milk might seem like a pure substance. It is actually a mixture! A **mixture** is made of two or more pure substances mixed together. Some of the substances in cow's milk are

- water
- lactose
- fat
- protein
- minerals and vitamins

pure substance

matter that contains only one kind of particle

mixture

matter that contains two or more pure substances mixed together

MAKING MIXTURES

Think of a glass of distilled water. It is a pure substance. You add sugar to sweeten the water. Sugar is another pure substance. The sweetened water is a mixture of distilled water and sugar.

Look at Figure 1. The two parts of Figure 1(a) show different pure substances. Figure 1(b) shows a mixture of the pure substances.

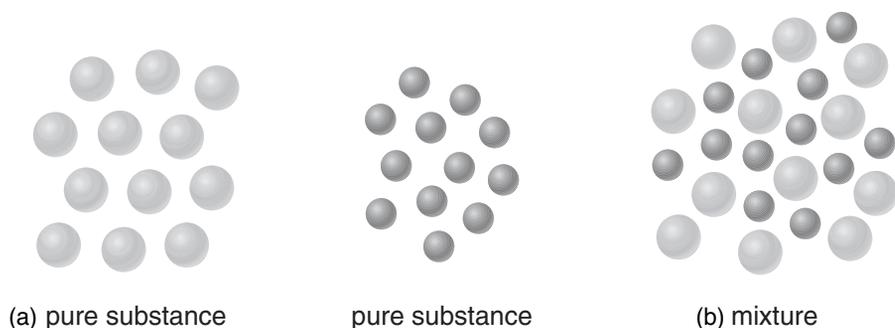


Figure 1 Two pure substances (a) combine to make a mixture (b).

There are many kinds of mixtures. Here are some familiar mixtures:

- steel
- batteries
- juice
- air
- concrete

Mixtures can contain pure substances that are dangerous. Batteries and certain light bulbs contain harmful substances. Mercury and lead are two examples of dangerous pure substances.

It is important to separate and recycle these dangerous parts. They should not be placed with regular garbage. They should be brought to special recycling stations. Knowing about pure substances and mixtures will help you dispose of chemicals properly.

Name: _____ Date: _____



CHECK YOUR UNDERSTANDING

1. What would a drop of milk look like under a very powerful microscope? Draw a diagram showing the types of particles you would see.

2. Give three examples of pure substances. Give three examples of mixtures.

3. Why is it dangerous to place batteries in the regular garbage? How should you get rid of batteries?

4. Think back to the Key Question. How are pure substances and mixtures different from each other?
