

Physical Change

In what ways can matter change? A **physical change** is any change that alters the form or appearance of matter but does not make any substance in the matter into a different substance. For example, a sand artist may change a formless pile of sand into a work of art. However, the sculpture is still made of sand. **A substance that undergoes a physical change is still the same substance after the change.**

Changes of State As you may know, matter occurs in three familiar states—solid, liquid, and gas. Suppose you leave a small puddle of liquid water on the kitchen counter. When you come back two hours later, the puddle is gone. Has the liquid water disappeared? No, a physical change happened. The liquid water changed into water vapor (a gas) and mixed with the air. A change in state, such as from a solid to a liquid or from a liquid to a gas, is an example of a physical change.

Changes in Shape or Form Is there a physical change when you dissolve a teaspoon of sugar in water? To be sure, you would need to know whether or not the sugar has been changed to a different substance. For example, you know that a sugar solution tastes sweet, just like the undissolved sugar. If you pour the sugar solution into a pan and let the water dry out, the sugar will remain as a crust at the bottom of the pan. The crust may not look exactly like the sugar before you dissolved it, but it's still sugar. So, dissolving is also a physical change. Other examples of physical changes are bending, crushing, breaking, chopping, and anything else that changes only the shape or form of matter. The methods of separating mixtures—filtration and distillation—that you read about in Section 1 also involve physical changes.



Reading
Checkpoint

Why is the melting of an ice cube called a physical change?



FIGURE 15

Change of State

At room temperature, the element iodine is a purple solid that easily becomes a gas.

Classifying Why is the change in the iodine classified as a physical change?

FIGURE 16

Change in Form

Crushing aluminum soda cans doesn't change the aluminum into another metal (left). When table sugar dissolves in a glass of water, it is still sugar (right).



Aluminum

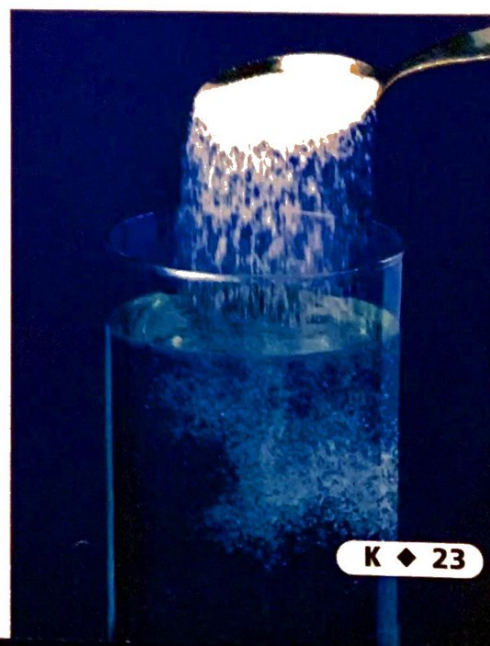


Table sugar