

Reversible and Nonreversible Changes

READ ALOUD PASSAGE

Matter can change in two very different ways. Some changes are reversible, which means the matter can go back to the way it was before. Freezing and melting are good examples. Water can freeze into ice, and that same ice can melt back into water, over and over again.

Other changes are nonreversible, which means there is no going back. Burning is the clearest example. When wood burns, it turns into ash, smoke, and gases, and there is no way to gather those back up and turn them into the original piece of wood.

Why are some changes reversible while others are not? The answer has to do with the particles that make up the matter. In a reversible change like freezing or melting, the particles of water stay the same particles of water the whole time. They simply pack together more tightly as ice or spread apart more loosely as liquid water. Nothing about the particles themselves has changed, so the change can be undone.

In a nonreversible change like burning, the particles themselves are broken apart and rearranged. When wood burns, its particles combine with particles of oxygen from the air to form new substances entirely, mostly carbon dioxide and water vapor. Once that happens, the original wood particles no longer exist, so there is nothing left to cool back into wood.

Scientists have a name for each kind of change. A reversible change, like freezing or melting, is called a physical change. A nonreversible change, like burning, is called a chemical change. Learning to tell the two apart is one of the first steps toward thinking like a scientist.

Activity 1

Fill in the blank with the correct word from the word box.

WORD BOX

reversible nonreversible physical change chemical change particles

1. A change that can be undone is called a _____ change.
2. A change that cannot be undone is called a _____ change.
3. Freezing and melting are examples of a _____.
4. Burning wood is an example of a _____.
5. Whether a change is reversible depends on what happens to the _____ of the matter.

Activity 2

Because / But / So Complete each sentence three different ways.

Freezing and melting are reversible changes because

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Freezing and melting are reversible changes but

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Freezing and melting are reversible changes so

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Activity 3

Circle True or False for each statement.

1. **True / False** Melting ice is a reversible change.
 2. **True / False** Burning wood is a reversible change.
 3. **True / False** In a physical change, the particles of the substance stay the same.
 4. **True / False** A chemical change can always be undone just by cooling it back down.
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Activity 4

Combine the short sentences below into one smooth sentence.

1. · Some changes are reversible.
 · Ice can melt into water.
 · Water can freeze back into ice.

Combined sentence:

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2. · Some changes are not reversible.
 · Burning wood changes it permanently.
 · You cannot unburn wood.

Combined sentence:

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