

Physical and Chemical Properties and Changes

A. Classify the following changes as physical or chemical.

1. Sodium hydroxide dissolves in water

2. HCl reacts with KOH to produce salt, water, and heat

3. A pellet of sodium is sliced into two

4. Water is heated and changed into steam

5. Two substances are mixed, and light is produced

B. Read each scenario. Decide whether a physical or chemical change has occurred and give evidence for your decision. The first one has been done for you to use as an example.

	Physical or Chemical Change?	Evidence
A student removes a loaf of hot bread from the oven. The student cuts a slice off the loaf and spreads butter on it.	Physical Change	He just made a mechanical mixture and made buttered toast. All the ingredients are still the same, meaning it is a physical change.
Your friend decides to toast a piece of bread but leaves it in the toaster too long. The bread is black, and the kitchen is full of smoke.		
You forgot to dry the bread knife when you washed it, and reddish-brown spots appeared.		
You blow dry your wet hair.		
In baking biscuits and bread, the baking powder reacts to release carbon dioxide bubbles. The carbon dioxide bubbles cause the dough to rise.		

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Answers

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Your friend decides to toast a piece of bread but leaves it in the toaster too long. The bread is black, and the kitchen is full of smoke.	Chemical Change	When you burn the bread, you are carbonizing the starch molecules. The water evaporates, which causes the sugar to caramelize and turn black
You forgot to dry the bread knife when you washed it, and reddish-brown spots appeared.	Chemical Change	This is most likely rusting because when you expose water to oxygen for long periods, it creates a new substance called rust
You blow dry your wet hair.	Physical Change	You are just adding heat to your hair to make it dry. The scientific composition of your hair is still the same, meaning it is a physical change
In baking biscuits and bread, the baking powder reacts to release carbon dioxide bubbles. The carbon dioxide bubbles cause the dough to rise.	Chemical Change	When the dough is heated, it can undergo a decomposition reaction. It creates carbon dioxide, which is a sign of chemical change