Chemical and Physical change

Physical changes do not produce a new substance. Changes in state (melting, freezing, vaporization, condensation, sublimation) are physical changes. Examples of physical changes also include bending a piece of wire, melting icebergs, and breaking a bottle

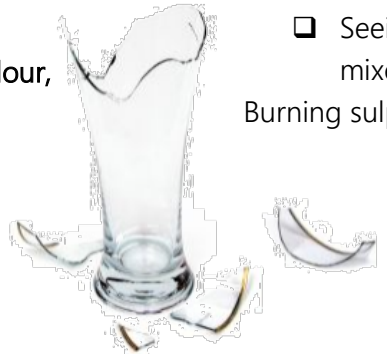
A **chemical change occurs** when a new substance is formed and is not easily reversible. Observations to show a chemical change could be a colour change, a new smell, the chemicals get hotter or colder or a gas is produced.

Evidence for Chemical and Physical change

Examples of Physical Changes

- ❑ crumpling a sheet of paper
- ❑ melting an ice cube
- ❑ breaking a bottle

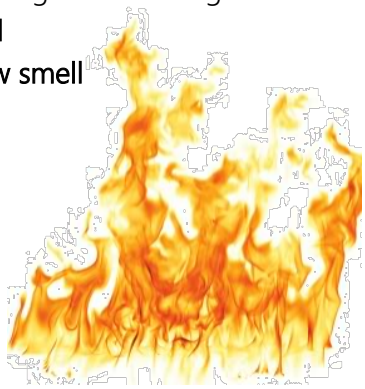
No change in temperature, colour, gas or smell



Evidence of Chemical Changes

- ❑ Burning wood – **temperature change**
- ❑ Mixing acid with universal indicator – **colour change**
- ❑ Seeing bubbles when vinegar and baking soda are mixed – **a gas is formed**

Burning sulphur – **creates a new smell**

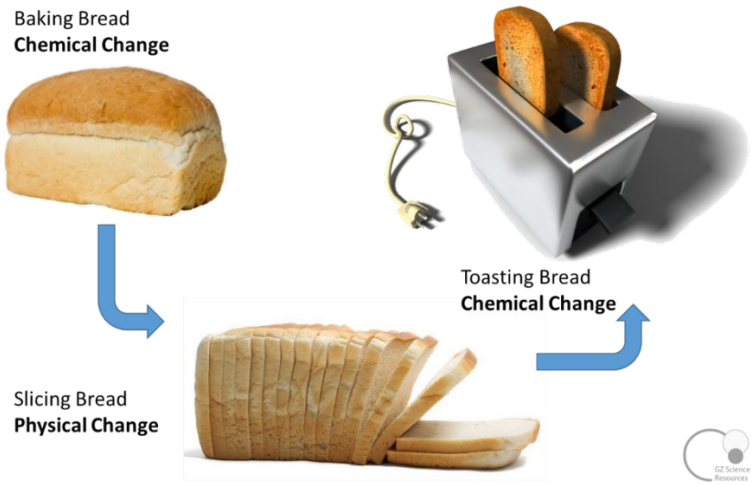


Observing reactions

To observe means to record or make note of something we have experienced. We also think of observations as watching something, but in Science, observations may be made with any of our senses (by seeing, feeling, hearing, tasting, or smelling) or even using tools to make observations that are then changed into something our senses detect.

Observation tools include thermometers, microscopes, telescopes, radars, computer sensors and spaces probes. Sometimes these tools can observe and collect data that humans cannot directly sense. By using these tools scientists can often make many more observations and much more precisely than our senses are able to.

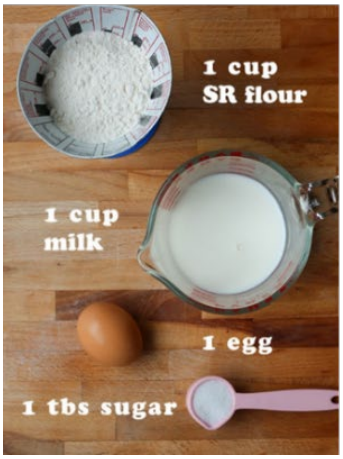
Chemical and Physical change in everyday situations



Reactants and products in a chemical change

A **chemical change** is a process that produces a chemical change to one or more substances. A chemical change will produce a **new substance.** Other observations may include a temperature change, a colour change or production of gas. Chemicals that are used, and you start with, in a chemical change are known as **reactants.** Those that are formed are known as **products**.

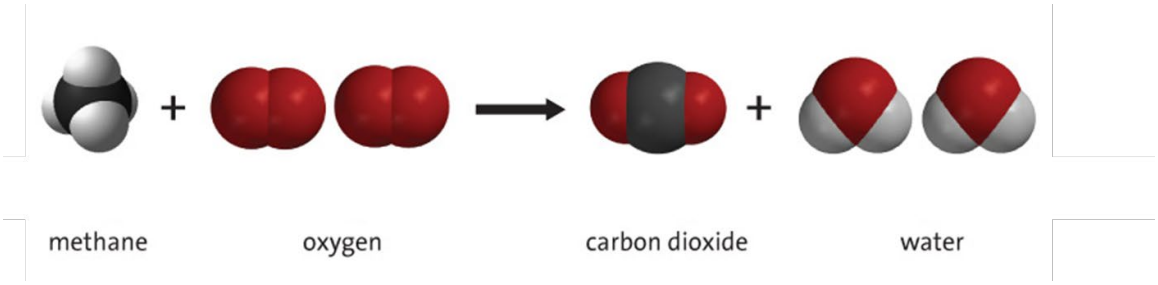
Reactants → **Products**



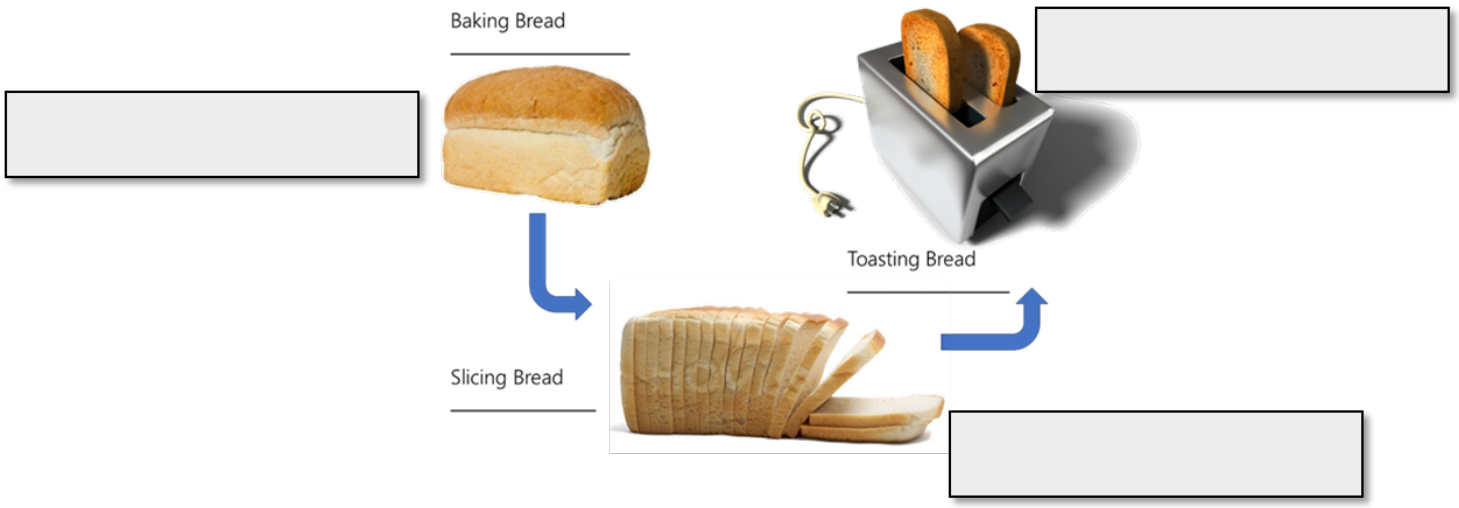
For example: making pancakes is a chemical change.
The reactants (ingredients you start with) are flour, milk, egg and sugar.
The product is pancakes.

Chemical equations

We show chemical changes as **equations.** All reactants must go to the left of the arrow and all products go to the right of the arrow. An arrow must be used and not an equal sign. The arrow shows a chemical reaction, where the reactants change into products.



1. During the process of baking, cutting and toasting, bread undergoes both physical and chemical change



a. Identify each step as either physical or chemical change

b. List **THREE observations** that might indicate a chemical change

c. Bread is mainly made from flour, water, yeast.

What are the reactants of the baking process?
What are the products of the baking process?
Write the baking process as a WORD equation