

Physical change

A physical change is a change in the appearance of a substance. It is still the same chemical substance, it just looks different.

Examples: Melting wax, crushing salt, dissolving copper sulfate

Physical changes are often reversible. This means that they can be undone. Wax melts easily. Molten wax can be cooled and turned back into a solid. The wax may have a different shape, but it is still wax. Crystals of copper sulfate can be dissolved to make a solution. When the water evaporates, crystals form. The crystals may be a different size but they are still crystals of copper sulfate.

Chemical change

A chemical change is a change that makes a new substance. The new substance looks different, smells different and has different properties—because it is different.

Examples: Putting magnesium into acid, burning paper, making sedimentary rocks

Chemical changes are usually one-way changes. They cannot go backwards. You cannot un-burn paper, or get the magnesium back after it has reacted with the acid.

How do you know when a chemical change has happened? Some clues to look for are:

- a change in colour
- bubbles or fizzing (which means a gas is being made)
- a change in temperature (the reaction becomes hotter or colder)
- change in solubility (substances can dissolve or crystallise)
- light, sound or heat energy released (such as in a wood fire)

When a chemical change has occurred we say a chemical reaction has taken place. A chemical reaction produces new chemicals.

Some reactions, like rusting, are slow. Some reactions are explosively fast. Some reactions need to be started with heat energy, and some reactions start by themselves.

True or False

- _____ A chemical reaction causes a chemical change.
- _____ A chemical change makes new products.
- _____ Elements can be lost or gained in a chemical reaction.
- _____ Energy can only be taken in during a chemical reaction.
- _____ The substances that take part in a chemical reaction keep their properties.
- _____ The new substances made in a chemical reaction have new properties.
- _____ A physical change makes new products.
- _____ The boiling of water is an example of a chemical change.
- _____ An equation tells the story of a physical change.

Physical or Chemical change

Circle the correct type of change

mixing salt and pepper	chemical	physical
evaporation of water	chemical	physical
decomposed of water	chemical	physical
cutting a marshmallow	chemical	physical
toasting a marshmallow	chemical	physical
burning magnesium	chemical	physical
adding chocolate syrup to milk	chemical	physical
the rusting of iron	chemical	physical
melting of sugar	chemical	physical