Physical and Chemical Changes

How to tell the difference

Physical Change

Substance may seem different, but the way the atoms link up is the same.

It’s a physical change if

* It changes shape or size
* It dissolves.
* It’s a physical change if:
* It changes phase (freezes, boils, evaporates, condenses)

Chemical Change

It’s a chem ical change if….

It’s a chemical change if...

* It bubbles (makes a gas)

It’s a chemical change if...

* It changes color

It forms a precipitate

What kind of change is it if someone...

* Tears up paper?
* Physical change
* Mixes salt and water?
* Physical change
* What kind of change is it if someone…
* Burns paper?
* Chemical change
* Evaporates salt water?
* Physical change

. What kind of change is it if someone…

* Mixes vinegar and baking soda?
* Chemical change

Chemical Properties & Physical and Chemical Changes

**Physical changes** are those changes that do not result in the production of a new substance.  If you melt a block of ice, you still have H2O at the end of the
change.

If you break a bottle, you still have glass.  Painting your nails will not stop them from being fingernails.  Some common examples of physical changes are: melting, freezing, condensing, breaking, crushing, cutting, and bending.

Some, but not all physical changes can be reversed. You could refreeze the water into ice, but you cannot put your hair back together if you don’t like your haircut!

Special types of physical changes where any object changes state, such as when water freezes or evaporates, are sometimes called **change of state operations**.

CHEMICAL PROPERTIES

Chemical properties can ONLY be observed AS the substances are changing into different substances.

**Chemical changes**, or chemical reactions, are changes that result in the production of another substance.

FLAMMABILITY: A material’s ability to BURN in the presence of OXYGEN.

REACTIVITY:
How readily (easily) a substance combines chemically with other substances

Which has higher reactivity? A 14 karat gold ring or a cheap metal ring from the vending machine at the grocery store? What is your evidence

Recognizing Chemical Changes:

When you burn a log in a fireplace, you are carrying out a chemical reaction that releases carbon.  When you light your Bunsen burner in lab, you are carrying out a chemical reaction that produces water and carbon dioxide.

Common examples of chemical changes that you may be somewhat familiar with are; digestion, respiration, photosynthesis, burning, and decomposition.

Physical or Chemical Change?

* Painting Wood

PHYSICAL

Physical or Chemical Change?

* Digestion of food
* CHEMICAL
* Physical or Chemical Change?
* Sugar dissolving in water
* PHYSICAL
* Physical or Chemical Change?
* Iron turning red when heated
* PHYSICAL
* Physical or Chemical Change?
* Evaporation
* PHYSICAL

Physical or Chemical Change?

* Melting ice
* PHYSICAL
* Physical or Chemical Change?
* Melting ice
* PHYSICAL
* Physical or Chemical Change?
* Cutting wire
* PHYSICAL
* Physical or Chemical Change?
* Cutting wire
* PHYSICAL
* Physical or Chemical Change?
* Painting fingernails
* PHYSICAL
* Physical or Chemical Change?
* Cutting fabric
* PHYSICAL
* Physical or Chemical Change?
* Shattering glass
* PHYSICAL
* Physical or Chemical Change?
* Decomposition of old leaves
* CHEMICAL
* Physical or Chemical Change?
* Wrinkling a shirt
* PHYSICAL
* Physical or Chemical Change?
* An old nail rusting
* CHEMICAL