

5.1.4 Chemical vs Physical Change

Physical Change: a change in matter in which no new substance is formed (for example: ice *melting*). This may be a **temporary change** in the physical properties of the substance (i.e. solid → liquid) but the particles in the substance remain the same.

Examples of physical change:

- Change of state (solid → liquid, liquid → gas, ...)
- Change of shape (a pane of glass is shattered)
- Change in taste (only in some cases)
(chlorinated water taste bad, but it will dissolve out of the water changing the taste)
- Change in ability to transmit light

Chemical Change: a change in matter in which at least one new substance, with new properties, is formed (for example: burning paper).

Indicators that chemical change has *probably* occurred: (*)

**** if two or more of these happen, there is a good chance chemical change happened***

1. heat is *produced* (gets hot)
2. heat is *absorbed* (gets cold)
3. the **reactants** (starting materials) are used up
4. a new colour appears (an *unexpected* colour appears)
5. the starting colour of the substances disappears (becomes clear)
6. a substance with **new properties** forms
7. gas bubbles form in a liquid (usually *without heating* the substance)
8. particles of solid **precipitate** form in a liquid

Precipitate: when a solid substance separates from a solution.

Electrolysis is the *chemical change* process of decomposing a chemical compound (breaking it down) by passing an electric current through it. The electrolysis of water (H₂O) produces the more simple chemicals hydrogen gas (H₂) and oxygen gas (O₂).