

Physical vs Chemical Changes

Chemical Change: involves a chemical reaction in which a new substance forms (different chemical formula, different bonding between atoms)

reactants → products

Word Equation

hydrogen gas + oxygen gas → water

Chemical Equation

$\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{H}_2\text{O}(\text{l})$

Balanced Chemical Equation

$2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l})$

Physical Change: no new substances forms,
change of state or a change of particle size

ice → water

$\text{H}_2\text{O}(\text{s}) \rightarrow \text{H}_2\text{O}(\text{l})$

Physical Properties: anything that can be measured without changing the substance

Physical properties can be qualitative (no numbers) or quantitative (can use numbers)

Qualitative Physical Properties:

- colour
- smell (odour)
- texture
- lustre (how shiny)
- malleability (how bendable something is)
- state
 - solid (s)
 - liquid (l)
 - gas (g)

Quantitative Physical Properties:

- melting point (m.p.)
- boiling point (b.p.)
- density
- solubility (how well it dissolves)
- conductivity (ability to transfer electricity)
- thermal conductivity
- mass

Quantitative physical properties can be used to help identify a substance.