

Rates Of Reaction

Rate=The amount of new product formed every second

FOR CHEMICAL REACTIONS TO OCCUR, REACTING PARTICLES NEED TO COLLIDE WITH ENOUGH ENERGY.

This energy is called Activation Energy, and it is used to break the bonds within the reactants so then there would be individual atoms available for reaction.

Collision with sufficient energy are called '**successful collisions**'.

The rate will increase if there are more successful collision per cm³ per second.

Factors that affect the rate of reaction:

→ Temperature

When temperature increases, the rate of reaction increases

Because increased temperature means that the particles are moving faster with more kinetic energy, so more collisions will occur, and the collision will contain a higher amount of energy, resulting in a higher probability of successful collisions.

→ Concentration

When concentration increases, the rate of reaction subsequently increases

Because there are more particles available to react per cm³ per second. More particles mean more collisions, so there will be a higher chance of successful collisions.

→ Surface Area to Volume Ratio

When surface area increases, the rate of reactions increases

When you increase the surface area, more particles at the surface are exposed to collisions, therefore the probability of a successful collision increases, hence increasing the reaction.

→ Catalyst

Catalysts speed up a reaction without getting used up.

A catalyst lowers the activation energy required for a reaction by offering an alternative pathway for the reaction to occur.

Ways to measure rate:

- ★ Change in PH
- ★ Change in temperature
- ★ Volume of gas produced in a certain amount of time
- ★ Light intensity (color change)
- ★ Change in pressure

Formula to Calculate Rate:

Change in variable divided by Change in time

Graph Analysis