

Particle theory

CAL Mags and Cal here – today we're looking at particle theory and the rate of chemical change.

MAGS Collisions make reactions happen. And sometimes you want chemical reactions to speed up.

CAL Yeah, and the more collisions, the quicker the rate of reaction.

MAGS Three ways to increase the rate of reaction. Number one? Concentration. This is the number of pure substance particles present in a given volume. Increase the concentration of a dissolved reactant, or the pressure of a reacting gas and you increase the rate of chemical change.

CAL Mags.

MAGS More crowded particles, more chance of successful collisions, higher reaction rate. When they get hotter, particles speed up and get more energy – this means more frequent collisions.

More particles will overcome the activation energy needed to collide more successfully. And the third thing that affects the collision rate is surface area.

A solid reactant, broken down into smaller pieces, has more surface area, so more particles are exposed, which means that there is more chance of colliding successfully with other particles.

So, three key ways to speed up the rate of chemical change. One – increase concentration. Stop texting Cal, we haven't finished yet.

CAL Chill out, Mags.

MAGS Chilling out's no good, Cal – raise the temperature to increase reaction rates, remember? That's number two. Number three is to increase the surface area. So, that's rates of reaction broken down for you – hopefully Cal surfaces from his phone before the next video.