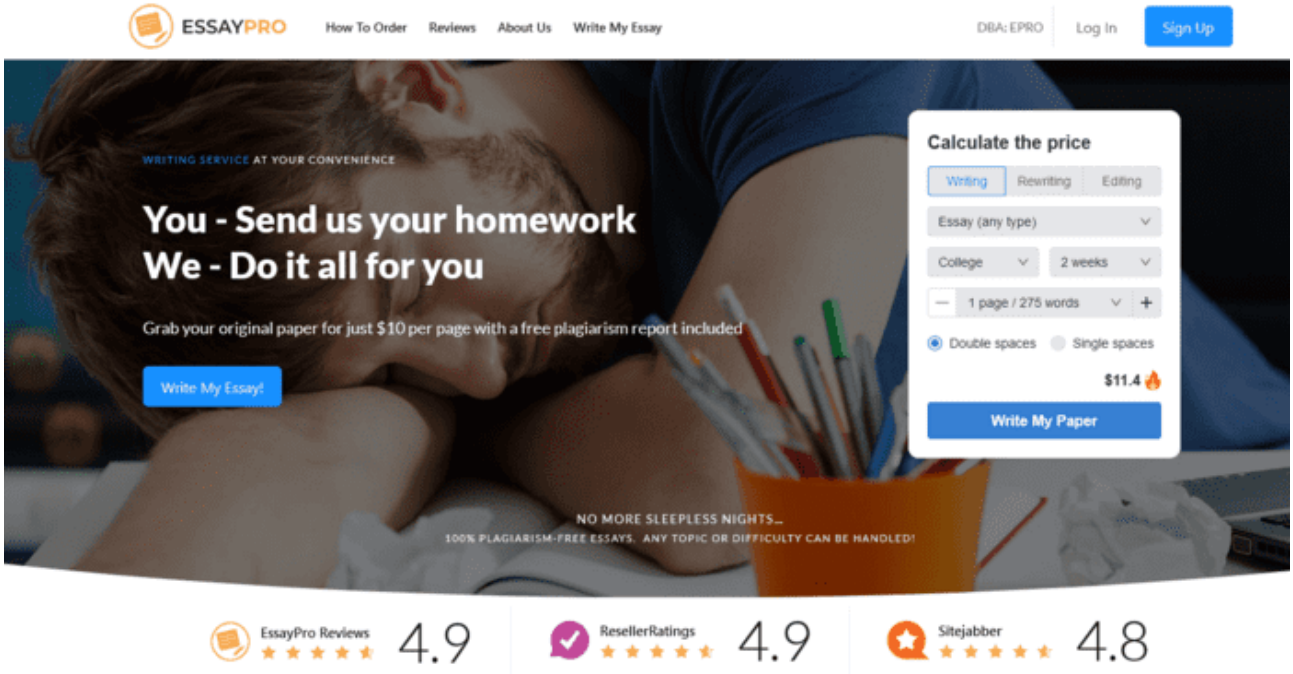
Rate of Reaction of Dilute Hydrochloric Acid and Sodium Thiosulphate



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Rate of Reaction of Dilute Hydrochloric Acid and Sodium Thiosulphate

To investigate the change in rate of reaction between DILUTE HYDROCHLORIC ACID and SODIUM THIOSULPHATE as the concentration varies.

PLAN

A chemical reaction takes place over a specific period of time i.e. which is the time for the reactants to be formed into the products. If the reactants take a relatively short time to form the products, the reaction is known as a FAST one. The RATE of that particular reaction

is high. On the other hand, a reaction which takes a longer time is known as a SLOW reaction, and as a result is known to have a LOW rate of reaction.

There are several factors which alter can alter the speed/rate of a reaction. These are:

-Temperature

-Addition of a Catalyst

-Size of Particles of a Solid Reactant

-Presence of Light

-Pressure

-Concentration of Reactants in Solution

I shall now look at HOW each of the above factors influences the speed at which a reaction occurs.

TEMPERATURE- At a higher temperature, the ions within the solution possesses greater levels of kinetic energy (movement), and consequently, whilst they move through the solution more rapidly, they collide a greater number of times amongst each other and also with a greater force as well i.e. more vigorously. Therefore there is a greater chance of success that a reaction will take place between the two particles, and as the chances of success are increased even further, more reactions take place, which increases the rate of reaction as a whole.

Constant: The temperature shall be kept constant by carrying out the

experiment in the same room with windows open during both sessions during the course of two days.

CATALYST- A catalyst is a substance which increases the speed of a chemical reaction without being used up. Certain catalysts increase the rate of reactions, whereas others are used to decrease the required reaction temperature which saves energy. So, in other words, they reduce activation energy levels. A catalyst works by increasing the chances of particles colliding by providing a ‘sticky’ surface on which particles stick onto and have a collision. Therefore the greater the size of the catalyst, the higher the rate of reaction.

Constant: A catalyst won’t be used in our experiment.

PARTICLE SIZE- Obviously, as the surface area of a react...

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... which helped to minimize errors. The experiment was relatively suitable for the task to be carried out, and it was very effective and accurate in producing results. It could have been improved by experimenting on a greater variety of concentrations and by measuring the liquids more accurately and consistently.

From the evidence, there seems to be a great deal of consistency in the averages, and almost a constant difference between these averages throughout. Each of the readings for a particular concentration level are very close together, suggesting that this accuracy meant that the evidence is more than reliable enough to support the prediction. A

wide range of values was used, with repeated readings, making the data more reliable, therefore making it more than sufficient enough to support the prediction.

To expand on the experiment, we could investigate on other factors which can alter the rate of reaction, such as pressure, temperature or particle size, and as a result, we could see whether they have a bigger impact on the rate than concentration does. This way, we would be able to see how much of an effect concentration has in relation to other factors.