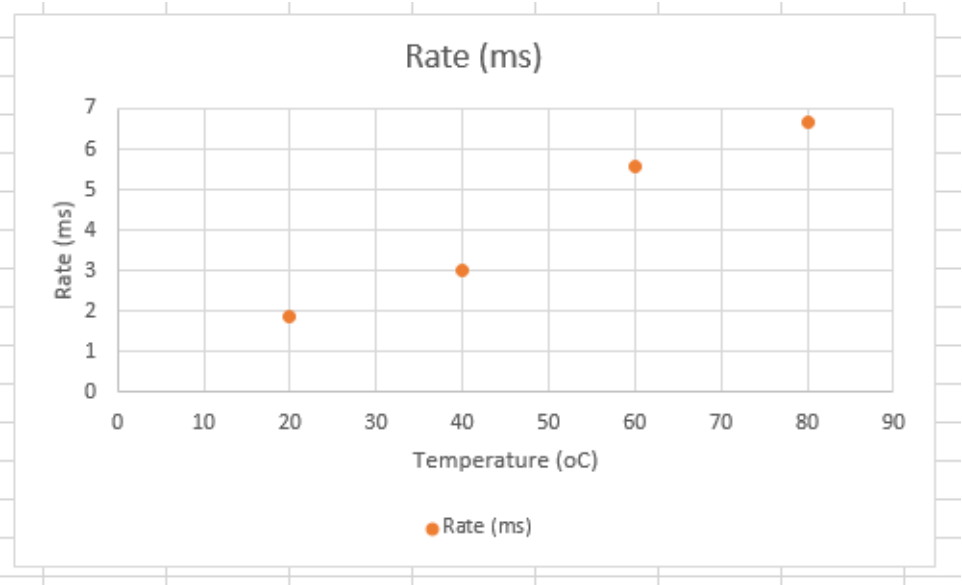


This graph shows that as you increase the temperature, the rate of how fast starch disappears increases.

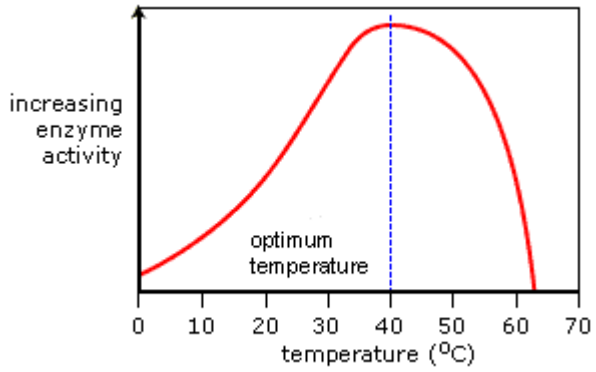
This photo shows that for every 30 seconds the mixture is in the water bath, the colour gets lighter and lighter. The colour of the mixture gradually changes to orange. By counting how many wells it takes for the mixture to turn orange, you can estimate how long it takes, as it is 30 seconds for each well.

The effect of pH on time taken by Amylase to break down starch

Introduction

Amylase is an enzyme that speeds up the breakdown of Starch into glucose. You will investigate the effect of pH on the rate of starch breakdown. The rate of reaction will be determines from how long

increase the number of collisions in an amount of time. If more collisions occur in an amount of time, it results in a faster reaction. Furthermore, increasing the temperature has a significant effect on the number of collisions with enough energy to react. A small temperature increase can produce a large increase in rate. As enzymes catalyse reactions by colliding with substrate molecules, this increases the temperature, which then increases the rate of reaction, forming more product. However, increasing the temperature also increases the vibrational energy that molecules have. This puts strain on the bonds that hold them together. As a result of this strain, more bonds will break. Breaking bonds within the enzyme will cause the active site to change shape. The change in shape means that the Active Site is less likely going to fit to the shape of the Substrate. This means that it is less likely to catalyse the reaction. Eventually, the enzyme will become Denatured and will no longer function. As temperature increases, more active sites shapes will be less likely to fit to the shape of their substrate. This means more enzymes will be denatured and will decrease the rate of reaction.



Unit 13 - Assignment 2 - D3

The effect of pH on time taken by Amylase to break down starch

The activity of an enzyme is affected by the environmental conditions it is in. When these conditions are changed, the rate of reaction is also changed caused by the enzyme. An organism can adjust the conditions of the enzymes to produce an optimum rate of reaction.

The H^+ and OH^- ions have a charge. This means that they interfere with hydrogen and ionic bonds which hold together an enzyme. They will be attracted or repelled by the charges created by the bonds. This causes a change in shape of the enzyme and its active site. Different enzymes have different optimum pH values. At the pH value, bonds within them are influenced by H^+ and OH^- ions. This causes the shape of their active site to be the most likely to fit to the shape of their substrate. At the Optimum pH, the rate of reaction is at an optimum. Any change in pH above or below the optimum will cause a drop in the rate of reaction, as more of the enzyme molecules will have active sites, whose shapes are not likely to fit to the shape of their Substrate. Small changes in pH above or below the Optimum do not cause a permanent change to the enzyme. Instead the bonds can be