Teacher’s Notes

The iodine clock reaction was discovered by Hans Heinrich Landolt in 1886 and is also known as the Harcourt-Esson reaction. It might be a good idea to demonstrate the reactions of starch and iodine, and iodine and sodium thiosulfate to familiarise the students. Hydrogen peroxide is capable of oxidising thiosulfate ions to tetrathionate ions but the reaction is too slow to affect this experiment.

The graph to the right shows the correct result for each concentration of iodide.

Reference
Landolt, H. Ber. Dtsch. Chem. Ges 1886, 19, 1317-1365

Extension Questions

1. What would be the effect of halving the concentration of the solution containing hydrogen peroxide and sulphuric acid?
   
   **Answer:** The time of the clock would double as the reaction rate is halved.

2. What would be the effect of halving the concentration of the solution containing the iodide ions, thiosulfate ions, and starch?

   **Answer:** There will be no change to the time period. The rate has been halved, which means that the triiodide ion is made half as fast. As the amount of thiosulfate has also been halved the two effects cancel each other out.

www.syngenta.co.uk/learningzone