

Iodine Clock Instructions

Solution Preparation

Solution A

Add 6.66g of Potassium Iodate, KIO_3 , to the 4L volumetric flask. Add 4L of water to the line and mix well. Transfer the solution to a 4L bung and a 1L plastic bottle.

Solution B.

Thoroughly rinse the 4L volumetric flask.

To make the starch solution, put 300mL of RO water in a 600mL beaker and bring the water to a boil. Weigh out 6 grams of starch and use 100mL of water to make a slurry. Add to the boiling water while stirring. Return starch water to a boil and then turn off the heat. Let cool for 15 minutes.

Weigh out 3.00 of Sodium **SULFITE**, Na_2SO_3 , and transfer to the 4L volumetric flask.

Half fill the volumetric flask and add the cooled starch solution.

Using a 2mL volumetric pipet, add 2mL of concentrated H_2SO_4 to the beaker.

Mix and allow to come to room temperature.

Fill the 4L volumetric to the line and mix thoroughly.

Transfer the solution to a 4L bung and a 1L plastic bottle.

Solution C.

Add 5.00g of Potassium Iodate, KIO_3 , to 1L of water in a 1L plastic bottle.

Procedure:

1. (a) Obtain 45 mL of solution A (KIO_3) in a beaker. Use the graduated cylinder marked A.
(b) Obtain 30 mL of solution B (Na_2SO_3 , H_2SO_4 , and starch). Use the graduated cylinder B.
(c) Take the solutions back to the desk. Pour solution B into solution A and count the time in s required for a color change.

Pour the used solution into the waste container and rinse out both beakers in the sink.

2. Effect of temperature.

Repeat the experiment, but cool the solutions down in an ice bath for ten minutes before mixing. In other words:

- (a) Obtain 45 mL of solution A (KIO_3) in a beaker. Use the graduated cylinder marked A.
(b) Obtain 30 mL of solution B (Na_2SO_3 , H_2SO_4 , and starch). Use the graduated cylinder B.
(c) Take the solutions back to the desk. Cool both solutions for 10-15 minutes in an ice bath. Pour solution B into solution A and count the time in s required for a color change.

Pour the used solution into the waste container and rinse out both beakers in the sink.

3. Effect of concentration.

Repeat experiment 1, but use a more concentrated solution of KIO_3 .

- (a) Obtain 45 mL of solution C (3x KIO_3) in a beaker. Use the graduated cylinder marked C.
(b) Obtain 30 mL of solution B (Na_2SO_3 , H_2SO_4 , and starch). Use the graduated cylinder B.
(c) Take the solutions back to the desk. Pour solution B into solution C and count the time in s required for a color change.

Did increasing the concentration of a reactant speed up, slow down, or not affect the rate of

Pour the used solution into the waste container and rinse out both beakers in the sink.