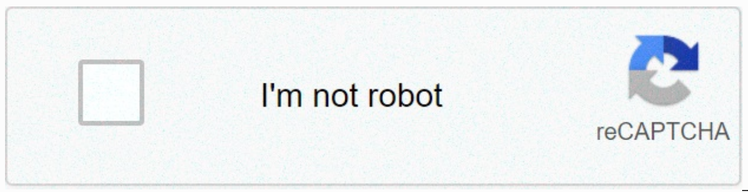

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Rates of chemical reactions iodination of acetone lab answers

Introduction: Can we help you with your assignment? Let us do your homework! Professional writers in all fields are available and will meet your assignment deadline. Free proofreading and copy editing included. Kinetics in chemistry are about the rate at which a chemical reaction occurs. This percentage, which is referred to as the reaction rate, is defined as the change in the concentration of a reactant or product with time, and is measured in M/s. The speed of a reaction is proportional to the concentration of reactants. A comparison called the tariff law expresses the relationship of the reaction rate with the constant speed, k, and the concentrations of the reactants increased to a number of powers, x and y, experimentally found. The tariff law is expressed as, rate = k [A]x[B]y. The constant k is equal to the rate divided by the concentration of a particular substance. The goal in this lab was to experimentally determine the constant k, as well as the exponential values of x and y in the tariff law. Experimental: The procedure of this lab was obtained through the website of the student laboratory course. Results: Table 1: Reagent Volumes Trial I2 Acetone H+ dH2O Total Volume 1 0.5 mL 0.8 mL 0.8 mL 1.9 mL 4.0 mL 2 0.5 mL 1.6 mL 0.8 mL 1.1 mL 4.0 mL 3 0.5 mL 0.8 mL 1.6 mL 1.1 mL 4.0 mL Table 2: Initial Concentrations, Times, and Rate for Each Trial Trial [I2] [Acetone] [H+] Time (sec) Rate [I2] k 1 6.25e-2 M 0.68 M 0.2 M 184 sec 3.40e-6 M/sec 2.50e-5 M-1s-1 2 6.25e-2 M 1.36 M 0.2 M 125 sec 5.00e-6 M/sec 1.84e-5 M-1s-1 3 6.25e-2 M 0.68 M 0.4 M 88 sec 7.10e-6 M/sec 2.62e-5 M-1s-1 Sample Calculations: Discussion: To conduct this experiment, the groups placed 1.9 mL of distilled water , 0,8 mL H+ (HCl) and 0.8 mL of an acetone solution in a cuvette of 4,0 mL. 0.5 mL of I2 was then added to the cuvette, and the group immediately began timing the response. They mixed the contents of the solution by reversing the cuvette several times before being put into a calibrated spectrometer. The absorption rate was monitored at 400 nm until it reached a nominal zero value. The time was then stopped, and the groups were able to determine the rate. Two more tests were carried out, first doubling the original volume of the acetone and the H+ remaining constant, then in test 3, doubling the volume of the H+ and using the original volume of acetone – 0.8 mL. Constantly keeping the volume of I2 at 0.5 mL, and doubling a solution while keeping the other constant made it possible to calculate the value of the constant speed later, k. The chemical reaction being studied was chemical kinetics - the rate at which I2 disappeared. To the speed of disappearance of I2 in the response the M1V1=M2V2 equation was used to find the concentration of I2. Then that value was divided by the time that had elapsed to result in Rate. When I2 was first added to the cuvette, it was dark red in color. As the reaction progressed, the solution lost its color and became clear, consuming the I2 completely. At this point, the spectrophotometer displayed that at 400 nm, zero light was absorbed into the solution. The starting concentrations were varied according to the experiment design to calculate the speed right exponents. The tariff law does not include [I2] because I2 does not affect the rate of chemical reaction under the selected conditions. It is not included, because the rate of disappearance of I2 was what was solved for. The tariff law determined from this laboratory is tariff= k[Acetone][H+]. By using the values of [Acetone], [H+], and the rate, and taking the average of the three trials, the value of k was found to be 2.32nd-5 M-1s-1. READ: Lab Explained: Flow in Simple DC CircuitThe goal to determine the values of k, the exponents x and y, and the rate of disappearance of I2 was successfully met. The expected results correspond to the results obtained – the concentration of acetone and H+ are directly related to the reaction rate. Both [Acetone] and [H+] are first order actions, resulting in an overall response from the second order. The main source of errors in the lab came from not properly measuring the substances, resulting in a very askew time and speed of response. Having incorrect amounts of each solution in the cuvette directly affected the rate at which I2 disappeared, which in turn made the results not so clear or concise. Conclusion: The purpose of this lab was to experimentally determine how the concentrations of Acetone and H+ affect the rate at which I2 disappears in a response by calculating the values of k, the exponents x and y, and putting these values in the rate law equation. These numbers were found by changing the amounts of acetone or H+ used in each trial, which made it possible to solve a comparison above for the value of k, and use the exponents, x and y, in the rate law equation. It turned out that both Acetone and H+ have a direct effect on the reaction rate of I2. The tariff law for acetone iodination is rate= k[Acetone][H+]. The average value of k calculated from the three trials turned out to be about 2.32nd-5 M-1s-1. Introduction: Can we help with your assignment? Let us do your homework! Professional writers in all fields are available and will meet your assignment deadline. Free proofreading and copy editing included. Kinetics in chemistry are about the rate at which a chemical reaction occurs. This percentage, which is referred to as the reaction rate, is defined as the change in concentration of a reactant or product with time, and is measured in M/s. The speed of a reaction is proportional to the concentration of reactants. 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