Concentration of sulfur dioxide in wine and time periods

Science, Chemistry

Research question: Does the concentration (mol DMS) of sulfur dioxide in wine rise or fall when exposed to alarm for different time periods (O, 75, 150, 225, 300 minutes)? Purpose: Many adults enjoy the consumption of wine but are not aware of the different preservatives and chemicals that are added to the drink. Sulfur Dioxide, which is added to manyfoodproducts including wine because it acts as a redundant, is Well known as a poisonous and allergenic substance (Echo-consult, n. D), making it a somewhat harmful ingredient.

The purpose of this experiment Is to determine how the amount of sulfur dioxide In white wine Is affected by the exposure to the alarm over different time periods and whether this will negatively or positively affect the human body. The boiling point of sulfur dioxide is -ICC, therefore when it is above this temperature it is expected to evaporate. According to Rutledge Estates, an Australian wine companyцtriangle Estates, 2011), the concentration of sulfur dioxide In wine reduces when subjected to aeration, this loss of sulfur dioxide increases over time.

This reduction in sulfur dioxide can be beneficial for people with allergies but can be harmful for the wine as oxidation causes a loss of the fruity flavor, browning, and the development of allowedly or nutty flavors (Threadlike, 2013). Hypothesis: As the wine Is left out for longer the sulfur dioxide content falls. Variables: Variable Dependent The amount of Sulfur doodle Independent Amount of time Controlled The equipment used The rinsing techniques The measurements of each Sodium hydroxide (ml) White wine (ml) Sulfuric acid (1 Mol) Starch indicator (2 ml) Set Up: mall flask Stopwatch Pipette

These results did not conform to the hypothesis; this difference could be a result of the percentage error in the equipment, and the systematic error. The results for each trial only varied slightly therefore the narrow time limit could have affected the results, there may have been larger difference of SIS if the experiment was conducted over a larger period of time. If this was the problem then it can be seen that over short periods of time the concentration of SIS does not change very much.

This means that wine will take longer to oxides and will have antibacterial properties for a longer time, making it retain its flavor and quality for a longer time. Percentage errors in instruments: Percentage error for Pipette- Percentage error com of pipettes wine) X 100 x 100 ? 0. 2% Percentage error for Burette titration 1- Percentage error =(Uncertainty com of average titration) X 100 =(0. 049. 60) XIII Table of percentage errors in instruments Instrument Titration Uncertainty Percentage error (%) B±o. Ml 0. % B±o. Ml 0. 4% 5 Evaluation: Weakness Reason Improvement The timing of each interval. The laboratory was lock at certain times, this was not accounted for in the planning stage and made the timing very inaccurate. Plan the experiment at the beginning of the day accounting for all breaks and laboratory trading hours. The number of trials There was not enough time to do enough trials to get three concordant results for each test Repeat experiment until there are at least three concordant results Seeing the end point

It was hard to tell what color the endpoint should be as the previous titration would change color after a period of time Have a color chart that is

permanent which the color of the titer can be compared to Contamination of wine The beakers holding the wine were exposed to the air and there may have been gases in the air which contaminated the wine. Place the wine in a place which is not exposed to things which could contaminate it. Rinsing technique The equipment was rinsed multiple times but foreign chemicals could still have been present Repeat all of the rising steps twice to ensure they are not contaminated

Measuring inaccuracies Seeing how much iodine was still in the burette was difficult because the lines were very close together. Spend more time with maximum concentration on viewing the measurements on the burette. Bibliography: Threadlike, M 2013 Wine Aeration and Its Adverse Effects, Iowa State University, accessed 25 November 2013, . Shannon, C 2011 Is aerating wine Just hot air? , Rutledge Estates, accessed November 2013, . The use of Sulfur Dioxide in Must and Wine n. D. , Echo-consult, Pdf, accessed Xavier, L n. D. Titration, CICADAS, accessed 25 November 2013, .