Distillation of alcoholic beverages assignment

Distillation of Alcohol Beverages Abstract Distillation is a process wherein a liquid is heated until its boiling point while the resultant hot vapors are subsequently captured and cooled, and the condensed vapors are collected. Among the many types of distillations, the fractional method or technique of distillation was used in this experiment. A step by step procedure was followed and an amount of 3. 33 % of ethanol was obtained from the sample wine, Mateus Rose, which was used. Further discussion on the results obtained, as well as related terms, shall be discussed in detail in the following pages.

Introduction With these in mind, the objectives of this experiment are to separate and calculate in percentage the alcohol content of the commercial alcoholic beverage, Mateus Rose wine, by distillation process, and to compare the efficiency of simple and fractional distillation techniques. Experimental {draw: frame} {draw: frame} Results and Discussion Fractional distillation of the sample beverage, Mateus Rose wine, shows that it contains 3. 33% of ethanol relative to the results obtained regarding the volume of the distillate and corresponding temperature (Table 1. 1). Table 1. Fractional Distillation Data on Volume of Distillate and Corresponding Temperature {draw: frame} Using the results above which were obtained, the temperature readings versus the volume of the distillate were plotted on a graph which may be seen below (Figure 1. 2). {draw: frame} Given the data above, the percentage of ethanol present in Mateus Rose wine may be computed with the use of Equation 1. 1 which may be seen below. % ethanol= mL of ethanolmL of sample x 100 {draw: frame} Following the

equation above, the corresponding data may be plugged in. These are 0. 5mL and 15. 0mL for the mL of ethanol and mL of sample, respectively.

The result of which is 3. 33% ethanol which is in itself the percentage ethanol content of the sample wine, Mateus Rose. Table 1. 2 below shows the results gathered by group 3 after performing simple distillation using the sample, Mateus Rose wine. Their results show a gradual temperature increase as compared to that of fractional distillation which only took 4 collections of 0. 5mL each before the sample reached about 100? C. Temperature {draw: frame} Using the results above, the temperature readings versus the volume of the distillate were plotted on a graph which may be seen below (Figure 1.). {draw: frame} Given the data above, the percentage of ethanol present in Mateus Rose wine may be computed with the use of Equation 1. 1 once again. % ethanol= mL of ethanolmL of sample x 100 {draw: frame} Following the equation above, the corresponding data may be plugged in. These are 0. 5mL and 15. 0mL for the mL of ethanol and mL of sample, respectively. The result of which is 3. 33% ethanol which is in itself the percentage ethanol content of the sample wine, Mateus Rose. The same result of 3. 33% ethanol was obtained via the fractional distillation method.

Therefore, the data presented shows that the said wine, Mateus Rose, only contains a small amount of ethanol therefore making it not too much of an alcoholic drink. Ethanol (ethyl alcohol, grain alcohol), is a clear, colorless liquid with a characteristic, agreeable odor. In dilute aqueous solution, it has a somewhat sweet flavor, but in more concentrated solutions, it has a burning taste. Ethanol is an alcohol, a group of chemical compounds whose

molecules contain a hydroxyl group -OH, bonded to a carbon atom. The word alochol derives from Arabic al-kuhul, which denotes a fine powder of antimony used as an eye makeup.

Alcohol originally referred to any fine powder, but medieval alchemists later applied the term to the refined products of distillation, and this led to the current usage. C6H12O6 > 2 CH3CH2OH + 2 CO2 {draw: frame} The ethanol produced by fermentation ranges in concentration from a few percent up to about 14 percent. Above about 14 percent, ethanol destroys the zymase enzyme and fermentation stops. Ethanol is normally concentrated by distillation of aqueous solutions, but the composition of vapor from aqueous ethanol is 96 percent ethanol and 4 percent water.

Therefore, pure ethanol cannot be obtained by distillation. Commercial ethanol contains 95 percent by volume of ethanol and 5 percent of water. Dehydrating agents can be used to remove the remaining water and produce absolute ethanol. Much ethanol not intended for drinking is now made synthetically, either from acetaldehyde made from acetylene, or from ethylene made from petroleum. Ethanol can be oxidized to form first acetaldehyde and then acetic acid. It can be dehydrated to form ether. Butadiene, used in making synthetic rubber, may be made from ethanol, as can chloroform and many other organic chemicals.

Ethanol is used as an automotive fuel by itself and can be mixed with gasoline to form gasohol. Ethanol is miscible in all proportions with water and with most organic solvents. It is useful as a solvent for many substances and in making perfumes, paints, lacquer, and explosives. Alcoholic solutions

of non-volatile substances are called tinctures; if the solute is volatile, the solution is called a spirit. References [1]Boggan, B. (2003). Alcohol, chemistry and you. Retrieved from http://www. chemcases. com/alcohol/alc-01. html [2] Meneghetti, M. (2009). The distillation process of liquors and spirits.

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