# Analysis of an antacid

Science, Chemistry

Analysis of an Antacid In this lab report we will discuss the results of the ‘ Determining the Most Effective Antacids’ lab. In this lab we tested different brands of antacids to find out which will be the most effective at neutralizing acids. We will test this by seeing how much drops of hydrochloric acid (HCl) are required to neutralize a certain amount of the antacid. Antacids are used to resist heartburn. We sometimes use them to treat this because antacids are a mild base that can neutralize acids in our stomachs, such as HCl.

The purpose of this lab is to see how well each antacid neutralize hydrochloric acid. Procedure: 1. Obtain two burets, one for use with the HCl and others for use with the NaOH. 2. Record the exact molarity as they appear on the stock bottles. 3. Determine the mass of each of you antacid tablets. 4. Dispense 25 mL of HCl solution into the Erlenmeyer flask, and then add one of the antacid tablets to the flask. 5. Bring the solution to a boil to dispel any undissolved CO2. 6. Add two or three drops of an indicator to our antacid mixture. 7.

Titrate antacid mixture with the NaOH solution until we have reached the end point of the indicator used. Mass tablet| VHCl| Vinitial NaOH| Vfinal NaOH| #moles HCl neutralized By antacid/ g tablet| x? - x| ( x? - x )2| 1. 29 g| 25 mL| 0 mL| 18 mL| 0. 0055961 mol/g| 0. 0024959| 6. 22952*10-6| 1. 221 g| 25 mL| 0 mL| 17 mL| 0. 0067452907 mol/g| 0. 00134671| 1. 8136*10-6| 1. 24 g| 25 mL| 0 mL| 18. 9 mL| 0. 005083629 mol/g| 0. 003| 9. 050296*10-6| 1. 273 g| 25 mL| 0 mL| 16. 2 mL| 0. 00714 mol/g| 9. 52*10-4| 9. 063*10-7| 1. 289 g| 25 mL| 0 mL| 15. 2 mL| 0. 0078 mol/g| 2. 2*10-4| 8. 5264*10-8| 1. 248 g| 25 mL| 0 mL| 10. 6 mL| 0. 01185 mol/g| -0. 003758| 1. 412*10-5| 1. 29 g| 25 mL| 0 mL| 9. 3 mL| 0. 01243 mol/g| -0. 00434| 1. 8818*10| Average x? =

0. 008092 mol/g ? (x? - x) 2 = 5. 102298*10-5 Standard Division = SD = ± ? x- x 2n-1 = ±0. 0029161 A brand name| Tums| Safeway| Safeway| Phillips| Tums| Safeway| ActiveIngredient| CaCO3| CaCO3| CaCO3| Mg(OH)2| CaCO3| CaCO3| G active ingredient from battle| 0. 5 g| 0. 5 g| 0. 5 g| 0. 311 g| 0. 5 g| 0. 5 g| Calculated gActive ingredient| 0. 911 g| 0. 3718 g| 0. 3548 g| 0. 392 g| 0. 285 g| 0. 15 g| #moles HCl neutralized by active ingredient/g tablet| 0. 00587 mol| 0. 0060 mol/g| 0. 00709 mol/g| 0. 01345 mol/g| 0. 00648 mol/g| 0. 0081 mol/g| Cost / g| 4. 3835 ? /g| 7. 35 ? /g| 7. 50 ? /g| 17. 83 ? /g| 14. 011 ? /g| 5. 16 ? /g| Brand = Safeway regular strength Cost = $ 3. 99 #tablets = 150 g active ingredient = 500 mg each tablet Ingredient = (active) calcium carbonate, (inactive) corn starch, crospovidone, dextrose, flavor, magnesium stearate, maltodextrin, sucrose, talc. CaCO3 (s) + 2HCl (aq) > CaCl2 (aq) + H2O (l) + CO2 (g) Calculation: 1.

Calculate moles HCl neutralized by antacid per gram tablet: (Total moles HCl – moles HCl neutralized by NaOH) / mass of tablet Total moles HCl = Moles HCl neutralized by NaOH = 2. Calculate grams active ingredient: 3. Calculate cost/gram: Based on the results, although Phillips brand was expensive, it was the most effective antacid. This is because it neutralized the most moles of HCl per gram of antacid. The active ingredient in this antacid is Magnesium Hydroxide. As the result, I prefer to buy Phillips antacid to resist heartburn. Chemical Equation: Mg (OH) 2 + HCl Cl (OH) 2 + MgH