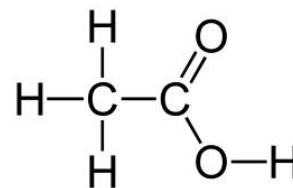




Finding the concentration of ethanoic acid in vinegar.

Vinegar contains ethanoic acid, CH_3COOH .

An acid/base titration can be used to find the concentration of ethanoic acid in a sample of vinegar. An indicator will be used to show the point of neutralisation - the endpoint.

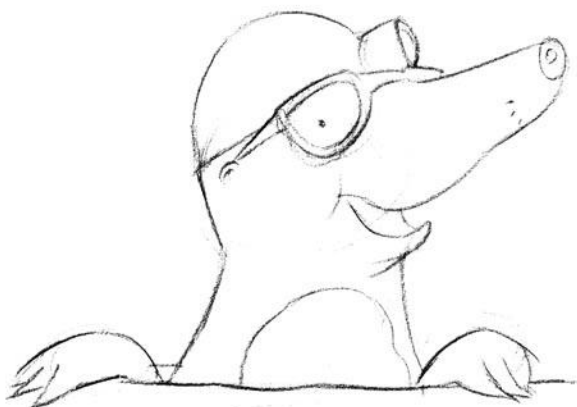


1. Dilution of the vinegar sample. Pour some vinegar into a small beaker and, using a graduated pipette and pipette filler, transfer 25 cm^3 of the vinegar into a clean beaker. Add distilled water up to about 100 cm^3 and pour this solution into a 250 cm^3 volumetric flask. Make this solution up to exactly 250 cm^3 with distilled water. The bottom of the meniscus should be on the line. Carefully invert the flask to mix the solution.
2. Preparation of conical flask. Using a clean pipette transfer 25 cm^3 of the diluted vinegar from a small beaker into a conical flask and add a few drops of phenolphthalein indicator. This indicator is colourless in acid.
3. Preparation of burette. Carefully fill the burette with 0.1 mol dm^{-3} sodium hydroxide solution including the portion below the tap.
4. Titration. Add sodium hydroxide solution, with swirling, to the conical flask until the mixture just stays pink. Record the volume of NaOH solution added. This is your trial titration. Repeat the titration until you have sufficient consistent results.

Burette readings (cm^3)	Trial	1	2	3
Final				
Initial				
Volume used				

5. Calculations.

- (a) Write a balanced equation for the reaction between ethanoic acid and sodium hydroxide.
- (b) Calculate a mean titre.
- (c) Calculate the amount, in moles, of sodium hydroxide in the mean titre.
- (d) How many moles of ethanoic acid were in the 25cm^3 of the diluted sample?
- (e) Calculate the concentration of ethanoic acid in the diluted vinegar.
- (f) Calculate the concentration of ethanoic acid in the original vinegar.



Can you remember your mole triangles?