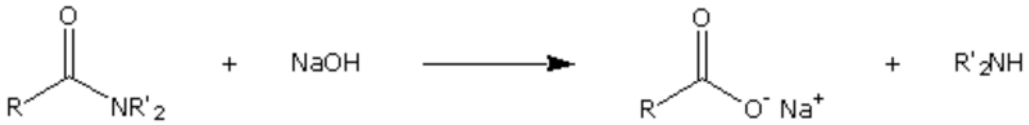
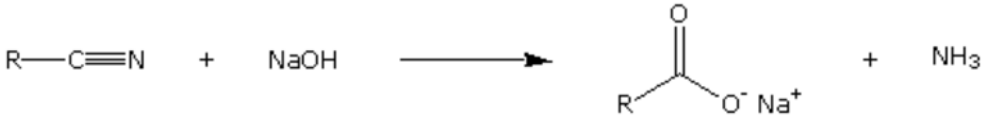
NaOH Hydrolysis

Amide



Nitrile



Procedure

Treat 0.2 g of the unknown in a test tube with 5 mL of 10% sodium hydroxide solution. Shake the mixture and note whether or not ammonia is evolved. Heat the solution to boiling and note the odor. Test the action of the vapor on either pink moist litmus paper or filter paper moistened with a copper sulfate solution. If ammonia or amine is being evolved, the litmus paper turns blue. Ammonia, which is evolved only from primary amines, will turn the copper sulfate solution on the filter paper blue. Nitriles and ammonium salts will also give a positive test with the copper sulfate.

Positive Test

1^{o} amides - production of ammonia is a positive test.

2^{o} amides - litmus turns blue is a positive test.

3^{o} amides - litmus turns blue is a positive test.

nitriles - production of ammonia is a positive test.

Complications

The carboxylic acid should be isolated and analyzed to determine the neutralization equivalent. The amine evolved should also be collected and tested with the Hinsberg or nitrous acid test.

Neutralization equivalent (NE) = (weight of sample * 1000) / (ml of base * normality)
