POLARIMETRY IN COMMERCIAL PRODUCT

shaking the liquid occasionally. Next, 5 cc. magnes um sulphate solution are added and 10 cc. ammonia solution are stirred in. These solutions are all measured exactly, so that the total volume will be 35 cc. If the original substance is a liquid, room may be made for it by taking a smaller volume of stronger ammonia. After a few minutes (not more than an hour), the solution is filtered through a dry filter, a slight turbidity of the filtrate being disregarded. To 20 cc. of the filtrate, measured into a 50 cc flask, are then added a few drops of methyl orange, and hydrochloric acid from a burette till the pink color appears (two or three drops too much or too little are of no consequence). Find ly to cc. more molybdate solution are added to the pin', solution, which now becomes colorless or pale yellow, and where to make up the volume to 50 cc. This solution, after filtering if necessary, is polarized in a 200 mm, tube.

The amount of tartaric acid in grams (y) in the weight of sample taken is given by the following formula, in which x is the rotation in minutes (Appendix 105-108).

y = 0.00121.r.

A word of explanation may be given here with reto the function of the citric acid in the above method. It was and that although under ord.nary circumstances tartaric acid entirely prevents the precipitation of aluminum hydroxide by ammonia, this is not the case when molybdate is present, and, consequently, when the ammonia was added to the solution to precipitate the magnesium ammonium phosphate, the aluminum was simultaneously thrown down. This not only produced a liquid which was extremely difficult to filter, but the precipitate appeared to carry down a considerable quant' y of the tartaric acid. The addition of citric acid prevents the precipitation of the aluminum without interfering with the form m of the magnesium phosphate; indeed, this precipitate may be ignited and used for the quantitative determination of the phosphoric acid in the cample.

It may also be mentioned in this connection that the removal of the phosphoric acid by means of molybdate in acid solution is not practicable, for when sufficient acid is added to effect this result, the molybdic acid rapidly oxidizes the tartaric acid and is itself converted into one of the blue reduction products.

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