Name of Procedure:

Preliminary Tests
Marquis Reagent

Suggested Uses:

The Marquis reagent consists of a solution of formaldehyde in concentrated sulfuric acid. Aromatic compounds that typically undergo electrophilic substitution will react with the Marquis reagent to produce colored intermediates. A positive response with the Marquis reagent is indicated by a significant color formation within 1-2 minutes.

Apparatus Needed to Perform Procedure Including Preparation of Reagent:

Fume hood
Gloves
Eye protection
Laboratory coat
Pipet with bulb
Graduated cylinder
50ml beaker
Glass stirring rod
Sulfuric acid (concentrated)
Formaldehyde solution (40%)
Funnel
Reagent bottle
Porcelain spot plate
Spatula

Formula for Preparing Reagent:

1. Measure out 10 milliliters of concentrated sulfuric acid in a beaker.

2. Add 8-10 drops of formaldehyde solution (40%) and stir.

3. Pour solution into a reagent bottle.

4. Properly label reagent bottle.

Formula for Preparing Reagent (continued):

Alternate Method

1. Pour 15-20 milliliters of concentrated sulfuric acid into a reagent bottle.

2. Add 0.2 - 0.3 gram of trioxane (trioxymethylene) and stir until completely dissolved.

3. Properly label reagent bottle.

Quality Control Check:

A quality control check of this reagent will be performed using a known standard of heroin and following the application procedure listed below.

Expiration Date of Chemical Reagent:

The Marquis reagent should be prepared every 30 days.

Application of Procedure on Evidence:

1. Place 1-2 drops of the reagent into a clean well on a spot plate.

2. With a spatula, add approximately 0.1 milligram of the unknown powder/tablet to the reagent in the spot plate.

3. Observe color produced.

4. Record results.

Safety Concerns:

Always wear eye protection, gloves and a laboratory coat when preparing this reagent.

Eye protection and a laboratory coat should be worn when using this reagent for color tests.

Sulfuric acid is a strong oxidizing agent and corrosive.

Literature References:

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Noller, C.R., **Chemistry of Organic Compounds**, W.B. Saunders Company, Philadelphia, 1965, p. 244.

Feigl, F., **Spot Tests in Organic Analysis**, 5th ed., Elsevier, New York, 1956, pp. 133-36.

Moffat, A. C., ed., **Clarke's Isolation and Identification of Drugs**, 2nd Ed., Pharmaceutical Press, London, 1986, p. 139.

Johns, S. H., "Spot Tests: A Color Chart Reference for Forensic Chemists," **Journal of Forensic Science**, July 1, 1979, pp. 631-649.

Butler, William P., **Methods of Analysis**, IRS Publication #341, December 1966, p. 136.