

## APPLICATION NOTE

# Guar Analysis

## Anthrone Detection of Guar

### Required Apparatus:

COD Tubes (empty): Hach PN 2517600

COD Rack: Hach PN 1864100

DRB200: Hach PN LTV082.53.44001 (16 mm wells)

Photometer

Pipet (6 mL and 1 mL additions)

0.05 g measuring spoon: Hach PN 49200

### Required Reagents:

Anthrone: Sigma-Aldrich PN 319899-25G (or equivalent ACS grade)

Thiourea: Sigma-Aldrich PN T8656-50G (or equivalent ACS grade)

Sulfuric Acid, ACS: Hach PN 97949 (or equivalent ACS grade)

### Procedure:

- 1) Add 6 mL of 75% sulfuric acid to (empty) COD tube
- 2) Add approximately 50 mg of thiourea to COD tube
- 3) Add approximately 50 mg of anthrone to COD tube
- 4) Shake tube to dissolve reagents (reagents do not need to completely dissolve)
- 5) Add 1 mL of sample/standard to COD tube, shake to mix
- 6) Heat COD tube at 100°C for 10 minutes
- 7) Allow COD tube to cool for 10 minutes
- 8) Read absorbance at 625 nm versus DI reagent blank

### Calibration equation: Concentration range = 50 to 750 ppm Guar

It is recommended that the analysts create their own calibration curve for more accuracy. Customers can program their spectrophotometer with the following equation based on guar:

$$C = 8.43 * A^2 + 199 * A + 7.57$$

### Standard preparation:

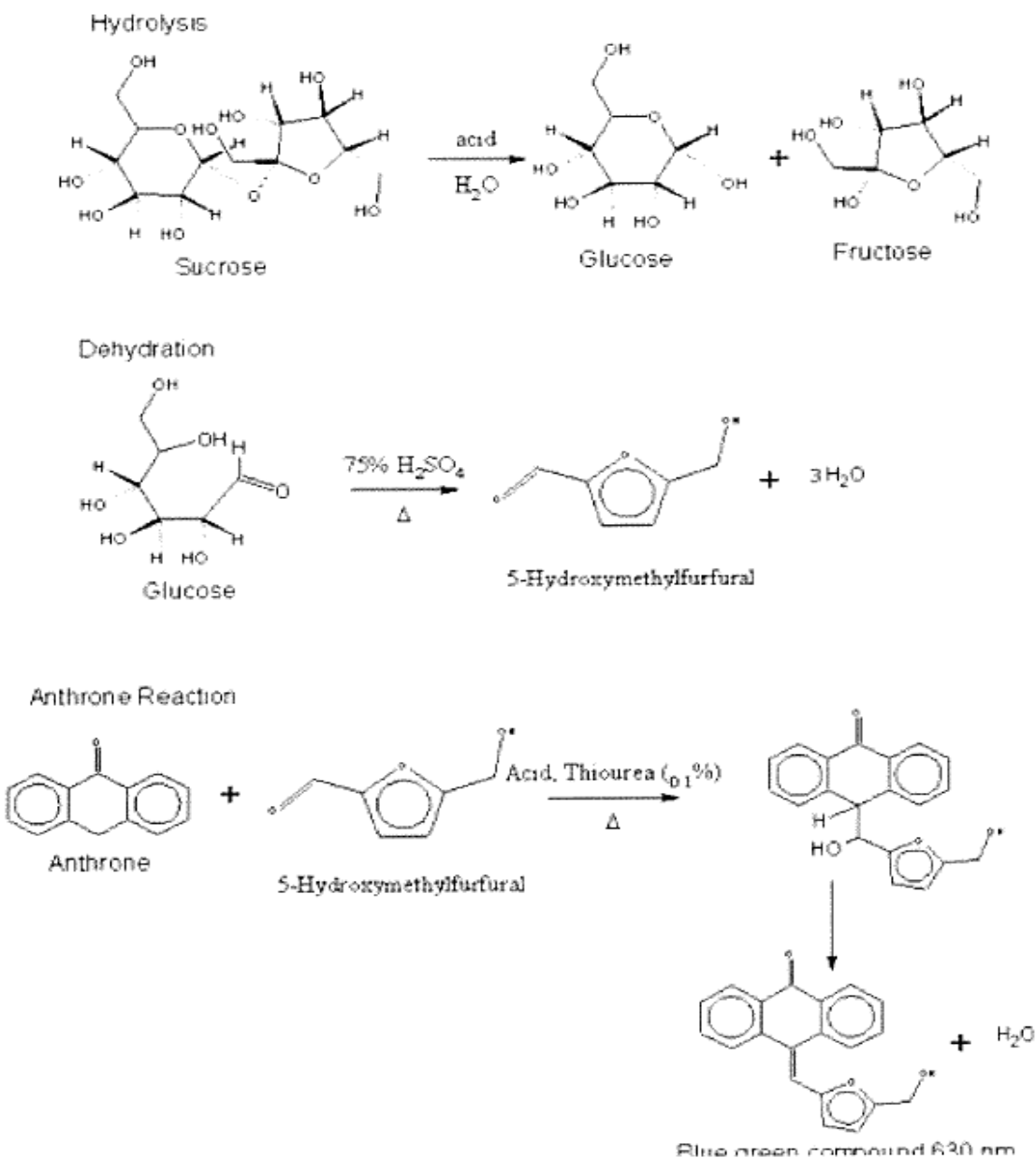
Zero the instrument with a reagent blank (DI water reacted with the reagents). The calibration standards used were 50, 100, 250, 500 and 750 ppm guar; this standard range can be adjusted based on the needs of the user. The range cannot go higher than 750 ppm due to the absorbance maximum. To prepare a 1000 ppm guar standard, weight out 1 g of guar powder and dilute up to 1 L with DI water. Mix the solution until dissolved.

### Analysis Notes:

- Zero the spectrophotometer on the DI reagent blank (Reagent blank = DI water carried out as a sample to zero out background reagent color)
- Pour the anthrone and thiourea reagents into a secondary container so you do not cross contaminate the bulk reagent
- If sample is turbid after the reaction period, try using a fresh acid solution (75% H<sub>2</sub>SO<sub>4</sub>)
- The samples can still be analyzed after the 10 minute cooling period has elapsed as they are stable for 10 plus hours

## Chemical Reaction:

### Anthrone Colorimetric Reaction with Carbohydrates



FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:

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LIT2198 (APP-PHM-0046)

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