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## Technical Procedure for the Preparation of Spot Test Solutions

**1.0 Purpose** – This technical procedure shall be followed for the preparation of the spot test solutions within the Trace Evidence Section.

**2.0 Scope** – This procedure applies to all preparations of diphenylamine, silver nitrate, barium chloride, and Crophen spot test solutions prepared within the Trace Evidence Section.

**3.0 Definitions** – N/A

### **4.0 Equipment, Materials, and Reagents**

- Diphenylamine – Certified ACS
- Silver nitrate
- Barium chloride
- Zinc sulfate
- Potassium nitrate
- Deionized water
- Sulfuric acid – Certified ACS
- Graduated cylinder
- Beaker
- Brown bottle
- Top loading balance

### **5.0 Procedure**

#### **5.1 Diphenylamine solution**

##### **5.1.1 Preparation**

**5.1.1.1** Weigh 1 gram of diphenylamine.

**5.1.1.2** Measure 40 mL of deionized water.

**5.1.1.3** Measure 200 mL of sulfuric acid.

**5.1.1.4** Combine diphenylamine, deionized water and sulfuric acid.

**5.1.2 Storage Conditions** – The prepared reagent shall be stored in a brown bottle at room temperature after preparation.

**5.1.3 Expiration** – The solution expires one year after preparation.

**5.1.4 Sampling and Sample Selection** – N/A

**5.1.5 Calculations** – N/A

**5.1.6 Uncertainty of Measurement** – N/A

## **5.2 Silver nitrate solution**

### **5.2.1 Preparation**

**5.2.1.1** Weigh 5 grams of silver nitrate.

**5.2.1.2** Measure 100 mL of deionized water.

**5.2.1.3** Combine silver nitrate and deionized water.

**5.2.2 Storage Conditions** – The prepared reagent shall be stored in a brown bottle at room temperature after preparation.

**5.2.3 Expiration** – N/A

**5.2.4 Sampling and Sample Selection** – N/A

**5.2.5 Calculations** – N/A

**5.2.6 Uncertainty of Measurement** – N/A

## **5.3 Barium chloride solution**

### **5.3.1 Preparation**

**5.3.1.1** Weigh 5 grams of barium chloride.

**5.3.1.2** Measure 100 mL of deionized water.

**5.3.1.3** Combine barium chloride and deionized water.

**5.3.2 Storage Conditions** – The prepared reagent shall be stored in a brown bottle at room temperature after preparation.

**5.3.3 Expiration** – N/A

**5.3.4 Sampling and Sample Selection** – N/A

**5.3.5 Calculations** – N/A

**5.3.6 Uncertainty of Measurement** – N/A

## **5.4 Crophen reagent**

### **5.4.1 Preparation**

**5.4.1.1** Weigh 5 grams of zinc sulfate.

**5.4.1.2** Weigh 4 grams of potassium nitrate.

**5.4.1.3** Measure 40 mL of deionized water.

**5.4.1.4** Combine zinc sulfate, potassium nitrate, and deionized water. The solution will be super-saturated; therefore some of the zinc sulfate and potassium nitrate crystals may not dissolve.

**5.4.2 Storage Conditions** – The prepared reagent shall be stored in a brown bottle at room temperature after preparation.

**5.4.3 Expiration** – N/A

**5.4.4 Sampling and Sample Selection** – N/A

**5.4.5 Calculations** – N/A

**5.5 Uncertainty of Measurement** – N/A

**6.0 Limitations** – N/A

**7.0 Safety** – Sulfuric acid may cause severe skin burns. Avoid skin contact with sulfuric acid.

**8.0 References**

Jungries, E. *Spot Test Analysis - Clinical, Environmental, Forensic and Geochemical Applications*. New York: John Wiley and Sons, Inc. 1985.

Crippin, J.B. and T.J. Hopen. *The Copen Test: A Polarized Light Microscopy Method for the Identification and Differentiation of Chlorates and Perchlorates*.

**9.0 Records** – Forensic Advantage Resource Manager

**10.0 Attachments** – N/A

| Revision History |                |                                   |
|------------------|----------------|-----------------------------------|
| Effective Date   | Version Number | Reason                            |
| 09/17/2012       | 1              | Original ISO Document             |
| 10/18/2013       | 2              | Added issuing authority to header |
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