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 Unit.

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

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 0.5 gram of diphenylamine.

5.1.1.2 Measure 20 mL of deionized water.

5.1.1.3 Measure 100 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 – Use a certified, calibrated balance when weighing chemicals for preparing test solutions.

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 – Use a certified, calibrated balance when weighing chemicals for preparing test solutions.

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 – Use a certified, calibrated balance when weighing chemicals for preparing test solutions.

5.4 Cropen 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 Cropen 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
08/29/2014	3	Updated header to Physical Evidence Section – Trace Unit, issuing authority to Physical Evidence Section Forensic Scientist Manager. Updated all references in procedure from Trace Evidence Section to Trace Unit Edited 5.1.1 diphenylamine preparation Changed Uncertainty of Measurement statements