

Drug Chemistry Section
Drug Chemistry Procedure Manual
Effective Date: March 1, 2002

Modification of B-4
Prepared By: N.H. Gregory
Approved By: D.J. Koontz
Supersedes: September 1, 1996

Name of Procedure:

Polarized Light Microscopy
Gold Chloride in 20% Acetic Acid with optional 0.05N Hydrochloric Acid Solution

Suggested Uses:

Microcrystalline test for cocaine and phencyclidine (PCP).

Apparatus Needed To Perform Procedure Including Preparation of Reagent:

Polarized Light Microscope
Fume hood
Gloves
Eye protection
Laboratory coat
Spatula
Microscope slides
Weighing paper
Graduated cylinder
Glass stirring rod
Glass beaker
Reagent bottle
Glacial acetic acid
Distilled water
Gold chloride
Concentrated hydrochloric acid

Formula for Preparing Reagent:

For Gold Chloride in 20% Acetic Acid:

1. Measure out 40 milliliters of water in a graduated cylinder.
2. Add glacial acetic acid to the 40 milliliters of water in the graduated cylinder and bring to a total volume of 50 milliliters to make a 20% acetic acid solution. Discard 10ml of this solution.
3. Add the 1.0 gram of gold chloride from the ampule to 40ml of the 20% acetic acid solution.
4. Stir until dissolved.
5. Pour prepared solution in reagent bottle.
6. Properly label reagent bottle.

For 0.05N Hydrochloric Acid solution:

1. Measure out 250 milliliters of water and place in a beaker.
2. Measure out 1.0 milliliter of concentrated hydrochloric acid and combine it with the 250 milliliters of water.
3. Pour solution into a reagent bottle.
4. Properly label reagent bottle.

Quality Control Check:

Check the reagents with a known standard of cocaine using the application procedure listed below.

Expiration Date of Chemical Reagent:

The reagent can be used until depletion provided they are stored in airtight reagent bottles.

Application of Procedure on Evidence:

1. Place a small portion of crushed substance on a microscope slide.
2. Place one drop of 0.05N hydrochloric acid solution on the substance on the microscope slide and mix them together (**Optional Step**).
3. Place one drop of gold chloride/20% acetic acid reagent on the substance.
4. View the crystal formation using a polarized light microscope.
5. 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 the microcrystalline test.

Hydrochloric acid is a strong oxidizing agent and corrosive.

Always dispose of used microscope slides in a broken glass container.

Literature References:

Bureau of Narcotics and Dangerous Drugs Seminar, 1970.

Moore, Richard A., and Stanley P. Souse, **Analytical Manual**, Laboratory Division, Bureau of Narcotics and Dangerous Drugs, United States Department of Justice.

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