

**Drug Chemistry Section**  
**Drug Chemistry Procedure Manual**  
**Effective Date: August 3, 1998**

**Modification of C-15**  
**Prepared By: I.L. Allcox**  
**Approved By: I.L. Allcox**  
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**Name of Procedure:**

Thin-Layer Chromatography  
Iodine Visualizing Reagent

**Suggested Uses:**

A visualizing reagent or detection reagent must be used in Thin-Layer Chromatography if the compound or compounds are not distinguishable by their own color. Benzodiazepines and other unsaturated compounds can be visualized in an iodine chamber. Organic compounds form a brown complex when reacted with iodine vapor. This visualizing method is usually nondestructive and warming the plate will sublime the iodine, leaving the organic compounds unchanged.

**Apparatus Needed to Perform Procedure Including Preparation of Reagent:**

Fume hood  
Graduated cylinder  
Eye protection  
Laboratory coat  
Gloves  
Funnel  
Spatula  
Iodine chamber  
Iodine

**Formula for Preparing Reagent:**

1. Iodine is the only chemical needed.
2. To prepare the iodine chamber, place several iodine crystals in the airtight chamber.

**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 iodine chamber will be active until all the iodine crystals have vaporized.

**Application of Procedure on Evidence:**

1. Place well-dried TLC plate in the iodine chamber.
2. Remove the TLC plate from the iodine chamber after the known standard has reacted with the iodine and a brown spot appears.

**Application of Procedure on Evidence (continued):**

3. Compare the known standard and the compound in question for their size, shape, color and position on the TLC plate.
4. Record the results of your observation.

**Safety Concerns:**

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

Eye protection and laboratory coat should be worn when visualizing the TLC plate.

**Literature References:**

Randerath, Kurt, **Thin Layer Chromatography**, New York, Academic Press, 1968.

Moffat, A.C., **Clarke's Isolation and Identification of Drugs**, 2nd Ed., The Pharmaceutical Press, 1986, pp. 166-177.

This procedure has been used in the Drug Chemistry Section since 1971.