

**TENNESSEE BUREAU OF INVESTIGATION**  
*Forensic Services Division*



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Latent Print Standard Operating Procedures  
3.3 Coomassie Brilliant Blue

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**3.3.1 Scope**

Coomassie Brilliant Blue is used to develop and/or enhance latent prints that have been deposited in blood on non-porous items. Coomassie Brilliant Blue reacts with proteins contained in blood and will stain the protein a blue color.

**3.3.2 Evidence**

Any non-porous surfaces where prints may be deposited in blood, preferably surfaces light enough in color to produce adequate contrast after the staining process.

**3.3.3 Safety Precautions/Limitations**

Goggles and gloves are needed when using Coomassie Brilliant Blue. Mixing shall be performed in a fume hood or an adequate respirator may be used. Goggles and gloves shall also be used when mixing and a chemical resistant apron is suggested. Dispose of chemicals properly.

Universal precautions shall be taken when handling items that contain blood.

Surfaces bearing blood must be completely dry prior to staining.

Cyanoacrylate fuming can inhibit this process.

Coomassie Brilliant Blue does not result in a strong contrast.

**3.3.4 Chemicals/Reagents**

Coomassie Brilliant Blue R (dye content  $\geq 60\%$ )  
Glacial Acetic Acid  
Methanol  
Distilled Water

**3.3.5 Instrument/Equipment**

Balance  
Beakers  
Graduated Cylinders  
Magnetic Stirrer  
Stirring Bar or Other Stirring Device



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Storage Bottles  
Tray  
Spray Bottles or Squirt Bottles  
Control Slides  
Safety Equipment (gloves, lab coat, safety glasses)

#### **3.3.6 Preparation**

##### **3.3.6.1 Developer**

0.9g	Coomassie Brilliant Blue
84 ml	Glacial Acetic Acid
410 ml	Methanol
410 ml	Distilled Water

Combine ingredients and stir for approximately 30 minutes until all of the Coomassie Blue is dissolved.

##### **3.3.6.2 Rinse**

100 ml	Glacial Acetic Acid
450 ml	Methanol
450 ml	Distilled Water

Combine ingredients and mix well.

##### **3.3.6.3 Final Bath**

Distilled Water

If distilled water is not available, tap water may be used.

##### **3.3.6.4 Storage**

The developer and rinse may be stored in either clear or dark bottles.

##### **3.3.6.5 Shelf Life**

No expiration date is provided, however a control will be performed prior to use on evidence.

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#### 3.3.7 Controls

Coomassie Brilliant Blue is applied to a glass slide containing a print deposited in blood. (An individual from the laboratory will use a tube of his/her own blood to make multiple slides that will be stored in the Latent Print Unit laboratory area for future use as controls.)

A positive result is achieved with the development of blue-black ridge detail.

A negative result occurs when no ridge detail or color change develops after staining.

A control must be performed each time Coomassie Brilliant Blue is prepared and documented in the Reagent Log Book.

A control must successfully be performed before applying Coomassie Brilliant Blue to evidence. This control must be documented in the Reagent Log Book as well as the examiner's notes.

If at any time a control test indicates that a reagent is not working properly, the examiner or technician performing the control will properly dispose of that reagent, make a new reagent, and test a new control. Once the control tests appropriately, the reagent may be used.

In some circumstances of a failed control test it may be necessary to review each component of the reagent/solution to ensure no deficiencies exist in that lot number. If a deficiency is discovered, the preparer will properly dispose of that lot number and document the deficiency and disposal in the Chemical Log. A different lot shall then be used to make the reagent.

#### 3.3.8 Procedure

1. Apply the developer to the item(s) or area(s) by dipping or by using a squirt bottle. The target area should be completely covered and the developer will be left on the area(s) for thirty to ninety seconds.
2. Apply rinse to area(s).
3. Repeat steps 1 and 2 until maximum contrast is achieved.
4. Apply a final bath of distilled water.
5. Dry evidence at room temperature.

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**3.3.8.1 Deviation from Protocol**

A variation in the above procedure may be performed with supervisor approval.

**3.3.9 Interpretation of Results**

Latent prints of comparable value shall be marked and photographed with a ruler included. Refer to 2.5.2 and 2.5.5 of the Forensic Imaging Standard Operating Procedures Manual for further instruction.

**3.3.10 References**

CBDIAI. "Coomassie Blue." Retrieved from  
<http://www.cbdiai.org/Reagents/coom.html>

Federal Bureau of Investigation. Revised 2000. "Coomassie Brilliant Blue." Processing Guide for Developing Latent Prints. Federal Bureau of Investigation, Washington, D.C., p. 47-48.

Federal Bureau of Investigation. Revised 2001. "Coomassie Brilliant Blue." Processing Guide for Developing Latent Prints. Federal Bureau of Investigation, Washington, D.C., p. 72-73.