

Technical Procedure for Coomassie Blue

1.0 Purpose - This procedure describes how to make Coomassie Blue solution and apply it to items of evidence.

2.0 Scope – This procedure applies to porous and non-porous items of evidence that may contain bloody impressions that require developing/enhancing. This procedure may also be used in processing adhesive sides of tapes.

3.0 Definitions – N/A

4.0 Equipment, Materials and Reagents

4.1 Equipment and Materials

- Protective gloves and apron/coat
- Face shield visor and/or safety goggles
- Magnetic stir bar and magnetic retriever
- 2 glass beakers
- Application equipment: 2 spray bottles and 2 glass trays
- Camera/scanner
- Fume hood
- Shatter-proof container

4.2 Reagents

- Coomassie Brilliant Blue
- Glacial acetic acid
- Methanol
- Purified water

5.0 Procedure

5.1 Mixing Procedure

5.1.1 Staining Solution (Developer)

- 5.1.1.1** Place 0.44 g of Coomassie Brilliant Blue and 200 mL of methanol in a large glass beaker with a magnetic stir bar and stir.
- 5.1.1.2** Add 40 mL of glacial acetic acid and 200 mL of purified water to the solution with continuous stirring to ensure the solution is thoroughly mixed.
- 5.1.1.3** Place the solution in a clearly marked spray bottle for immediate use or a dark, shatter-proof container for long term use as needed.

5.1.2 Destaining Solution (Rinse Solution)

- 5.1.2.1** Place 40 mL of glacial acetic acid and 200 mL of methanol in a large beaker with a magnetic stir bar and stir.

- 5.1.2.2 Add 200 mL of purified water to the solution with continuous stirring to ensure the solution is thoroughly mixed.
- 5.1.2.3 Place the solution in a clearly marked spray bottle for immediate use or a dark, shatter-proof container for long term use as needed.
- 5.1.2.4 Larger amounts of Coomassie Blue may be mixed for large items or for use at crime scenes.

5.2 Application Procedure

5.2.1 Spray Method

- 5.2.1.1 Completely cover the area of interest with the staining solution.
- 5.2.1.2 Spray the item with the destaining solution to clear the background. The destaining solution shall be used generously to remove the excess staining solution.
- 5.2.1.3 Allow the item to dry completely prior to proceeding.

5.2.2 Immersion Method

- 5.2.2.1 Completely immerse the item in a tray of staining solution. Immerse the item for approximately 30-90 seconds.
- 5.2.2.2 Remove the item from the staining solution and place in a separate tray of destaining solution for approximately 1 minute and agitate to clear the background. This procedure may be repeated with a fresh destaining solution if the background is not completely clear.
- 5.2.2.3 Remove the item from the solution and allow the item to dry completely prior to proceeding.
- 5.2.2.4 Preserve the developed impressions through photography, according to the techniques in Photographic Equipment/Procedures and/or by electronically recording the impressions (See Image Processing). The impression may be lifted directly from the item only after the item is completely dry.

5.3 Standards and Controls – Forensic Scientists shall produce a self-made test print to be processed concurrently with items of evidence.

5.4 Calibration - N/A

5.5 Sampling –N/A

5.6 Calculations – N/A

5.7 Uncertainty of Measurement – N/A

6.0 Limitations - Coomassie Blue powder and solution have an indefinite shelf life.

6.1 The Coomassie Blue reagent shall be stored in the original shipping container until needed.

6.2 The staining and destaining solutions may be stored in clear spray bottles or dark, shatter-proof containers until needed.

7.0 Safety – Glacial acetic acid and methanol can be harmful if inhaled or ingested and shall be used in a fume hood when mixing and/or processing evidence. Protective gloves, eye goggles and aprons shall be worn as the staining solution will stain clothing and skin. This technique may be used at crime scenes; however, use only in a well ventilated area or use a fan to remove the fumes produced.

8.0 References

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9.0 Records – N/A

10.0 Attachment – N/A

Revision History		
Effective Date	Version Number	Reason
09/17/2012	1	Original Document
10/31/2013	2	Added issuing authority to header
03/30/2017	3	Header Update – Removed Digital reference.
01/19/2018	4	Updated issuing authority in header 5.2 & 5.3 – Moved test print requirement to “Standards and Controls.”
02/01/2019	5	Changed “distilled” to “purified” throughout document Changed number references to be numerals only instead of spelled out throughout document 4.1 Changed “Magnetic stirrer, magnetic follower” to “Magnetic stir bar”; added “Shatter-proof container” 5.1.1.1, 5.1.1.2: Corrected grammar 5.1.1.3, 6.2: Added “shatter-proof” to describe container 5.1.2.1: Changed “magnetic stirrer” to “magnetic stir bar” 5.1.2.3: Changed “dark jug” to “dark, shatter-proof container” 7.0: Changed “vented” to “ventilated”