

## LABORATORY SERVICES BUREAU

Document: Crime Scene Response Technical Procedures

Policy Number:  
1704

Revision:  
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Subject: CSR-SOP-22 Kastle-Meyer Testing

Approved:  
Sanders, Nicole

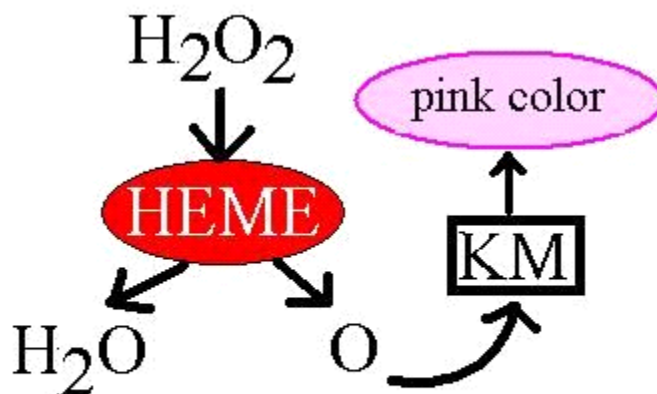
PHOENIX POLICE DEPARTMENT Effective: 10/23/2019 9:19:40 AM

Page 1 of 3

### 22. KASTLE-MEYER TESTING

#### A. Introduction

The Kastle-Meyer test is a presumptive test for the indication of blood. Because the Kastle-Meyer test is sensitive, blood may be detected without a visible stain. The Kastle-Meyer test is based on the fundamental oxidation-reduction reaction between the Heme component of blood, the Phenolphthalein chemical, and hydrogen peroxide. It is a catalytic reaction that relies on the peroxidase like activity of blood. The purpose of the Kastle-Meyer test is to test for the possible presence of blood.



#### B. Procedure

Locate the area of interest of suspected blood. Document if a red/brown spot is small and there is no other red/brown staining (e.g. limited sample). Sampling Note: Do not perform the KM test if there is a chance that  $\frac{1}{2}$  or more of the stain will be consumed. Instead collect the dried blood by adding a minimal amount of distilled water to a swab and collect the small stain by concentrating it on the tip of your swab (reference Biological Evidence Collection Section).

##### (1) Positive Control

- (a) One drop of distilled water on to a sterile swab.
- (b) Take out your known blood sample and swab the known blood stain.
- (c) Apply one drop of ethanol.
- (d) Apply one drop of Kastle-Meyer. Wait three seconds to view if a pink color change occurs. If the swab turns pink, the presence of an oxidative contaminant exists and the test is inconclusive.
- (e) Apply one drop of hydrogen peroxide. The swab should turn pink immediately (10 seconds or less).

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Page 2 of 3

- (f) If the positive control test is negative, do not proceed with the Kastle-Meyer test. New chemicals must be obtained before performing a new test. If the test is inconclusive, attempt another positive control test. Notate all results.
- (g) Notate test results in notes.

Examples of possible Control Notation:

KM Controls 7/31/06

*Pos = Pos / Neg = Neg*

OR

+ = + / - = -

- (2) Negative Control
  - (a) Apply all chemicals, as listed in above procedures, to a clean swab (no blood added to the swab).
  - (b) No color change should occur within 10 seconds.
  - (c) Do not proceed with test if a color change occurs in less than 10 seconds.
  - (d) Retrieve new chemical supply if improper results are obtained on negative control.
  - (e) Notate test results in notes.
- (3) Locate the area of interest of suspected blood.
- (4) Do not perform the Kastle-Meyer test if there is a chance that ½ or more of the stain will be consumed.
- (5) Add one drop of distilled water to a sterile swab-just enough to make it slightly moist.
- (6) Lightly rub the suspected bloodstain with the moistened area of the swab.
- (7) Add one drop of ethanol to the swab.
- (8) Add one drop of the Kastle-Meyer reagent to the swab. Wait three (3) seconds. If there is no change in color (pink) proceed to step 9. If there is a change of color, then the chemicals need to be examined to ensure they are working properly.
- (9) Add one drop of the 3% hydrogen peroxide.
- (10) Results
  - (a) Positive: A rapid development (within 10 seconds) of a bright pink color is a positive indication of blood.
  - (b) Negative: The absence of this response within the above time frame indicates a negative result.
  - (c) Inconclusive: The reaction does not conclusively reflect a positive or negative result. Examples include, but are not limited to: a color change prior to Hydrogen Peroxide or a color change other than bright pink. Inconclusive tests may be repeated at CSS discretion.

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Page 3 of 3

- (11) Photographs may be taken of a positive test result immediately following the application of the chemicals.
- (12) Swabs can be impounded if the sample tested is small and additional sample is needed, as well as if the sample was inadvertently consumed. Otherwise swabs can be disposed. An exception exists when KM testing is related to Bluestar, refer to CSR-SOP-23 Latent Bloodstain Enhancement for specific procedures.
- (13) Note: All swabs will eventually turn pink after an extended amount of time due to the nature of the reaction. This does not mean that there is a positive result. The above time frame is important to adhere to for interpretation of test results.
- (14) If apparent bloodstains are tested on items (e.g. sheets, clothing, etc.) that are being impounded, indicate on the item with a circle which stain was tested as well as the result of the test (e.g. + or -). The Specialist will also indicate in the impounded item description the result of the Kastle-Meyer test.
- (15) Test results and the locations of the surfaces/items tested will be documented in the Specialist's notes. Control results, expiration dates, and lot numbers will also be documented in the notes.

### C. Safety

- (1) Wear proper PPE to avoid contamination.
- (2) Biological materials can contain pathogens (HIV, hepatitis, tuberculosis, etc.) and Universal Precautions should always be utilized. Always assume that all biological evidence is infectious.

### D. References

- (1) Fisher, Barry A.J., *Techniques of Crime Scene Investigation*, 7th ed. Boca Raton, FL: CRC Press, 2004 (Chapters 8 pg 206)
- (2) Gardner, Ross M., *Practical Crime Scene Processing and Investigation*. Boca Raton, FL: CRC Press, 2005 (Chapter 10, pgs 283-285)
- (3) Lee, H.C., Palmbach, T., and Miller, M.T., *Henry Lee's Crime Scene Handbook*. San Diego, CA: Academic Press, 2001 (Chapter 8 pgs 205-211)
- (4) James, Stuart H., Kish, P. E., and Sutton, P.T., *Principles of Bloodstain Pattern Analysis Theory and Practice*. Boca Raton, FL: CRC Press, 2005 (Chapter 14, and pg 353)