Presumptive Test for Blood (Kastle-Meyer Test)

Procedure:

*Wear safety goggles and disposable gloves for this procedure.*
1. Obtain cotton swab.
2. Hold swab over the plastic waste dish and apply 1 drop of ethanol from the dropper bottle to the swab.
3. Rub surface of letter opener suspected of blood with swab 4-5 times.
4. Hold swab over the plastic waste dish and apply 1 drop of phenolphthalein solution from the dropper bottle to the swab.
5. Immediately apply 1 drop of hydrogen peroxide solution to the swab.
6. If colour change to pink occurs within 10 seconds of the application of hydrogen peroxide then the sample is positive for blood. If the swab does not turn pink or turns pink after 10 seconds then the sample is negative for blood.
7. Repeat steps 1-6 using the nail file rather than the letter opener.

Overview
The Kastle-Meyer test is a forensic presumptive blood test, where the chemical indicator phenolphthalein is used. Phenolphthalein, a clear dye, immediately turns pink if oxidized by hemoglobin and hydrogen peroxide. The test is based on the peroxide-mediated oxidation of reduced phenolphthalein in which the heme molecule acts as a catalyst.

This test is nondestructive to the sample, which can be kept and used in further tests at the lab. This test has the same reaction with human blood and animal blood so further testing would be required to determine which one it is.

In the reaction, only phenolphthalein and hydrogen peroxide react with the haemoglobin in the blood; the alcohol behaves as a solvent.

The Reagents

There are three reagents involved in this test. These are:

**Alcohol:** Methyl or Ethyl alcohol is used to increase the sensitivity of the test. It does this by “cleaning up” the area in and around the bloodstain to better expose the hemoglobin.

**Phenolphthalein:** This is a solution which acts as a color indicator. When prepared, the solution is boiled for several hours to help remove most of the oxygen trapped in it. It should appear as a colorless liquid. When this solution is oxidized (exposed to oxygen), it will turn pink.

**Hydrogen Peroxide:** This is the 3% form typically found in drugstores. Hydrogen peroxide is essentially water with an extra oxygen atom attached to it.