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## TECHNICAL INFORMATION

### Master Seminal Fluid Test Kit

#### Catalog No. SF298

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#### INTRODUCTION

The SF298 is a complete master field and lab kit that enables the investigator to perform contact testing and verification of suspected seminal stains. Components of the various reagents are sealed in glass ampoules to eliminate contamination and prolong storage life—applicators are disposable. Because of the specificity of the test, only minute quantities are required for identification. Stains up to 4 years in age have responded positively. The contact transfer technique is used to verify the presence of semen eliminating contamination probability.

#### PRECAUTIONS

- Before using this kit, consult the appropriate Material Safety Data Sheets (MSDS) found on our website at [www.sirchie.com/support](http://www.sirchie.com/support).
- Skin and eye irritant. If contact made with skin, wash with soap and water—consult physician if irritation occurs. If contact made with eyes, flush with plenty of water for approximately 15 minutes—seek medical attention.
- **FLAMMABLE!** DO NOT use S3 Reagent around heat, open flames or sparks—dispose of empty containers according to Local, State, and Federal regulations.

#### FORENSIC CHARACTERIZATION OF SEMEN

A great number of cases received in a forensic laboratory involve sexual offenses, making it necessary to examine exhibits for the presence of seminal stains.



The normal male releases 2.5 to 6 milliliters of seminal fluid during an ejaculation. Each milliliter contains 100 million or more spermatozoa, the male reproductive cells. The forensic examination of articles for seminal stains can actually be considered a two-step process. First, before any tests can be conducted, the stain must be located. Considering the number and soiled condition of outer garments, undergarments, and possible bed clothing submitted for examination, this may in itself prove to be an arduous task. Preliminary examination may be accomplished using longwave ultraviolet light (No. CUV100T) or a BLUEMAXX™ alternate light source. Once located, the stain will have to be subjected to tests that will prove its identity; possibly, it may even be tested for the blood type of the individual from whom it originated.



Often, seminal stains are readily visible on a fabric because they exhibit a stiff, crusty appearance. However, reliance on such appearance for locating the stain is at best unreliable and is useful to a criminalist only when the stain is present in a rather obvious area. Certainly, if the fabric has been washed or contains only minute quantities of semen, visual examination of the article will offer little chance of detecting the stain. The best way to locate and at the same time characterize a seminal stain is to perform the acid phosphatase color test.

Acid phosphatase is an enzyme that is secreted by the prostate gland into seminal fluid. Its concentrations in seminal fluid are up to 400 times greater than those found in any other body fluid. Its presence can easily be detected when it comes in contact with an acidic solution of sodium alpha naphthylphosphate and Fast Blue B dye, the ingredients of SIRCHIE's Acid Phosphatase Testing Reagents.

The utility of the acid phosphatase test is apparent when it becomes necessary to search numerous garments or large fabric areas for seminal stains. If a filter paper is simply moistened with water and rubbed lightly over the suspected area, acid phosphatase, if present, will be transferred to the filter paper. Then, when a drop or two of the acid phosphatase reagent is placed on the paper, the appearance of a purple color will be indicative of the acid phosphatase enzyme. In this manner, any fabric or surface can be systematically searched for seminal stains. If it is necessary to search extremely large areas—for example, a bed sheet or carpet—the article can be tested in sections, first using an alternate light source. Alternatively, the garment under investigation can be pressed against a suitably sized piece of moistened filter paper. A negative reaction can be interpreted as meaning the absence of semen. Although some vegetable and fruit juices (e.g., cauliflower and watermelon), fungi, contraceptive creams, and vaginal secretions do give a positive response to the acid phosphatase test, none of these substances normally reacts with the speed of seminal fluid. A reaction time of less than 30 seconds is considered a strong indication of the presence of semen.

Semen can be unequivocally identified by the presence of spermatozoa. When spermatozoa are located through a microscope examination, the stain is definitely identified as having been derived from semen.

### **SF298 COMPONENT DESCRIPTIONS**

#### **Glass Ampoules**

All of the reagents are packaged in ampoules that are pre-measured. Since the ampoules are pre-scored, the chance of shattering and cutting has been all but eliminated. To open the ampoule,



**FIGURE 1**

grasp both ends and break as illustrated in Figure 1.

#### Distilled Water

This water is used to saturate either the filter paper or cotton to enable the contact test to be performed.

#### Glass Vials

These are used for storing liquid samples for laboratory analysis. The pipettes are utilized to pick up liquid samples and transfer them to the vials.

#### Disposable Pipettes

The disposable pipettes (Fig. 2) are used to evacuate liquid from one ampoule to the other and as an applicator for the mixed reagent. To use, fill or evacuate the pipette by squeezing the plastic bulb.

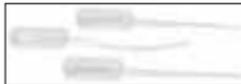


FIGURE 2

#### Contact Filter Paper

This is used for contact testing eliminating the need to apply the reagent directly to the suspected stain.

#### Cotton Balls

These are used for balling samples from water surfaces, etc.

### PROCEDURE

Perform the following procedures after preliminary search and location of suspected stains by either ultraviolet light, touch, or smell have been completed:

#### Ampoule Method Reagent Preparation

1. Take the ampoule labeled "S1" and break off the stem.\* This ampoule contains the dry chemicals required for the reagent.
2. Take the ampoule labeled "S2" and break off the stem.\*
3. Take the ampoule labeled "S3" and break off the stem.\*
4. Utilizing a disposable pipette, evacuate the liquid from ampoules "S2" and "S3" and deposit them in ampoule "S1".
5. Swirl the mixture in the "S1" ampoule using the pipette (pumping it in and out) until the dry chemicals are completely dissolved.
6. Remove some of the mixed reagent from the "S1" ampoule with the same pipette.
7. Use the pipette as an applicator for the reagent.

*\*NOTE: Make sure reagent is out of stem before breaking ampoule.*

**Dry Stains**

1. Saturate a piece of filter paper with distilled water.
2. Contact the saturated filter paper against the suspected stain for a few seconds. If the stain is on a woolen-type fabric, more contact time will be required.
3. Apply the prepared reagent directly to the filter paper and observe the characteristic purple color.

**Wet Stains**

1. With a cotton ball, make contact with the suspected liquid.
2. Apply the prepared reagent directly to the ball.
3. Observe the characteristic purple color.

**Positive Reaction**

If seminal fluid is present, a deep purple color will develop—weak at first, but intensifying quickly within a few seconds.

**Validity of The Test**

The material present in human semen responsible for the test is present in animal semen in very low levels and does not interfere. However, some other human tissues such as liver, kidney, or human milk can also show a positive test. A few juices from vegetables such as cauliflower, brussel sprouts, and clover can interfere—the likelihood of their presence in suspected articles is minute though. In spite of this, it is wise not to base semen identification on this test alone. The Florence Test and microscopic examination should be conducted to further validate the specimen.

**SF298 CONTENTS:**

- 8- 288DP Pipettes, disposable w/capillary and 3ml bulb
- 2- 288FP Contact Filter Papers, 1" x 2", 25 ea.
- 2- DISW2 Bottles of Distilled Water, 2 oz.
- 10- EIL011 Evidence Identification Labels, "Crime Evidence"
- 3- KCP172 Glass Vials w/caps, 3 dram w/cap
- 15- KCP217 Cotton Balls
- 8- SF298S1 S1 Reagent in glass ampoule, 5ml
- 8- SF298S2 S2 Reagent in glass ampoule, 5ml
- 8- SF298S3 S3 Reagent in glass ampoule, 5ml
- 1- SF298C Black molded copolymer carrying case, textured w/folding handle and molded inserts; Dimensions: 13.5" x 11" x 5.25"; Weight: 2.9 lbs.

**REFERENCES:**

- Smith, S., "Forensic Medicine"*
- Saferstein, R., "Criminalistics"*
- O'Hara, C.E. and Ostenburg, J.W., "An Introduction to Criminalistics"*
- Schiff, F. and Boyd, W.C., "Blood Grouping Technique"*
- Pinker, R.H., "The Preliminary Chemical Tests for Blood"*
- Kirk, P.L., "The Crime Laboratory"*
- Boyd, P.C., "Fundamentals of Immunology"*