Section J Small Particle Reagent (SPR) Subsection 4

Name of Procedure:

Small Particle Reagent (SPR)

Suggested Uses:

This process is used effectively on surfaces that are moist or wet. SPR may be applied to a number of surfaces including the exterior of vehicles, window frames, weapons, etc. even if the item is or had been exposed to rainy conditions. Plastic items such as PVC, Mylar, Polyethylene, and waxed paper are good items for the use of SPR.

Equipment to Preform Procedure:

A - Protective Clothing

B - Face shield visor and/or safety goggles

C - Two processing trays

D - Camera (35 mm, 2 1/4, MP-4, CU-5, TC III)

E - Rubber gloves

F - Fume hood

G - Forceps

Chemical Needed for Preparation of Chemical Solution(s):

A - Eight (8) ml of Tergitol 7 (BHD)

B - Four (4) grams of Choline Chloride

C - Ten (10) grams of Molybdenum Disulfide

D - Fifty (50) ml of Surfactant Stock Solution (Required for processing)

E - Five-hundred (500) ml of distilled water

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Formulation /Directions for Preparation of Chemical Solution(s):

Stock Solution: A surfactant stock solution is prepared by dissolving eight (8) ml of Tergitol 7 (BHD) and four (4) grams of Choline Chloride in five-hundred (500) ml of distilled water.

Working Solution: The working solution is produced by mixing ten (10) grams of Molybdenum Disulfide with fifty (50) ml of the surfactant solution in small amounts with constant stirring. Once the solution is free of dry powder, nine-hundred (900) ml of distilled water is added with continued stirring.

Processing Procedures for Application to Items of Evidence:

Dish Method: A. Porous items

1. Shake the reagent container well and pour into processing dish allowing the item being processed to be completely covered with the solution. Stir the reagent prior to immersion of the item to be processed.

2. Rock the dish gently for about thirty (30) seconds, remove item and allow excess reagent to drain from item.

3. Place item in a second dish of clear tap water to remove remaining excess solution. Trapped particles can be removed with a light jet of tap water from faucet.

B. Non-porous items

Repeat the above procedures for porous items, except no agitation is required after the item is immersed. This process will take approximately thirty (30) seconds to complete.

Spray Method: Large items or fixed surfaces may be processed with a garden sprayer, spray bottle or plastic applicator. The working solution is applied generously to the surface and rinsed with clear tap water.

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Steps to Preserve Developed Impressions:

The detail and clarity produced by the black particle adhesion is excellent and may be photographed with relative ease (See Photographic Equipment / Procedures). The Molybdenum Disulfide will act like a fingerprint powder once allowed to completely dry and may be lifted with powder lifting techniques (See Powder Processing).

Safety Concerns:

There are no documented safety precautions noted at this time with the use of SPR; however, the toxicological properties have not been throughly investigated.

Storage and Location of Chemicals and Solutions:

Both the surfactant stock and working solutions should be stored in dark plastic bottles or in chemical cabinets to avoid direct sunlight.

Shelf Life:

Surfactant stock solution - Indefinite (Solution should be throughly agitated prior to usage).

Working solution - Up to six (6) months (Solution should be throughly agitated prior to usage).

Other information:

The reagent is an aqueous suspension of Molybdenum Disulfide which is very lipid sensitive.

SPR may be also be used on surfaces which have no indication of being wet or exposed to moist environmental conditions.

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