

TECHNICAL INFORMATION

Primer Residue Collection Kit for SEM, ICP-MS and AAA Catalog No. GRA100

INTRODUCTION

The Primer Residue Collection Kit is designed for use by departments that anticipate submitting evidence for Scanning Electron Microscopy (SEM), Inductive Coupled Plasma Mass Spectrometry (ICP-MS) and Atomic Absorption Analysis (AAA). The GRA series gunshot residue analysis kits feature special alloy aluminum specimen mounts that contain no barium, antimony, or lead—the most common constituents in cartridge residue. GRA tests are specific and sensitive for collection of gunshot residue using SEM techniques and are economical and uncomplicated. The GRA100 kit also contains the materials necessary to collect primer (barium and antimony) residue for ICP-MS and AAA.



Control test firings show that the concentration of gunshot residue significantly declines after approximately 4 hours. Therefore, samples taken more than 4 hours after firing may not be acceptable for analysis.

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CAUTIONS

- Before using this kit, consult the appropriate Material Safety Data Sheets (MSDS) found on our website at www.sirchie.com/support.
- The person taking samples **must** have hands that **DO NOT** possess gunshot residues. Collector must wash hands thoroughly and put on latex, powder-free gloves before collection.
- To avoid contamination, DO NOT touch the subject's hands. The collector should use one hand to grasp the subject's arm above the wrist during the collection procedures.
- The ICP-MS and AAA components of this kit contain a weak acid solution (5% nitric acid). Follow the safety recommendations contained in the MSDS. In very rare cases, this acid solution may cause skin and eye irritation in sensitive individuals. Instruct the subject to wash his hands thoroughly **AFTER** they have been swabbed with the ICP-MS or AAA components.

SEM PROCEDURE (Adhesive Lifts)

The collection device consists of a plastic vial with a tightly fitting cap. The metal stubs in the caps are equipped with a carbon adhesive tab used for lifting residue.

Remove the cap from the vial. ***There is no tab cover to remove. The device is now ready for use.*** Once the collecting surface is exposed, take care not to drop the stub or contaminate the collecting surface by allowing the adhesive tab to come into contact with any object other than the area that is to be sampled.

Avoid heavily soiled or bloody areas as much as possible. When pressing the stubs on the questioned areas, apply sufficient pressure to cause a slight indentation into the surface of the skin.

Step 1: Right Back

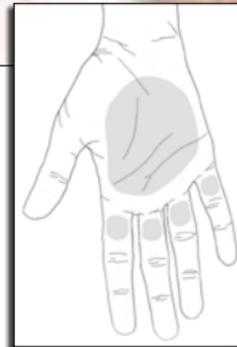
- A. Carefully remove the cap from the vial labeled **RIGHT BACK**.
- B. Grasp subject's arm above the wrist. Do not touch subject's hands.



STEP 1—Rt. back



STEP 2—Rt. palm



- C. While holding the vial cap securely, press the collecting surface of the stub onto the back of the suspect's hand until the web area shown has been covered (see Step 1 Illustration).
- D. After sampling the back of the suspect's hand, return the cap to the **RIGHT BACK** vial.

Step 2: Right Palm

Repeat the procedure described in Step 1 using the metal stub in the vial labeled **RIGHT PALM**. Be certain to sample the area of the palm.

Step 3: LEFT BACK/LEFT PALM

For collection from the left hand, repeat Steps 1 and 2 using the vials labeled **LEFT BACK** and **LEFT PALM**.

Step 4:

After sampling all four areas, return the capped vials to the kit box.

Final Instructions:

- A. Fill in all of the information required on the enclosed DATA SHEET, and place it in the kit box.
- B. With the exception of the **gloves**, return components to the kit box. *Dispose of the gloves according to accepted practices.*
- C. Reassemble the kit box, affix the Integrity Seals where indicated on the kit box top, and initial both seals.
- D. Complete all forms required by the agency designated to examine the kit.
- E. Submit the kit and completed forms to the designated agency.

ICP-MS and AAA PROCEDURE (Hand Wipings)

Perform ICP-MS or AAA gunshot residue collection **only after** sampling with the adhesive stubs (SEM procedure). If there is any possibility of glove contamination during the adhesive stub procedure, discard the gloves, thoroughly wash hands with soap and water, and dry with clean towels. At no time during the collection process should the collector's hands come into contact with the cotton tip of the swabs to be used during this procedure. *Put on a fresh pair of gloves before proceeding.*

To swab the suspect's hands, the investigator should grasp the subject's arm above the wrist with one hand and swab with the other. The suspect's hand should be in a *spread* position. Thoroughly swab the hands using moderate pressure. Rotate the swab during this procedure to ensure that the entire surface of

the cotton tip is used. Swab each area for a minimum of 30 seconds.

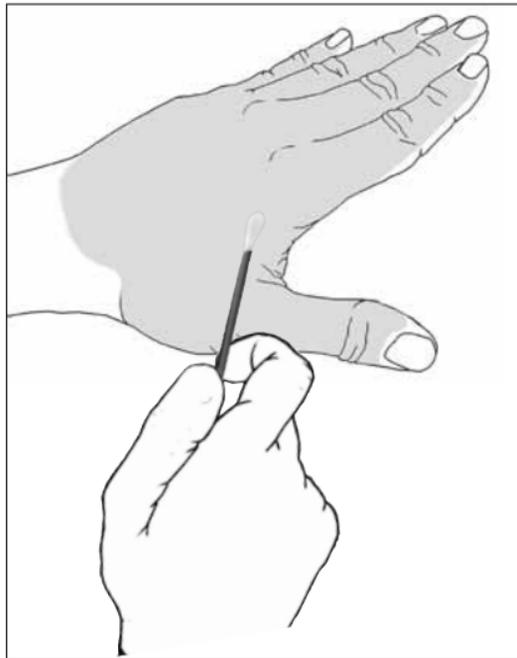
When dispensing the nitric acid, use 2-3 drops of the solution to moisten each swab. **DO NOT OVER MOISTEN!** In order to dispense an appropriate amount of acid solution, hold the acid dispenser in a horizontal position above—almost touching—the cotton tip of the swab, and squeeze gently. *Always put cotton swabs tip down when placing swabs in tubes.*

Step 5: Control Swabs

Remove **both** swabs from the unmarked zip lock bag. Moisten both swabs with the 5% nitric acid supplied with the kit (do not substitute this solution). Place both swabs in the tube labeled **CONTROL**. Recap the tube and set it aside.

Step 6: Left Back

NOTE: You MUST use TWO swabs for each area of the hand. Moisten the tip of one swab with 2-3 drops of acid, then thoroughly swab the back of the subject's left hand including the back of the fingers and all of the web area which would be exposed while holding a weapon. Place swab used into the tube labeled **LEFT BACK** and *repeat the above procedure using a second swab. Place the second swab used in the LEFT BACK tube, then recap tube and set it aside.*



STEP 6—Collection from back of left hand.

Step 7: Left Palm

NOTE: You **MUST** use **TWO** swabs for each area of the hand. Moisten the tip of one swab with 2-3 drops of acid, then thoroughly swab the palm of the suspect's left hand including the fingers and all of the web area which would be exposed while holding a weapon. Place the swab into the vial labeled **LEFT PALM** and **repeat the above procedure using a second swab. Place the second swab used in the LEFT PALM tube, then recap tube and set it aside.**

Step 8: Right Back/Right Palm

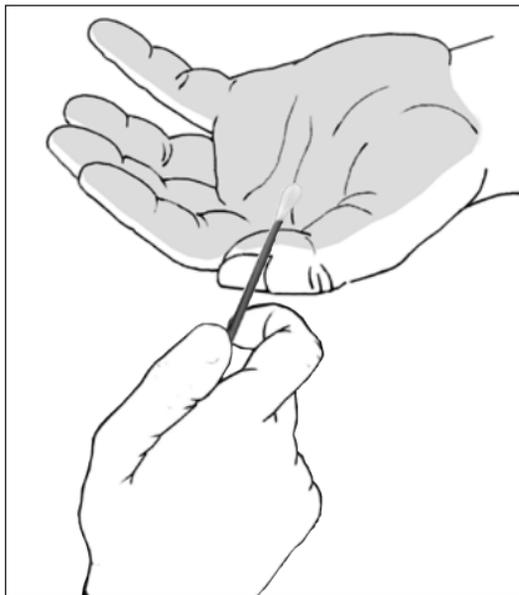
Follow the same procedures described in Steps 6 and 7 to swab the suspect's right hand.

Step 9: Cartridge Case

NOTE: For .22 caliber and foreign manufactured ammunition, it is necessary to complete Steps A and B described below, or submit the casings to the testing laboratory. If latent print processing has not been completed on the expended casing(s),

Steps A and B should be omitted and the casings should be submitted for latent print processing. **NOTE:** You **MUST** use **TWO** swabs on each cartridge case. If for any reason the Cartridge Case Swabs are not used, mark the tube "NOT USED".

Moisten the tip of one swab with 2-3 drops of 5% nitric acid, then thoroughly swab the **INSIDE** of the



STEP 7—Collection from palm of left hand.

cartridge case. Place this swab in the tube labeled **CARTRIDGE CASE**. If necessary, you can repeat this procedure with a second moistened cotton swab. Recap the tube and set it aside.

Final Instructions:

- A. Fill in all of the information required on the enclosed DATA SHEET, and place it in the kit box.
- B. With the exception of the **5% nitric acid dispenser** and the **gloves**, return components to the kit box.
Dispose of the 5% nitric acid dispenser and the gloves according to accepted practices.
- C. Reassemble the kit box, affix the Integrity Seals where indicated on the kit box top, and initial both seals.
- D. Complete all forms required by the agency designated to examine the kit.
- E. Submit the kit and completed forms to the designated agency.



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