TECHNICAL INFORMATION

Special Formula Ninhydrin Spray

Catalog No. NSI609

INFORMATION

Ninhydrin (2,2-Dihydroxyindane-1,3-dione) was developed originally to detect ammonia or primary and secondary amines such as amino acids. Amino acids are the basic structural units of proteins, which are found in human perspiration, as well as skin and blood cells. Amino acids are known to form a permanent bond with materials containing cellulose; thus, when an individual touches a piece of paper, amino acids conforming to the ridge structure of the fingertips are sloughed off. When a formula of Ninhydrin is applied to the paper it reacts with these free amines, evolving a deep blue or purple color known as Ruhemann's Purple. NSI609 is a special formulation using a solvent that does not dissolve most inks, making it safe to use on handwritten forms and letters, without destroying the writing. NOTE: all documents should be photographed prior to any latent print treatment, including when using NSI609.

PREPARATION INSTRUCTIONS

No advance preparation or mixing is required. Special Formula Ninhydrin is premixed at the factory and is ready for use upon delivery.

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Application	Development of latent fingerprints on porous surfaces such as paper, cardboard and raw wood.	
Hazards/Safety Info	HMIS H 2 F 1 R 0	**Caution!** This product may be harmful if inhaled, ingested or contacted by the skin. Wear chemical resistant gloves and a vapor respirator. **Warning!** Gross over exposure may cause irregular heartbeat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, unconsciousness and possible death. Use only in a well-ventilated area or use an exhaust fan. Prior to using this product, refer to the MSDS. *Go to www.sirchie.com and click on MSDS.*

APPLICATION INSTRUCTIONS

Caution! Due to the hazardous nature of this product, it should only be used where adequate ventilation is available. Indoors, this product should be used in a vented or ductless fume hood only.

Best Known Method

1. Secure the object to be tested as shown here.
2. Working from top to bottom, thoroughly saturate the item with the Ninhydrin spray. Be sure to spray both sides of the document for full penetration.
3. Allow the item to dry before handling. **Caution!** Wear protective gloves (latex or nitrile) as the residue on the treated item may cause staining of the fingertips.

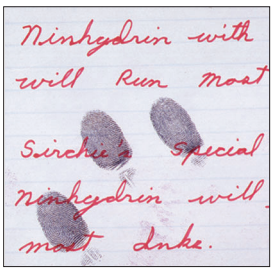
The document to be treated with NSI609 is secured inside a fuming hood with evidence clips.

The technician works from top to bottom, thoroughly saturating the document with NSI609. Protective gloves are worn to protect fingers from staining.

4. Development times for any latent prints present will vary. Seldom will they appear immediately after the Ninhydrin is applied. It is not uncommon for it to take a day or more before the latents are visible. A high humidity (60-80% RH) environment will accelerate development times to some degree.

Alternative Method

If it is essential to rapidly view prints rather than waiting 24-48 hours, development of prints may be accelerated by the application of moist heat. The simplest method of doing this is to place the treated and dried document on a cotton towel, and then cover it completely with a second towel. Using a steam iron set for low steam, place the iron in contact with the top towel and iron back and forth over the towel.
Special Note: Use only distilled or deionized water in the iron.



Example of results expected.

Results Expected

Fingerprints similar to those photographed here should be visible.

AFTER TREATMENT

Ninhydrin-developed prints may fade with time so it is important that they be photographed as quickly as possible (be certain to include a scale in all photos).

Ninhydrin prints may be fixed to prevent fading. After photographing the prints, apply Ninhydrin Fixative (No. NFS200) to the document according to the instructions that accompany the product.

Note: Only use Iodine fuming development methods prior to applying any Ninhydrin or a DFO formulation. Ninhydrin use will not interfere with subsequent treatments of Silver Nitrate (No. 205C), Silver Latent Print Spray (No. SLPS300) or Physical Developer (No, LPD100).

INTERPRETATION INSTRUCTIONS

Review Method

Once treatment is complete, as outlined above, examine the document for any possible latent prints. As men-

tioned above, development times will vary. If the moist heat method was used, prints could be clearly visible in minutes and they should be photographed. Store treated documents in individual evidence containers or envelopes (No. TVK100). Store in a cool, dark place.

Possible Reasons for Poor or No Results

1. No latent prints are present.
   - 1.1. Insufficient development time. Allow up to 48 hours and if no prints appear, retreat the item
   - 1.2. There were no amino acids present. Try Silver Nitrate (205C) or Physical Developer (LPD101)
   - 1.3. Check the expiration date of the chemical used. If it is out of date (usually up to one year), retreat the item with a fresh product.

Other Similar Products

SIRCHIE manufactures two other Ninhydrin formulations: Ninhydrin Spray (No. 201C/202C) and Ninhydrin with Acetone (No. 201ACE). Ninhydrin Crystals (No. NRP01) may be purchased when it is necessary for you to prepare your own solutions.

1,8-Diazafluoren-9-One or DFO (No. DFS200P) is a Ninhydrin analog and will develop latent prints on porous surfaces. On occasion, the developed prints will be light pink in color, but prints fluoresce brightly under alternate light sources or UV light.

1,2-Indanedione (No. LV508) is the result of a low cost substitute for DFO. It too produces fluorescence under alternate light sources (510-540nm).

References

1. Wertheim, Pat A., **"Ninhydrin", Crime and Clues,** <www.crimeandclues.com/ninhydrin.html>. January 15, 2009
2. Arizona, Univ. of, **"The Chemistry of Amino Acids" The Biology Project,** Dept. of Biochemistry and Molecular Biophysics,<www.biology.arizona.edu/biochemistry/problem_sets/aa/aa.html>. January 15, 2009
3. Saferstein, Richard, Ph.D., **Criminalistics,** p453. New Jersey: Prentice Hall; 1998.