

# Chemical Processing for Fingerprints

Presented by  
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## Chemicals

- Besides fingerprint powders, there are a number of chemical processes that can be used to develop latent impressions
- If you don't have them available, package the items properly and submit to lab personnel
- We will now discuss some of the more common processes available that are simple to use and affordable

## Processing Non-Porous Items

- Cyanoacrylate Fuming (Superglue)
- Sticky-Side Powder
- SPR (Small Particle Reagent)

## Processing Porous Items

- Ninhydrin
- Iodine Fuming

## Cyanoacrylate (Superglue)

- Reacts with certain eccrine and sebaceous components in the latent print (moisture)
- Produces white ridges
- Since there is no direct contact with the latent impressions such as with a dusting brush, there is less chance of wiping away or destroying fragile prints

## Cyanoacrylate Equipment



## Glue, Aluminum Tray, Heater



## Cyanoacrylate Fuming Chamber



## Cyanoacrylate Non-Porous Processing

- Item(s) to process: Wet wipe canister
- Aluminum tray for glue
- Container of warm water (for added humidity)
- Black lift card (test card)



## Items In Chamber



## Black lift card (test card) with cyanoacrylate fuming completed.



## Wet wipe container with latent impression



## Close up of developed impression



## Preservation of Impressions

- Always photograph after development
  - With scale and label
  - Fill frame
  - Camera parallel to surface
- Follow up with chemicals and ALS
 

or
- Dust with black powder applied with a cotton ball, lift impression and attach to lift card

## Sticky-Side Powder Wet Wop & Wet Powder

- All are used to process the sticky side of adhesive tapes and adhere to residue from the latents
- Sticky-Side powder is mixed with a solution of 50% distilled water and 50% Photo-Flo to a consistency of thin paint, then applied with a camels hair brush
- Wet Wop and Wet Powder are premixed and are applied with a camels hair brush
- Wet Wop & Wet Powder are available in both black, and white colors

## Sticky-Side/Wet Wop

Apply and allow the solution to set anywhere from a few seconds up to 60 seconds, then rinse off with a slow stream of cold water. Allow to dry, photograph, then cover with a clear sheet of acetate, or tape over with plastic fingerprint tape attaching to a lift card.

## Sticky-Side Powder Equipment

- Sticky-Side Powder w/ Distilled Water & Photo-Flo
- Or premixed Wet Wop
- Mixing Container
- Camels Hair Brush

## Materials & Equipment



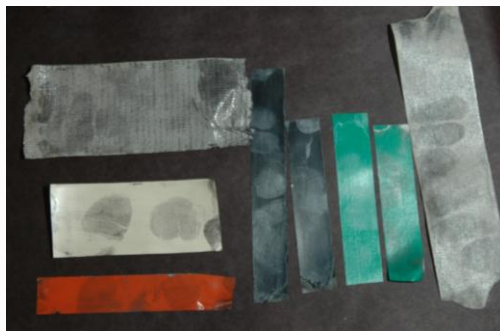
## Adhesive Tapes



Apply the solution with a camel's hair brush and allow to set, up to 60 seconds.



Processing Completed



## Preservation of Impressions

- Always photograph after development
  - With scale and label
  - Fill frame
  - Camera parallel to surface
- Allow tape to dry and attach to a clear acetate  
or
- Attach to a lift card with clear lift tape with latent impressions face up

## Small Particle Reagent

- Also called WetPrint. It is used primarily to process non-porous wet evidence. It adheres to the fatty substances in the latent print. Spray a light mist of the solution on the area of suspected latent impressions. After latents develop, rinse with water to remove excess solution. Photograph and lift when dry.



Spray the solution on the wet item



Rinse the SPR gently with water



SPR (WetPrint) processing completed.  
Photograph, let dry and lift impression.



## Preservation of Impressions

- Always photograph after development
  - With scale and label
  - Fill frame
  - Camera parallel to surface
- Allow to dry and lift with fingerprint tape
 

or
- While still wet, dry area adjacent to impression, attach tape and while laying tape down, force the water out from under the tape

## Proper sequence for processing porous surfaces

- Visual examination
- Inherent fluorescence by laser or alternate light source (includes UV)
- Powders may work if prints are fresh
- Iodine fuming
- Ninhydrin or DFO with light source
- Physical developer

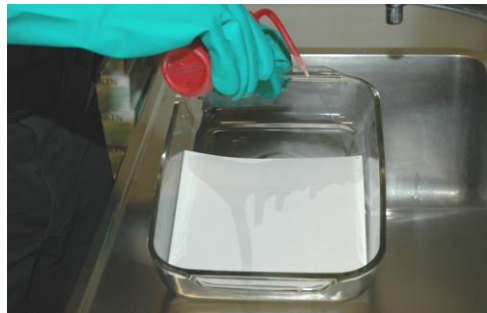
## Ninhydrin

- Ninhydrin is used to develop latent impressions on porous surfaces. It reacts with the amino acids present in perspiration. Ninhydrin can be applied by spraying, dipping, or painting.
- After the solution is applied, it must be dried. Then, heat and humidity (60%-80% for best results) is applied which will produce purple ridge detail.

Ninhydrin, squirt bottle, iron, gloves, tongs, glass dish.



Application of liquid ninhydrin



Drying the porous item in a ventilated hood



Steam Iron and Humidity Cabinet



## Using the steam iron to apply heat and humidity



## Latent impressions starting to develop



## Ninhydrin processing completed



## Preservation of Impressions

- Always photograph after development
  - With scale and label
  - Fill frame
  - Camera parallel to surface
- Latent impressions developed with chemicals have a tendency to fade after development, so quality photographs are necessary
- Avoid touching the item with bare hands even after processing and keep the item inside an envelope or zip-lock bag to prevent adding additional impressions

## Iodine Fuming

- Iodine is used to develop latent impressions on porous surfaces
- It reacts to oils and fatty materials present in the latent
- The iodine fuming produces yellowish-brown ridge detail.

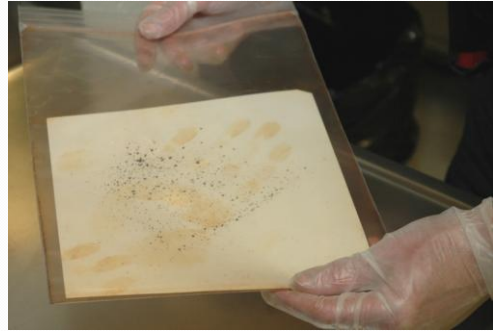
## Iodine crystals and zip-lock bag



Break the glass ampoule and place some of the crystals inside the zip lock bag with the evidence



Seal the bag and shake the crystals



Iodine fuming completed



## Preservation of Impressions

- Always photograph after development
  - With scale and label
  - Fill frame
  - Camera parallel to surface
- Latent impressions developed with chemicals have a tendency to fade after development, so quality photographs are necessary
- Avoid touching the item with bare hands even after processing and keep the item inside an envelope or zip-lock bag to prevent adding additional impressions

## Other porous surface development methods

- DFO: Reacts with amino acids. Prints fluoresce with laser or alternate light source.
- Physical Developer (PD): Reacts with fats and oils. Can be used to process items subjected to water.
- Silver Nitrate: Reacts with the sodium chloride (salt) in perspiration.

Questions or clarification?