



www.bostick-sullivan.com

(505) 474-0890

Instructions For Bostick & Sullivan's Modern Albumen Printing Kit

THE COATED PAPER

The Bostick & Sullivan Albumen paper is coated on 250 GSM Stonehenge White. This is a premium quality art paper. It is 25 inches wide so with some skill (and some really big trays) you can make a 24 in x 30 inch albumen prints with our recommended roller coating system.

THE SURFACE

The surface after we coat it with the salted albumen is a satin finish. It's between a matte and a glossy finish.

THE ALBUMEN COATING

Bostick & Sullivan has eliminated the chore of chasing chickens, separating the yolks, fermenting the egg whites, floating the paper on the albumen, and hanging the drippy bits to dry. We machine coat a uniform coating of albumen and the traditional chloride salts. Machine coated albumen paper has a consistent surface so that you can more easily control the sensitizing, exposing, and processing of the print.

FLOATING

Albumen paper needs to have a coating of silver nitrate applied before exposing. This has traditionally been done by floating the albumen paper on a pool of silver nitrate. You may still use the traditional floating method if you desire, but we have worked out a more efficient and easier roller coating system as a way to salt the paper with the silver nitrate. (See next section.) The floating method is described in Christopher James's book on Alternative Photographic Printing. For those interested in the historic albumen process and the floating method of silvering, check out the Albumen Section and the Albumen Documents section of the Advanced Process Forum hosted by Bostick & Sullivan found at www.bostick-sullivan.invisionzone.com

BENEFITS OF ROLLER COATING

We have developed a coating technique using a small high density foam roller for silvering prints that eliminates the need for floating. This technique will allow the efficient and smooth silvering of any size prints from small to extremely large.

Roller coating eliminates the need for large trays of silver nitrate solution used in the traditional 19th century "float sensitizing" system. It also is a "one-shot" system so that each print is coated with a known quantity and quality of silver nitrate.

To make large prints by the float system you need lots of silver nitrate. There is also an increased risk of spillage. Silver nitrate can cause chemical staining of skin and will even stain "stain-proof" Formica counter tops. The roller coating system developed at Bostick & Sullivan is safer, cleaner, saves silver nitrate, and your silver is always fresh and up to the needed percentage.

There were some photographers in the 19th century who brush coated and some do it that way today. We believe the roller is a better method. The roller "rolls" over the surface whereas the brush tends to drag through it. We find the roller system to be a bit more smoother. Besides, bristle brushes will start to shed hair faster than Bruce Willis after a short time of use.

SAFETY

Albumen printing is like many other alternative and historical photographic processes. In untrained hands it can be dangerous. If you do not have a background in working with chemistry and serious photographic processes you should not attempt it. Our local community college offers a course in "Art Safety." Check your local college and see if something similar is offered.

When working with this process when appropriate:

- Wear gloves
- Use "splash proof" eye protection
- Wear a water proof apron
- Wear a mask when appropriate.

Silver nitrate is corrosive. Small quantities on skin cause dark discoloration that only wear off with time. Strong solutions splashed on skin and not immediately washed off can cause corrosive burns. Silver nitrate solution that is splashed in eyes can cause serious damage. 19th century photographers could easily be identified by silver stained fingers and burns on forearms from flash powder. Gold chloride solutions likewise cause purplish stains.

Always wear gloves and eye protection when handling silver nitrate or gold chloride solutions.

EQUIPMENT

ROLLER AND EXTRA ROLLS

We use what we call a paint store "hot dog" roller. These are available at Home Depot and Lowes home improvement stores in the US and are commonly available in paint stores in other parts of the world.

They are about $\frac{3}{4}$ of an inch in diameter and come in 6 inch and 4 and 3 inch long sizes and are made of a white high density foam. They come in packs of 4 or 5 separate rollers or a handle with one roller. Buy a pack of them.

A 4 inch foam roller attached and a spare 2 inch roller. Six inch ones are available.

LINT-LESS PAPER TOWELS

You will also need a good supply of lintless paper towels. Do not use standard kitchen paper towels as they contain nasty things that can affect your print. We have used what Home Depot sells as "Rags in a Box."

3M 3903 TAPE OR DUCT TAPE

We've grown fond of this tape. It tears straight and will stick to a damp print. We prefer yellow but any color will do.

PLASTIC SHEETING

Although not absolutely necessary, this will make life a lot easier. Almost any thin, stiff, lightweight sheet of material will work. Most home improvement stores carry clear plastic for replacing windows. Often used in areas off play yards where children might hit the window with a ball. These will work well.

GLOVES AND SAFETY GLASSES To repeat:

Nitrile gloves are preferred. Wrap around splash proof goggles are necessary as splashes can get to the eyes.

STEP BY STEP INSTRUCTIONS FOR ROLLER COATING SILVER NITRATE SOLUTION ON TO ALBUMEN PAPER

Phases:

1. Roller coating silver nitrate on to albumen paper 2. Drying 3. 2nd light roller coat of silver nitrate 4. Exposing the dried and sensitive sheet of albumen paper. 5. 1st wash after exposure 6. Toning the image 7. 2nd Wash after toning 8. Fixing the image with Sod. Thiosulfate 9. 3rd Wash -- final and thorough 10. Drying the print 11. Mat and ship to your gallery.

ROLLER COATING

1. Put on latex or nitrile gloves and splash proof protective eyewear
2. Make sure you have your toner and 10% Sodium thiosulfate Hypo Fix mixed and ready.
3. Cut the Bostick & Sullivan albumen paper to size. Make sure your cutting area is iron particle free. See Final Notes.
4. Tape your cut sheet at 4 corners to a clean glass table top or clean sheet of plastic. We are very fond of 3M's tape #3903 for doing this. Duct tape will work.
5. Put on your safety goggles. These should provide splash protection ordinary eyeglasses are not safe!
6. For a 10 x 12 print measure out about 8 milliliters of 12% silver nitrate solution [See Note on Silver Percentage and Amount in the Appendix] and put into a shot glass or other small container. The amount you use will depend on the size of the print and humidity. You don't want it sopping wet, nor just barely wet, but enough to coat the paper and leave a little shine.
7. Turn the lights down low. It's more romantic and your paper will like it. It does not have to be real dark. Ordinary tungsten light is ok. A 25 watt bulb at least 10 feet from the coating area is ok. It is much more sensitive than most other alt processes so the less light you use the less chance for fog.
8. Put the silver nitrate solution in a small tray. For a 4 inch roller a 4x5 tray is good, flat bottom if you can find one. Pour a quantity of silver solution into the tray and run the roller through it several times. (You do not want to pour the solution directly on to the paper surface as this can leave a subtle mark in the print surface.)
9. Using the tray, wet the roller with several rolling motions. The roller should not be dripping wet but should have a good amount of solution
10. (See the notes section following for a detailed explanation of the coating procedure.)
11. Begin rolling the silver solution on to the paper in one motion. Work the solution over the paper surface. Roll out the silver until the solution is beginning to go matte. A slight sheen is ok. Pay particular attention to the coating edges as in our experience they frequently seem to not get enough coating.

12. Very large prints, over 11x14 inches may benefit from a second coating. After some dry time, the paper does not have to be absolutely dry, you may do another light coating of silver. The second coat will not need as much silver nitrate solution as the first.
13. Park your roller and tray in a dark box or similar unlit place. You may use it again without washing so keep the roller and tray out of the light
14. Dry the albumen paper you just sensitized. Depending on the humidity in your room it may take as long as ½ hour or longer to dry. In Santa Fe, it usually dries in less than 10 minutes. A gently low heat from a hair drier can finish the drying. Do not get the paper hot. Only let a soft warm wafting of air to hit the print.

NOTES ON ROLLER COATING

- When you are starting you will need a clean dry roller. **Do not pre-wet the roller with water!** You will need to get the roller *evenly* dampened with the silver nitrate solution before you start. The trick to getting an even smooth coating without “skid marks” is to completely cover the paper with solution that is not sloppy wet but shiny wet. Do this in long even fairly rapid strokes. First going in one direction and then in the perpendicular direction. Make sure you do not have large open spaces that are uncoated. Once coated, continue rolling on the coating until the paper starts losing its shine and is begging to go matte. Near the end you will start to see slight roller marks. Continue till you no longer see them. As you progress use lighter pressure on the roller.
- Hold the paper in a dim light and let it reflect off the surface. you see dull areas in the paper, you did not roll long enough or put enough solution on when coating
- As one would suspect, the larger the print size the trickier the coating becomes. If the roller is wet with water in some place and silver nitrate in others, the water will penetrate the albumen leaving marks. Do not “dampen” the roller first with water. The water will dilute the silver nitrate and you are likely to have uneven silver distribution on the roller.
- Silver nitrate instantly hardens the albumen. The higher the percentage of silver nitrate the longer the silver nitrate solution will take to penetrate the albumen. Water sinks right in and effects the surface by making it matte., even a slight amount of water dampness from the roller may leave marks. This is why we recommend you start with a dry roller. Less than 10% silver nitrate solution will sink into the paper this is not good and produces what are called “wooly” prints (whatever they may be!) in the classical literature.. Ideally you want a thin coating of silver on the very top surface of the albumen.
- The more silver nitrate you coat on the paper, to a point, the more it will increase the paper print exposure speed. This will also change the print color to a cooler tone. A too thin coating of silver may not give a good black. Once you determine the look you want it is probably best to note how much silver to put on per square inch of paper.
- Many factors affect the look of your print. The toner you use, the length of time the print is in the toner, your exposure unit, and your technique you use for silvering the paper, all have an effect on the look of the print. These variables allow the photographic artist many ways to achieve different looks and styles to their prints that are unavailable to other processes.
- I prefer using a new fresh roller for each printing session. You can reuse the roller if you wash very well after the print session and do not let light strike it causing a darkening of the silver nitrate on the roller. Eventually the roller will start to deteriorate. A new roller will cost much less than the gold, silver and paper you are using and you can use the roller for at least one session. Factoring in the cost of a new roller for each printing session still makes the system far more efficient and far less expensive than using the tray floating method for silvering.

- If you are using plastic sheets to tape the paper to, you can move them to a dark place to dry with the print taped down. Wipe off the sheets with a damp paper towel before coating your next print. Make sure the plastic or table top is clean before coating. You will need to roll over the edges of the print and if you pick up exposed silver from the edges of the plastic it will ruin your print.
- Do not leave the roller out in the light. Exposed silver on the roller will stain any print you are coating. It will also stain anything you lay in on! A good system is to lay in on a piece of plastic wrap or a piece of trash bag in a lightproof box. This way you can use it without washing for your next print.
- After the printing session rinse out the roller with warm water and with a gloved hand squeeze out the water. You will need to use four or five thorough rinses. A final rinse in distilled water is recommended. Soak off the remaining water with lint less paper towel. The roller over time and usage will eventually turn brown and start to crumble and deteriorate from the silver. You will need to start with a new roller.
- Historic literature says to soak blotter paper in a saturated sodium carbonate solution and let dry. Silver albumen paper can be stored interleaved in the blotters for several days without fogging. Though we have not tried it, it has worked with other processes. Freezing in air tight plastic tubes should work well.. We have used 4 inch irrigation pipe with end caps for storing sensitized carbon tissue. Cut the pipe to size. Cheap, a 10 foot length is about \$8.00.
- Heat can be a culprit. We coated one recently in the lab when in was 95 Deg F. I think I may have done too much rolling and the surface albumen broke down. If it is really hot, be gently with the rolling.

EXPOSING

Place the dry sheet of silvered albumen paper in a vacuum or print frame and expose as you would any contact printing process. Earlier sources recommend blue sky exposure instead of bright sunlight and say the difference is quite different in effect. How so? I am not sure at this point but I am using my exposure unit at the mid level intensity setting and the Olec 5000 watt unit takes 250 units and about 3 minutes to expose a print..

NOTES ON EXPOSING

- It is a POP print out system so one can examine the print. We use a 1 mil plastic cover for our negative and the material is called Krystal Seal to protect our negatives. A quality printing frames such the ones we sell at Bostick & Sullivan are excellent for examining POP prints during exposure.
- Any exposure unit for alt process printing is excellent. Sunlight is as well but traditionally the frame was aimed at blue sky and not directly at the sun.
- Expose until the print is slightly darker than desired for the finished print. This may vary considerably with the toner you choose to use. We recommend the B+S thiocyanate gold toner because it pretty much leaves you with a print that is about the same as it came out of the print frame. Once you have mastered the process then move on and explore toners to your hearts delight.

1ST WASH.

With the lights still low plunge the print into a tray of fresh water. You still have gloves on! Immediately move the print to a fresh tray of water or quickly replace the water in the tray. I have not confirmed this but earlier works say a print left in the first wash for too long will stain.

NOTES ON WASHING

- Unless you have distilled water piped into your house you should see a slightly whitish florescence in the water. This is from the chlorine in the water reacting with the unexposed silver nitrate and creating silver chloride.

- Early works call for six 2 minute dump and fills for a complete wash. You need to dump and fill or run water until no hint of silver chloride is present. The unexposed silver chloride will react with the gold in your toner and waste precious gold. At last notice, water was cheaper than gold.

TONING

Prints will need to be toned. This insures permanence and renders more pleasing colors.

Drain the print and place in (preferably) a flat bottom clean tray.

Add the toner and rock the tray gently to move the solution over the print. After a minute or two you should start to see a color shift. You should go at least 5 minutes but you may go as long as 15 minutes or more. The final color will depend on how long you tone. The only real way to know to experiment and try various times.

Toning is an art and a career in itself. Check the Appendix for some classical documents on albumen toning.

NOTES ON TONING

- It is not a bad idea after exposure to trim the print so as not to have a lot of black margin. Big black margins will use up a lot of gold.
- Early literature warns of using too strong a gold solution in the toner and toning for too long.
- Each toner is different so the photographer will need to work out the details for their particular style of printing.

2ND WASH.

Rinse in two one minute dump and fill trays of water.

FIXING.

Use a 15% sodium thiosulfate solution, that is 150 grams per liter of water. Fix in a two bath system for 5 minutes in each bath. You should see a quick change in the color and density. Do not be alarmed if the print becomes much lighter. It is amazing how much they darken down when drying.

NOTES ON WASHING

- As history has taught us that fixing and the final wash are critical steps in the making of an albumen print. Incomplete fixing, exhausted fix and incomplete washing are the principle causes of albumen print fading and staining.

3RD AND FINAL WASH.

A thorough 15 minute wash is necessary. This is a silver print and washing out the fix is imperative. I have seen vintage documents saying "leave under the tap for 3 hours." (!) Water is a precious commodity in Santa Fe. Some authorities call for a distilled water soak as a final step. We have not seen any benefit from this procedure.

HANG TO DRY.

All the various traditional methods of drying work. However, do not try to dry in a drymount press or all you will get is a melted print.

FLATTENING

The heavy Stonehenge paper dries flat compared to thinner papers. We flatten prints in a dry mount press after drying. There may be a slight darkening of the prints but this has not been confirmed by measurement. It may only be a perception issue as flat prints look nicer.

Reilly's studies at RIT in the early 80's warned against using presses on historic albumen prints as there could be, and usually was, an instant browning of the print.

MATTE PRINTS

I have developed a quick and easy way to make lovely matte prints using the standard Bostick & Sullivan Stonehenge albumen paper. This means you can make matte prints without having to buy a

special paper. It also means we don't have to make and stock two kinds of paper. The material used is silica. This is quartz and is about as archival as one can get.

The process involves a quick dry rolling of fumed silica powder over the paper before silvering. Have the paper taped down and ready for the silvering but before rolling the silver do this:

1. Wear a dusk mask. The silica can be irritating but is not carcinogenic or harmful.
2. Prepare a new dry roller. You may dedicate a roller for this task. After use store it in a Ziploc™ bag.
3. For an 10 x 12 sheet place about ¼ to 1/2 teaspoon or approximately 2-5 ml of fumed silica on the center of the paper.
4. Roll it out on to the paper making sure that the edges are well covered.
5. After rolling the silica dust the paper with drafting brush, a piece of paper towel, or a microfiber cloth taking care to wipe the edges of your support as well.

That's it!

NOTES ON MATTE FINISHING

- The rolling process is a bit odd while doing it as you use a dry roller and the silica seems to disappear during the rolling. Your instincts are that the little pile of silica should move around but it is actually disappears rolling into the paper.
- The first time you use a roller you will need to use more silica to "charge" the roller. It is a very matte surface and it is almost velvet like. It sort of reminds me of one of my favorite papers I used in the early 1960's called Gevaluxe Velour that was made by Geveart back in the 50's and early 60's.
- You may want to experiment with differing amounts of silica for square inches of paper. There seems to be maximum amount which gives a very velvet like finish which is not at all like using a matte spray. In our trials lesser amounts appear to give less matte but we have not explored this aspect in detail.

FINAL NOTES

BLACK SPOTS

Apparently the curse of albumen printing. While we were working out the details of albumen printing we were periodically finding black spots on the prints. Of course they always seemed to migrate to the most critical white spot in the print. We finally traced this down to our self sharpening roller paper cutter. Self sharpening means it is constantly grinding the cutting edge of the wheel to keep it sharp!

Black spots happen a lot in platinum and palladium printing as well. In Pt printing we have discovered that a steel rule and a razor knife sheds iron particles and we once had a customer who traced his problem to a vent fan above the cutting table that was grinding itself to death. We feel that a aluminum rule and a steel cutter is likely ok.

STAINS

Thiosulfate fix is the culprit in many cases. Fingers contaminated with fix can migrate all over the place.

Rust is another problem. We have found that the roller handle will sometimes be corroded by the silver nitrate. Remove the roller from the handle and use a piece of steel wool to remove any corrosion. We also spare the roller frame with Krylon. Whether Krylon helps is not known as this time.

BLOW DRYERS

We suspect that too much heat can cause fogging. Use with great care.