

Brief Outline of the Photogravure Process

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Foreword:

This outline gives you a brief step by step summary of the Fox Talbot / Carl Klic method of dustgrain - copper plate photogravure the way I use it. I was written to accompany my workshops and classes on this process I frequently teach. It is brief in that it does not go into the reasons and purpose for each of the steps, something I talk about in my classes. It would be difficult for any beginner to learn this process from just reading this outline. The most difficult aspects of the process are the skills in handling the materials, as well as the etching process, something that can best be learned from observation and practise.

I am planning on producing a DVD-Rom on the entire process of photogravure, which I will make available through my website www.lotharosterburgphotogravure.com. I hope to have it finished in the summer of 2007.

Terminology:

In the last decade “**photogravure**” has had an enormous comeback and has enjoyed increasing popularity. An internet search will come up with dozens of results. Upon closer look however, the term photogravure describes a multitude of techniques. It starts with the fact that in latin languages (Italian, French etc.) ‘*photogravure*’ translates to the word of ‘*photoetching*’ in english, referring to a halftone, not continuous tone image. In German, French and Italian, the word for photogravure is heliogravure.

Recently the development of various new photographic polymers (Image-on; Solar plates...) has given rise to “**polymer photogravure**” techniques, frequently just called “photogravure”. In most cases they only approximate a true continuous tone with the use of the fine halftone dots given by the newer generation inkjet printers. Technically those are still just photoetching processes. The true continuous polymer photogravure techniques use a continuous tone film positive in the making of the plate and an exposed aquatint screen. Of what I have seen, the latitude of values in these prints however seems greatly limited over that of a copper plate photogravure. The plates are soft polymer plastic, which can not be reworked, nor hold up to a larger edition without damage. I expect more new developments and improvements in this field in the future, which could make sense for certain types of images without any loss. It is however doubtful they will ever replace the traditional photogravure, rather broaden the possibilities available to printmakers and photographers that range in appearance, cost and quality.

The term “**continuous tone**” has started to blur in the last decade as well. Continuous tone refers to a gradual change in values from black to white, much like an analog sound recording would record the actual shape of a sound wave. More and more people nowadays refer to anything that appears to most people’s naked eye as continuous tone as such, even if it is only an extremely fine halftone. A look through a magnifying glass will in most cases clear the situation. Just as a digital recording is always only an approximation of an analog recording, digital photography is getting better and better at believably imitating a true continuous tone, but will never .

In almost all other photographic printing techniques the tonal values are created by smaller or larger dots of the same tonality which are called **halftones**. They are used in the traditional halftone screens in newspapers, catalogues, magazines, postcards, posters, art books and many more areas. Modern halftones can also be created by the accumulation of equal size small dots as used in the stochastic screens of image setters and inkjet printers. The image appears lighter or darker depending on how much white paper shows or how much area is covered by ink, while the thickness of ink is the same in the shadow areas as in the highlights.

1) Sensitizing of Gelatin:

Timing:

- Allow approx. 5:00 hours total time from start of setup to wrapping dried gelatin; 1:00 to 2:00 hours for the sensitizing process, the rest drying time plus 15 min. wrap up. After approx. 3 hours drying time, depending on relative humidity and airflow, use or store tissue paper for future use. To use the waiting time during the drying of the gelatin efficiently, do the darkroom work at this time. Do not dry gelatin for an excessive amount of time as it becomes stale over an extended period of time in room temperature.

Space Requirements:

- Room with yellow safe light
- large sink in room with subdued light

Before:

- Refrigerate sensitizing solution of 3.5% Potassium Dichromate (Store in Refrigerator)

Set Up:

- Cut gelatin
- Clean a piece of Plexiglas of sufficient size for each piece of gelatin to be sensitized with glass cleaner and alcohol
- Gloves
- Stiff squeegee
- Foam brush
- One clean tray for sensitizer, another one as support for Plexiglas
- Timer
- Paper towels
- Scotch tape (always use tabs)
- Funnel
- Fan
- Black Plastic
- Refrigerator to store dried gelatin tissue paper and sensitizing solution. I do not recommend to mix food and chemicals in the same refrigerator!
- Fill one tray with sensitizing solution, place another one upside down as support for the Plexiglas to the left of it (right for left handed people)

Step by Step:

◊ Wet gelatin is barely sensitive to light, so it can be done under subdued light in normal room conditions. As it dries it becomes sensitive to ultraviolet light. Sensitizing can be done under bright yellow light. A yellow "bug light" is a good safe light. I have frequently done this under existing room lights, but the gelating needs to dry in the dark.

1. Clean a piece of Plexiglas, bigger than the tissue, with windex. Use alcohol if there is any tape residue.
2. Fill a clean tray with refrigerated sensitizing solution.
3. Place roll of gelatin paper into the solution. Hold down at the edge and, with the help of a foam brush, roll it back and forth a few times until it relaxes. Start the timer once it is fully immersed.
4. Put a bead of solution on the Plexiglas after 2:30 min.
5. After 3 minutes pick the gelatin slowly out of the solution, letting air bubbles and debris run off. Place one edge of the gelatin in the bead and roll it gelatin side down onto the Plexiglas.
6. Squeegee in all directions with firm, but gentle strokes. Catch the runoff in the tray.
7. Dry the back with paper towels. Make sure it is completely dry: The back should look dull when held against the light
8. Tape the corners down with Scotch tape to prevent drying marks through premature popping off the Plexiglas while drying.
9. Lay flat in dark place to dry. A fan might speed the drying process. Rotate Plexiglas occasionally to aid even drying. In humidity under 40% the gelatin will dry too fast, curl up into a tight roll and might even crack. Under those conditions increase the humidity by mopping the floor and placing a wet towel in front of the fan. I have built a drying cabinet for this purpose.
10. Filter sensitizer through a "Bounty" paper towel back into the bottle and store in the refrigerator for future use.
11. Depending on the humidity, the gelatin is dry after 2-3 hours, and comes off easily from the Plexiglas. Wrap it up in black plastic to store in a refrigerator, or let it sit for another hour before exposure, to let the moisture equalize throughout the tissue. Never dry it over night.
12. Use sensitized gelatin at room temperature within 8 hours, refrigerated within 7 days, and frozen within 3 weeks, before it turns stale. However, I have used 6 month old, merely refrigerated gelatin with good results.
13. Take refrigerated gelatin out at least one hour before unwrapping it to avoid damage by condensation.

After:

- Remove gelatin tissue paper from the Plexiglas and cut off wet corners.
- Let the gelatin cure for another hour before exposure.
- The sensitized gelatin will be good for about 8 hours in room temperature, for 3 to 6 weeks refrigerated and 3 to 6 month frozen. For storage, wrap gelatin tightly in light and airtight black plastic and tape it shut.

Break: 1:00 hr - 3 month.

- You can continue working at any time as long as you use the gelatin before it turns stale. Always return unused portions of sensitized gelatin to the refrigerator as soon as possible.

2a) Continuous Tone Film Positives from Negatives in the Darkroom:

Timing:

- Allow 2:00 hours: 0:30 for setup, 1:00 for darkroom work, 0:30 for cleanup.

Before:

- Mix Dektol , Selektol Soft, or other developers.
- Mix Fix

Space Requirements:

- Darkroom with Kodak A1 Safe light, Thomas Duplex Safe light with closed louvers or equivalent

Set Up:

- Negative
- Film (Arista APH, APHS, Aristatone, Agfa, Bergger BPSP...)
- Scissors
- Gloves
- Fill 4 Trays: (1) diluted developer, (2) water as stop bath, (3) fix, (4) water for rinse.
- Enlarger with appropriate lens
- Timer
- Lint cloth, fine soft brush and compressed air*
- Dodging and burning tools*
- Stouffer scale and light box or light table, or alternatively a densitometer
- Place to hang film to dry
- Funnel

Step by Step:

- ◇ You can use a continuous tone film and developer to make your positive; however, it is hard to get in larger sizes and is very expensive.
 - ◇ It is cheaper and more efficient to use a halftone-line film like Kodalith, and stretch its limits for your purpose.
 - ◇ For almost every use I have had good experience with Arista APHS or APH, developed in Kodak Dektol or Selectol Soft diluted 1:4 to 1:6 or even 1:10 depending on temperature and the nature of the negative.
 - ◇ The market of ortho chromatic continuous tone films is constantly changing with new brands appearing and disappearing all the time. Possibilities are Bergger BPSP or Aristatone (recently discontinued), developed in Dektol straight to 1:3.
 - ◇ Use a proper safe light like Kodak A-1 safe light while handling the film, and always close the box.
 - ◇ Make a stepped exposure test to determine your exposure time.
 - ◇ Expose for the highlights, develop for the shadows. Once you determine the amount of exposure you need to get your highlight details, adjust the development time to achieve the appropriate density range.
 - ◇ Keep in mind that a lith film is made to yield extremely high contrasts (0.0 - 2.6 density) of which you will need only a fraction. To achieve this you will have to under develop your positive. If your image has the full tonal range from deep black to brilliant highlights, keep your film positive in a range from step #2 to #11.
 - ◇ Keep the temperature at 65°-75° F and agitate the tray as constantly as possible, to get predictable results.
1. Quickly place film face down in developer, agitate vigorously until film is completely covered, flip it over that emulsion side faces up, and agitate until development is complete. (start with 1 minute development time)
 2. Stop by dragging the film through a tray of water.
 3. Fix until white fog has lifted off the film base, about 30 sec to 1 min.
 4. Check the densities on a light table or with a densitometer. (They will increase slightly when film is dry.)
 5. Fix any positive you want to keep for another 5 minutes.
 6. Rinse with water for 5-10 minutes. A drop of photoflo in the end helps avoid drying marks.

After:

- Hang positive to dry and store in glassine envelope or plastic sleeve.

Break: 0:00 hrs. - infinity.

- A well fixed film positive will last forever. You can prepare all your film positives for later use at any time.
- Store your film positive in a clean, dry environment.

2b) Digital Negatives for Continuous Tone use:

- ◊ Using a high resolution scan (300 ppi at output size) and a photo quality inkjet printer (like Epson 2200) printed on Pictorico OHP media in best printing resolution as described by Dan Burckholder (see appendix) has become a viable new alternative.

Timing:

- Allow at least 1:00 hours if image is already scanned, an additional 30 min. for scanning, more to remove dust introduced in the scan.

Space Requirements:

- Computer with Adobe Photoshop CS, good scanner and 7 color Epson Photo Printer.

Before:

- An image shot with a digital camera or from the internet does not have enough information for a good photogravure
- A negative can be scanned at a high enough resolution to render the highest detail possible

Set Up:

- Epson photo printer (Epson 2200; 7600 or 9600; or the newer generation 7 or 8 color Epson photo printers with Ultrachrome inks such as Epson 4000, 7800, 9800 or R800)
- Pictorico OHP film

Step by Step:

1. Scan your print, slide or negative at a high enough dpi that the resolution of the final image size is 300 ppi. For example a slide or 35mm neg. at 1.25 x 1" needs to be scanned at 2400 ppi to print a 8 x 10" positive.
2. Open your image in photoshop.
3. Under "Image"/"Image Size" "Constrain Proportions" needs to be checked, and "Resample Image" unchecked. Enter 300 under "Resolution". If image size is larger than needed, check "Resample Image" and enter the final image size. When you are done the file size should be about 20.6 mb in RGB mode.
4. Under "Image"/"Mode" select "Grayscale" and click "OK" to discard all color information. The file size should now be 6.9 mb.
5. Fix all 'problems' such as dust using photoshop tools.
6. Under "Image"/"Rotate Canvas" select "Flip Canvas Horizontal" to print a reversed image on the film.
7. Select "Image"/"Adjustments"/"Shadow/Highlight", you can open up the shadow and increase the separations without touching the mid tone or highlights (unlike the application of curves would do) I have made good experience with a setting of Shadow amount between 10 and 15, and highlight amount between 5 and 15, but this will depend greatly on the image.
8. I have made various printing tests of a grayscale (0-100% in 10 increments), and compared the densities to a stouffer scale to come up with a perfect curve. The image will print lighter than it appears on the computer screen, especially in the mid range. A 50% black in the original image should match a step 6 on the stouffer scale, 60% should match step 7 and 90% step 10, 100% step 11... I saved that curve in the presets, and apply it every time. Select "Image"/"Adjustments"/"Curves". Increase the output amount in the highlights to reduce the risk of single printing dots showing in an open highlight area. An amount of 10 should be good.
9. Load a sheet of Pictorico OHP into your printer with emulsion side facing correctly. The film is notched at a corner like conventional film (top right when emulsion is facing you).
10. Pictorico OHP takes ink very well, but will not go black easily. A fully saturated film will have a density equivalent of about step 11 on the stouffer scale, a perfect range for photogravure. Make tests with your printer, as it may differ from the one I use, and printing technology changes constantly.
11. **Print** using the highest resolution (2880dpi), high quality vs. speed, set the media for high quality glossy photo paper. Under "color controls" I print with color controls "on", using Gamma 1.8 in "photorealistic". Save your printer settings to print the same way every time!
12. Printing will take a while, but can be left unsupervised. Additional print requests can be sent to the printer, which will start them as it becomes available again.
13. I recommend making tests on your printer to determine it's parameters. I have seen quite different results from the same printer model using the same settings as described above.

3a) Preparation of the Film Positive for Exposure:

Timing:

- ca 15 min.

Set Up:

- Strips of Goldenrod. Alternatively brown craft paper or equivalent can be used.
- Scotch Tape

Step by Step

1. Place the dry film positive face down on your clean and dry work surface.
2. Cut Goldenrod in thin strips, one of them wider to accommodate space for the stouffer scale.
3. Tape the strips of Goldenrod to the top of the film using 2 pieces of Scotch tape each.
4. Attach the wide strip on the side of the film that provides the most access space on your copper plate, and cut a window 1/2 x 5" for the stouffer scale.

3) Exposure, Adhesion and Development:

Timing:

- Allow 2:30 hours: 1:00 for setup and curing of gelatin, 1:00 for exposure, adhesion and development, 0:30 for cleanup. All steps in this part have to be done consecutively.

Space Requirements:

- Room with yellow safe light and exposure unit
- large sink in room with subdued light

Before:

- Remove package with sensitized gelatin from refrigerator 1 hour before you want to start with your first exposure

Set Up:

- Mask positive
- Stouffer scale
- Exposure unit
- Timer
- Scissors to cut exposed gelatin to size
- Gloves
- Copper plate with beveled edges
- Rag, whiting and ammonia to degrease plate
- Transfer solution, a mix of 50% isopropyl alcohol (at 99%) and 50% water
- One clean tray for transfer solution, another one as support for plate
- Stiff squeegee
- Foam brush
- Paper towels
- Sharp knife for emergencies
- Hot water
- Dry trays for alcohol
- Two solutions of isopropyl alcohol: one previously used one for presoak, one fresh ~91%
- Paper towels
- Funnel

Step by Step

1. Prepare your piece of copper (.040 thickness), which should be bigger than your gelatin, scratch free, and polished. (Some people like to save money by using a lesser grade of copper. Thinner copper might need to be shimmed during printing. Unpolished copper will carry a plate tone which will obscure any subtleties in the highlights. In some cases though it might be acceptable to incorporate scratches in the plate and use the back of used or failed plates.)
2. Brighten the plate with salt and vinegar (if necessary) and degrease it with a paste of whiting and ammonia; the rinse water needs to run off in a sheath and should not bead off. Rinse well and dry off immediately with paper towels.
3. Set up two trays, one inverted as support for the plate, the other filled with transfer solution (50% alcohol / water mix)
4. Take a sheet of gelatin out of its protective black plastic envelope, and place the prepared film positive emulsion side (goldenrod up) on top. You may use 2 small pieces (no more!) of scotch tape to keep film in place. Place this sandwich with film towards the glass in your vacuum or contact frame. Place Stouffer scale in the provided space.
5. Expose gelatin with UV light source. The UV exposure time is the same for all films with approximately the same density range. Test you unit once before first using it for photogravure to determine the ideal exposure time: in an exposed and developed Stouffer scale all steps from 1 to 12/13 should be clearly separate, but not more.
6. IF AN AQUATINT SCREEN IS USED INSERT INSTRUCTIONS UNDER 4a HERE.
7. Place exposed gelatin face down in the tray, turn it over, brush off the surface to remove all bubbles and impurities. After about one minute, or when the tissue has relaxed completely, lift it out of the transfer solution and roll the gelatin onto the plate. Starting within 1/2 an inch from the edge in the middle, squeegee the gelatin from all directions onto the copper plate and dry it with paper towels until the surface moisture is dried off. Place plate away from any water.
8. Fill a tray with 100° -110° F water.
9. Place plate in water, brush off air bubbles, wait for about 30 seconds and carefully start peeling the backing paper off. Wear gloves, as this releases potassium dichromate into the water. To help getting a hold of the backing paper with gloves, push one corner slightly towards the center of the gelatin and grab the loose corner. If the water is too cool or the gelatin was overexposed (or if you forgot to use the safe edge), all or part of the gelatin might peel off, and you would have to expose a new one.
10. Keep rinsing the plate for at least 6 minutes in 100° - 110° F water. You may help the development by gently moving cotton balls in circles over the plate.
11. Cool the Plate off with cold water to harden the gelatin.
12. Let the water run off, dry the back of plate and tray and pour ~ 90% Isopropyl alcohol over the plate in the tray. To extend the life of the alcohol a more diluted (older) pre-bath may be used.
13. Keep the plate covered with alcohol for at least 6 minutes with occasional agitation.
14. Take the plate out, drain, lay flat on a blotter or towel, and quickly dry the plate with some soft (Bounty) paper towels. Uneven drying will result in drying marks which will etch unevenly.
15. Filter the alcohol through a paper towel back into the bottle. Replenish it regularly with some fresh 99% alcohol.

After:

- Store plate away from harms way (for short periods leaning against a wall with back to room, for longer periods in flat file, wrapped in tissue paper or in old film box.

Break: 0:00 hrs. - 6 month.

- The plate can be aquatinted right away or months later.

4a) Aquatint Screen (Exposed Aquatint):

1. Timing:

- Adds ca 15 min. to Step 3

Space Requirements:

- Same as 3

Set Up:

- Aquatint Screen

Step by Step:

Insert this step at 3-6 during exposure!

1. Right after the exposure of your film positive, replace film with the aquatint screen. (again it is important to expose it with the emulsion side towards the gelatin)
2. Expose the screen for 110% of your base exposure.
3. Two screen exposures may be necessary (as with the screen commercially available through Renaissance Graphics)
4. Proceed with step 3-7

4) Aquatint (Rosin - Dustgrain):

1. Timing:

- Allow 1:00 hour.

Space Requirements:

- Printshop: aquatint area

Set Up:

- Grind lump rosin
- Check aquatint box and fill if necessary
- Cardboard or Plexiglas to set plate on
- Commercial hot plate, possibly with lid or blow torch and metal rack to melt aquatint
- Magnifying glass
- Flashlight

Step by Step:

◇ The relationship between the coverage and melt is important, but there is not just one right way. The ideal is a perfectly melted aquatint with a 50-60% coverage. An aquatint of slightly more or less coverage or melt will work as well. The further off the aquatint is from the ideal, the more problematic it will be to get a good plate. In general, a light or under melted aquatint will result in weak shadow details as well as in the danger of over bite and fast wear of the plate. A too heavy coverage or over melt will result in a coarse, grainy image with an all over loss of detail. The etch with a light, fine fall will generate deep blacks in a much shorter time than one with a heavy fall. To get the perfect aquatint will require either lots of luck or years of experience in etching as well as a good judgment.

1. Place one or more plates on a tray (cardboard etc.), at least 2" bigger than any edge of the plates.
2. Crank the aquatint box handle to stir up the fine rosin dust. Wait for about one minute. Slide tray into aquatint box.
3. The final coverage of the melted rosin should be 50-60%. As the dust melts, it shrinks visibly, it needs to look fuller in the dusty state. Handle the plate very carefully at this point to not mess up the dust.
4. After enough rosin has settled on the plate melt it on.
5. Watch as the rosin melts. Melt the aquatint until the last frostiness disappears on the thickest areas of the gelatin. When looking across the plate from the same level with the aid of a flashlight shining across the plate like a setting sun, the sparkling of the dust has to disappear.
6. Take the plate off the heat source as soon as the last frostiness disappears to avoid over melt.

After:

- Store plate away from harms way (for short periods leaning against a wall with back to room, for longer periods in flat file, wrapped in tissue paper or in old film box.

Break: 12:00 hrs. -6 month.

- The plate should rest until the next day but also can be etched months later.

5) Etching:

Timing:

- Allow 2:30 hours: 1:00 for setup, 1:00 for etch, 0:30 for cleanup.

Space Requirements:

- large sink

Before:

- Mix ferric chloride solutions of 46° Be; 45° Be; 44° Be; 43° Be; 42° Be; 41° Be and 40° Be and store in labeled plastic bottles. Let them sit at least 24 hours before first use. These baths are good for many plates.
- Check Beaume of solutions with hydrometer.
- Block out open plate areas around image with asphalt, hardground or stop out varnish and let dry.
- Block out back of plate with liquid hardground, asphalt or contact paper.

Set Up:

- One etching tray for ferric chloride
- Gloves
- Tape masking tape handles on plate
- Cotton to remove bubbles from surface
- Funnel
- Stop watch or timer
- Paper towels
- Paint thinner to remove hardground
- Solution of salt, vinegar and water to remove gelatin

Summary:

- Total etch time within the image area should be 30 min. depending on the type aquatint. Shorter for finer or sparser aquatints, longer for heavier or over melted ones.

Step by Step:

- ◇ The gelatin resist is impermeable to ferric chloride. Water is needed to soften the gelatin enough for the ferric chloride to penetrate the gelatin and start etching the underlying copper.
 - ◇ At least 3-5 different solutions of ferric chloride in different saturation are needed. The saturation or specific gravity is measured in Beaumé (Be). Most commonly needed are solutions in 45° Be, 44° Be and 43° Be, sometimes also 42° Be or even lower. (For a screen aquatint it might be higher.)
 - ◇ A ferric chloride solution of 48° Be would be completely saturated, and would have no unbound water in it which could penetrate the gelatin. At 45° Be there is just enough water in the solution to penetrate the thinnest areas of the gelatin and start to etch the underlying copper.
 - ◇ To keep the etch moving gradually into the lighter areas, which have thicker gelatin, the ferric baths need more and more water to penetrate the thicker gelatin. The 43° Be and the 41° Be solutions will etch the middle and the light tones.
 - ◇ Etching the plate too long in one bath will compress the tones which are already etching; moving on too soon will make the image look flat.
 - ◇ The temperature of the etchant should be between 65° and 75° F.
1. Check and adjust the beaumé before each etching session with a hydrometer.
 2. Block out the back of the plate and the areas around the image with hard ground or asphalt, and let it dry.
 3. Cover "pinholes" in the gelatin with a fine point sharpie pen.
 4. Tape handles on the plate with masking tape.
 5. Place plate in dry tray.
 6. Pour the 45° Be Ferric slowly over the plate. Brush off surface with a soft piece of cotton to dislodge air bubbles.
 7. The etching will start soon in the densest steps of the Stouffer scale, but wait to start the timer until the darkest part of the image starts to etch. At a density of 1.4, it should start at step 10 or 11.
 8. Agitate constantly and watch the progress of the etch in the image and the Stouffer scale. (The etching parts of the plate will change from a shiny orange color to a dull gray)
 9. Make notes of the time each step of the Stouffer scale starts to etch. The progress should be steady, with steps starting at fairly equal intervals.
 10. The total etch time should be between 20 and 30 minutes for plates with a 40 - 50% aquatint coverage and between 25 and 40 minutes for plates with a 60 % coverage. A better coverage gives better shadow details
 11. In high or low humidity the etch will progress faster or slower. This has to be adjusted for by keeping the plate in the higher beaumé longer or progressing faster. In some cases a 39° Be might even be needed.
 12. Don't pull the plate out too early, even if the image seems lost.
 13. Rinse the plate off with water after the etch is completed and wash the gelatin off with salt and vinegar.

After:

- Clean plate with salt and vinegar and whiting. If you are not planning to print right away, use some metal polish which can be diluted with paint thinner to avoid severe tarnish from ferric residue.

Break: 0:00 - infinity.

- The plate should be good forever.

6) Printing:

Timing:

- Allow at least 2:00 hours: 0:30 for setup, 1:00 for printing, 0:30 for cleanup.

Space Requirements:

- Printshop, press area

Before:

- Soak printing paper, drain and wrap in plastic over night

Set Up:

- Put (photogravure) blankets on press and set pressure
- Blotter or towels and rolling pin
- paper tabs (folded metrocard, phone card etc.)
- Paper towels
- Ink
- Palette knife
- Glass palette
- Inking card or brayer
- Tarlatan
- Rag
- Whiting
- Mineral Spirit and Alcohol
- Drying rack or print dryer*
- Invisible glove*

Step by Step:

1. It is best to make a damp pack with the paper a day ahead of printing. Soaking in a water bath is acceptable for proofing, but is not ideal.
2. One 1/8" thick pusher, and one or two 1/16" sizing catchers, finely woven woolen felt blankets are placed on the press bed. The thicker blanket should be next to the roller, the thin blankets on the press bed.
3. Set the pressure so that all paper texture is smoothed within the print impression.
4. Soften the tarlatan. Bunch it up behind the cleanest area and pulled tight, that the wiping surface is a firm "cushion" with a smooth surface.
5. Remove some ink from the can by skimming the ink off the top. Place it on a glass sheet towards the back of your inking table.
6. Ink up your plate at the front of the table. Pick up a good amount of ink with your inking card and place it within 1/2" of the far edges of your plate. Lay down all ink in one spot, holding the card in a low, almost horizontal angle towards the plate. While slightly pushing downwards drag the card in a short stroke towards yourself. Go back and set the card vertically into the far edge of the ink and drag it slowly with slight downward pressure across the plate. Repeat and turn the plate to cover all areas. Return any unused ink to the center of the ink pile on the palette.
7. Tarlatan in a small circular pattern to remove the remaining ink in surplus. Stop when you see your image quite clearly, yet through a thin cloudy layer of ink.
8. Hand wipe the plate on the edge of the wiping table. Low heat will soften the ink if necessary. Wipe with fast broad strokes, but no pressure across the entire plate using the palm of your right hand. Wipe straight across the plate directly onto your left hand, which is draped with a rag, stopping the plate from being brushed onto the floor. Use whiting only at the end and only if necessary.
9. Blot all surface moisture off the paper before printing.
10. Position paper on the press, and catch edge of paper under roller.
11. Lift paper up over the roller, and place plate in position.
12. Keep blankets and paper snug around the roller, and crank press slowly!
13. Lift blankets on other side, and lift paper off from a corner, and inspect.
14. Re-ink for another print, or wash plate with paint thinner or mineral spirit after printing for the day.

After:

- Clean plate with paint thinner twice and wipe off with some alcohol when you are done with printing. Protect with some hardground and store in a dry place for prolonged periods.

Break: 0:00 = infinity.

- The plate should be good forever.

* - not essential

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- Kolb, Gary P. *photogravure: a Process Handbook*. 1986. Carbondale and Edwardsville: Southern Illinois University Publication. ISBN: 0-8093-1252-2
(Too scientific and complicated for beginners. Useful in some areas, wrong in others)
- Sacilotto, Deli. *Photographic Printmaking Techniques*. 1982. New York: Watson-Guption Publications.
ISBN: 0-8230-4006-2
(Comprehensive, but short chapter about photogravure. Out of print)
- Osterburg, Lothar . *The Klic/Talbot Dust Grain Aquatint Photogravure Process*. 2002, New York. Self published worksheet:
photogravure@earthlink.net

Note: The above literature is varied in its approach to the photogravure process, and may differ greatly from the way I describe it. As in many printmaking techniques there are many ways to a great result. You will have to find your own way that you feel most comfortable with.

Web Links:

For illustrations, links to relevant websites and other information visit my website: www.lotharosterburgphotogravure.com

Suppliers:

- (1) **Fuji Hunt Chemical Corp.:** 1-800-344-1847, for 15 gal Hunts blue label Rotoiron 48° Be. Cat. #: 840363.
- (2) **B&H Photo:** 1-800-947-9954, for photographic supplies.
- (3) **Autotype USA:** 1-800-323-0632, for gelatin paper: *Autotype Rotogravure Pigment Paper GP 35*.
- (4) **Freestyle:** 1-800-292-6137, for *Stouffer scales, Halftone Line film Arista APH*.
- (5) **CG Metal:** P. O. Box 672, Nyack, NY 10960. (914) 358-8364, for *mirror finish and unpolished copper*.
- (8) **Renaissance Graphic Arts:** 1-888-883-3398, for *all etching inks, papers, tools, blankets and etching trays*, (8).
- (9) **Photographers Formulary:** 1-800-922-5255, for *Potassium Dichromate*.
- (10) **Local Drugstore**
- (11) **Local Hardware Store**
- (12) **Pictorico:** www.pictorico.com

Essential equipment you need to do photogravure:

Equipment:

- Darkroom, enlarger and trays. (2)
- Vacuum fame or contact print frame (b)
- Ultraviolet light source (11)
- Yellow "bug" light bulb (11)
- Densitometer (a)
- Stiff Darkroom Squeegee (2)
- Light table (2)
- Timer (2)
- Blow dryer (a)
- Plexiglass, scratch free (11)
- Plastic bottles (brown and clear) (2)
- Glass Thermometer (2)
- Etching studio (full set up: Aquatint box, plate cutter...)
- Woven Etching Blankets: one 1/8" 'Pusher' and one or two 1/16 'Swanskin' (8)
- Hydrometer 39° - 48° Be (8)
- 1 - 6 Etching trays only slightly larger than plate (2) (d)
- Thin, Tall Graduate (1000 ml) (2)
- Refrigerator (access)

Special Supplies:

- Gelatin Pigment Paper GP35 (3)
- 3 gal. min. 48° Be acid free Ferric Chloride (Hunts Blue Label) (1)
- Potassium Dichromate (9)
- Aquatint Screen (8)
- Pictorico OHP (12)

Supplies:

- Darkroom chemicals (2)
- Lith or continuous tone film: (*Arista APH*, *Bergger*) (4)
- Developer Kodak Dektol, D-19 or Selectol Soft (2)
- Paper towels (Bounty !!) (10)
- 99% Isopropyl alcohol (10)
- Copper, preferably polished to mirror finish (5)
- non detergent ammonia (10)
- Salt and vinegar (10)
- Rubber gloves (11)
- Etching supplies (8)
- 21 step Stouffer scale (4)
- Goldenrod or rubylith (4) (c)
- Scotch tape (10)

- (a) Nice to have, but not essential. Stouffer scale will do.
- (b) Might be replaced by a heavy glass plate on stiff clean foam which however may result in a slight loss of detail.
- (c) Could be replaced with brown craft paper or other colored dense paper.
- (d) When etching yourself you can etch in just one tray: change baths by pouring each Beaume back into it's bottle with plate still in tray - holding it by it's masking tape handles - and filling the same tray with the next solution.