

# Van Dyke Brownprints

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[Van Dyke brownprint](#)

on orangey paper (~20k jpeg)

photograph © wendy mukluk



[Van Dyke brownprint](#)

(24k jpeg)

photograph © wendy mukluk



[Van Dyke brownprint](#)

on gray paper (~20k jpeg)

photograph © wendy mukluk



[Van Dyke brownprint](#)

(~30k jpeg)

photograph © wendy mukluk

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## Safety

- These chemicals can be harmful or fatal if swallowed.
- **\*\*Silver nitrate causes permanent stains on skin and clothing\*\***
- Avoid getting chemicals on skin or in eyes.
- Wash in running water if this does occur, and seek medical help immediately.
- Avoid breathing fumes and dust.
- If sensitive, wear mask and gloves.
- Seek medical attention if adverse reactions occur.
- Do not eat or drink while working with chemicals.

- **Wash hands with soap and water when done.**

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## Materials and Equipment needed

- Safety Equipment: An apron and rubber gloves are recommended; breathing mask and goggles for splattering, airbrush work
- A clean surface to work on that can be washed, or put down old newspapers.
- A place for coated prints to dry, in subdued light
- Chemicals: silver nitrate; ferric ammonium citrate; tartaric acid; sodium thiosulfate.
- Measuring cups and spoons
- A container for mixing the solution
- Plastic spoon for mixing
- Eyedropper to put small amounts of sensitizer on paper
- Brushes or glass rods for coating sensitizer on paper
- [Paper](#)
- [Negatives](#)
- [A light source and print frame](#)
- A timer or clock
- 2 Trays, slightly larger than the paper size, and running water
- Masking tape
- Pencil for registration or notes
- A place for prints to dry undisturbed (eg. print rack, clothesline)
- Sponge, rag, mop, soap for cleanup

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## Simple Step-by-Step Instructions

- 1** **Mix** one part silver nitrate solution with two parts ferric ammonium citrate and tartaric acid solution.
- 2** **Coat and dry paper** in subdued light.
- 3** **Expose** approx. 15 minutes in bright sun; approx. 100 units with arc light or platemaker; or leave sitting out most of the day in room lights or outside on a cloudy day. Times are approximate; make test prints first.

After exposing, **develop** in running water a few

- 4 minutes until water runs clear instead of milky, and the image is visible.
- 5 **Fix** with agitation for about 5 minutes. Save fix -- it can be reused a few times.
- 6 **Wash** in running water for about 20 minutes.
- 7 **Dry** flat or hang up.
- 8 **Clean up:** Rinse out cups, brushes, spoons, trays, etc. Wipe up spills. (otherwise things will have permanent brown stains)

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## Detailed Instructions

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### Stock solutions:

Mix 4 stock solutions:

1. Solution A -

ferric ammonium citrate	9 grams	(or 0.3 oz)
water	33 ml	(or about 1 fl oz)
2. Solution B -

tartaric acid	1.5 grams	(or about 0.05 oz)
water	33 ml	(or about 1 fl oz)
3. Solution C -

silver nitrate	3.8 grams	(or about 0.13 oz)
water	33 ml	(or about 1 fl oz)
4. Fixer -

sodium thiosulfate	50 grams	(or 1.76 oz)
water	1 liter	(or about 1 qt +1 oz)

**OR**

Fixer -

sodium thiosulfate <b>anhydrous</b>	32 grams	(or 1.12 oz)
water	1 liter	(or ~ 1 qt +1 oz)

Tap water may be used, but use distilled water for best results.

Combine Solutions A and B, the ferric ammonium citrate and tartaric acid. This will keep for months. Keep Solution C separate until use.

*\* Label all containers clearly.\**

## Sensitizing

When ready to print, combine two parts of the A+B solution with one part C. Mix only what will be used that day. About 20 ml or 1/2 oz of sensitizer solution makes five to ten 8"x10" prints, depending on coating technique, type of paper, atmospheric humidity.

In subdued light (darkroom, indoors with lights off, shades closed, away from direct sunlight), pour or drop solution onto paper with eyedropper or plastic spoon and spread evenly with brush. A wide foam brush works well. One coat is all that is necessary. Two coats may result in dull, silvery or chalky images, which may or may not be desirable.

Let coated paper dry in subdued light. Paper may be stored in total darkness up to a few days, although for best results, use it the same day. A fan or blow dryer may be used to speed up drying.

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## Exposure

Place negative on dry coated paper, tape edges to hold negative in place if necessary (especially in multiple exposures), cover with glass or put into a print frame, and expose to light. The negative can be face up or down, just however you want it. A print frame keeps the negative evenly in contact with the paper during exposure. Hinged wood and glass print frames are available commercially, and are convenient to use. A simple "print frame" can be made by placing your paper and negative on a board or flat folded cloth in the sunlight and covering it with a piece of glass or plexiglas. Commercial platemakers and blueprint machines have rollers or vacuum systems that keep the negative evenly in contact with the paper.

Sunlight, ultraviolet lamp, arc light, commercial platemaker, sunlamp or other ultraviolet light sources may be used.

Exposure varies depending on lighting, negatives, coating techniques and other factors. Try 10 minutes in bright sun or 75 units in violet arc light to start. The print will turn yellowish brown or brown when exposed. Shorter exposures result in orangey-brown final prints; longer exposures result in dark brown prints. Any of these may give the final results you might want, so experiment and make test prints to find the correct exposure.

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## Processing

Immerse exposed print in water (tray with agitation or running water) for about 5 minutes, or until image has finished coming up and water running over print is clear, not milky or yellowish. Image will turn reddish brown or darker brown in water. Handle prints carefully while wet; the brown image can be partially rubbed off.

Fix in fixer with agitation for about 5 minutes. Image will turn darker, colder brown. If the image fades, the fixer is too strong, or the print has been left in the fixer too long. Remove print and wash; and either dilute fixer before immersing next print, or don't leave subsequent prints in the fix as long. The fixer can be reused several times. One way to test it is with a scrap of unprocessed film. Time how long it takes for the film to clear in the fixer. If it clears in a minute or two, the fixer is still good, but if the film just languishes without changing opacity, throw the fixer out.

Wash in running water for 20 min to 1 hour.

Hang or lay flat to dry.

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## NOTES:

- Mix small amounts first (about 20 ml or 1/2 oz, for example). Then mix more sensitizer as needed.
  - The powdered chemicals keep longer than the stock solutions.
  - Stock solutions will keep several months or longer.
  - Other recipes with different proportions exist; stronger or more dilute solutions may work better for specific situations.
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## Another recipe:

Solution A -

ferric ammonium citrate      6 grams      (or 0.2 oz)

water 33 ml (or about 1 fl oz)

Solution B -

tartaric acid 1 gram (or 0.03 oz)

water 33 ml (or about 1 fl oz)

Solution C -

silver nitrate 2.5 grams (or 0.09 oz)

water 33 ml (or about 1 fl oz)

Fixer -

sodium thiosulfate 1 tbsp plus 1 tsp (or 24 grams)

water 1 quart (or about 950 ml)

Mix and store and use as above.

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## Small amount:

ferric ammonium citrate 1.8 grams (or ~1/2 tsp)

tartaric acid 0.3 gram (or ~1/8 tsp)

silver nitrate 0.76 (or ~1/8 tsp)

water 20 ml (or about 2/3 fl oz)

- Mix ferric ammonium citrate and tartaric acid with 10 ml (or about 1/3 fl oz) water.
- Mix silver nitrate in 10 ml (or about 1/3 fl oz) water and add to first mixture.
- (If all three chemicals and water are just dumped together, the resulting solution is lumpy. This is still usable for some purposes, but not good for more precise or delicate work.)
- Use chemicals the same day they are mixed.
- Coat and process as above.
- 20 ml sensitizer solution makes 5-10 8"x10" prints, depending upon coating techniques, absorbency of paper, brushes, and other variables.

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## Paper:

Use any paper that can stand soaking, such as many watercolor, etching, and charcoal papers, commercial offset cover stock, or heavier sketchbook pages.

If unsure, test a small paper sample by soaking it in water at least an hour, or overnight, then pick it up and turn it over several times. If it tears easily or falls apart, it is unsuitable.

Colored papers may bleed or fade.

If the paper is very absorbent or unsized, size the paper first:

Mix 1 teaspoon of cornstarch or arrowroot with a small amount of cold water to evenly wet it, then add 1 cup boiling water. Brush evenly on paper. Let dry.

Spray starch may also be used to size paper.

Many commercial papers do not need sizing.

If unsure, make a small test print. If sensitizer immediately soaks into the paper or if the image is very faint or looks like it sank under the surface of the paper, sizing is needed.

Put sensitizer on same side of paper as sizing.

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## Negatives:

Continuous tone or line negatives and positives may be made in a copy camera or by projecting small negatives or slides in an enlarger onto sheet film on the easel. Any graphic arts film, line film or copy film may be used, such as Rapid Access, Kodalith, LPD4, QPD4, Kodak EL. See the [high contrast film page](#) for more details. These may be obtained from a lithographic supply company.

Process film according to manufacturer's instructions, OR for continuous tones on high contrast film, use a diluted paper developer such as Dektol (1:1 or even more diluted, such as 1:4 or 1:10), or use [halftone screens](#) when making the copy negatives.

When making large negatives in an enlarger, it may be necessary to project onto a wall or floor, and to make an easel. Use a big piece of cardboard with the film size drawn on it, and some masking tape to hold film if necessary.

Ortho films require a red safelight. Red cellophane may be used over a yellow darkroom safelight.

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## Other methods for making negatives:

- Photocopy images or make computer printouts onto clear plastic (transparencies, overheads, mylar).  
Piece together several 8"x10" sheets for larger images. Overlapping edges will show up as less exposed areas on print. If this is undesirable, cut pieces to fit exactly. Secure with tiny pieces of clear tape in unobtrusive places. Or, use overlaps and pieces of tape as part of the design.  
Thin paper printouts may also be used, but will need long exposures, approximately twice as long as needed for clear film. The paper grain might show up in the image.
- Draw or paint on clear plastic or thin paper. Try black or red marking pen, India ink, film opaque,

whiteout, litho crayon, black cattle marker, black oil pastel. Shadings in pencil may or may not come out well.

- Use paper or rubylith and cellophane cutouts or make [photograms](#). Opaque materials will block the light and appear as blank spots; transparent and translucent materials will make areas of tones.

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## Special effects:

- Multiple exposures, moving or changing negatives between exposures.  
Multiple coatings of sensitizer - exposing and processing and drying between coats.  
Use different negatives, varying exposure times, etc, for the different exposures or coats.  
Layers of gum bichromate in different colors, using different negatives and so on, may be added on top of the processed and dried brownprint.  
For best results with registration, preshrink paper by wetting it in warm water for several minutes and letting it dry before the first coating. Line up negatives the way you want them and make registration marks with pencil or tape on the paper before making the first coating.  
(my page about [registration](#) for lithography may be illuminating, or confusing.)
- Coat sensitizer over wax resists or crayon drawings.
- Try coating small areas, spattering, or painting designs with sensitizer. Spattering may be done with an old toothbrush or airbrush. Wear an apron; and rubber gloves and goggles for messy or close work. Clean up spills and spatters in the area as soon as you are finished. These can cause permanent stains.
- Other surfaces besides paper:
  - Cloth, wood, birch bark, leather, some kinds of plastic, bisque ware ceramics, and other porous, water-immersible materials may also be used.
  - Size cloth with laundry starch or cornstarch, or spray sizing before coating with sensitizer.
  - When coating T-shirts or other clothing, put a sheet of plastic inside the shirt so the sensitizing solution does not soak through to the back.
  - Give very porous objects, such as plaster, a coating of matte spray paint or spray laundry sizing to keep the sensitizing solution from soaking in.
  - Give shiny objects, such as metal or plastic a *thin, fine* layer of matte spray paint to give the sensitizing solution something to hang on to.
  - Brush on sensitizer or dip items in sensitizer.
  - Tape negatives to three dimensional objects that won't fit under glass for exposure.
  - Coating methods, exposure and processing times may vary; and it might be difficult to get good results with very porous or very smooth, hard surfaces; so *experiment with small test images first!*

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## For more information:

L. P. Clerc, *Photography Theory and Practice*,  
Pitman Publishing Co., NY, 1954 (a technical book)

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