

Introduction

Printmaking is undergoing significant changes. Printmakers are growing more aware of safety and environmental issues. It is no longer satisfactory to use hazardous materials to make prints, no matter how splendid the results. This has led to a search for safer, better methods and materials. Polyester plate lithography weds old and new technologies, and is one of the safer and more environmentally friendly printmaking techniques.

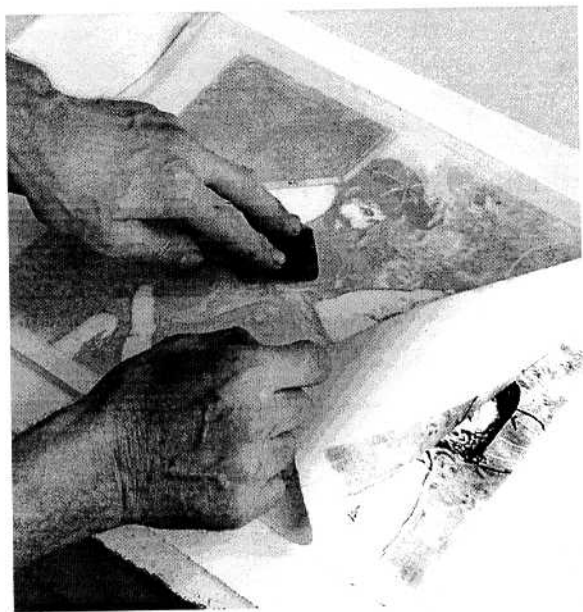
The author discovered polyester plates in 1997 while engaged in an Idaho State Board of Education Grant. He learned from the distributors that polyester plates were developed in India as inexpensive offset lithographs. They were designed for a copier which creates images by depositing and fusing toner to its surface. The plates are nearly paper thin with a textured surface much like a metal lithographic plate. They are nonporous and water-loving, printing any imaging material that is waterproof and will fill the pores of the plate. The plates are composed entirely of polyester with no other coating, making their shelf life almost

infinite. As offset lithographs, they can print from a thousand to two thousand prints. This is more than adequate for fine art runs.



Random Toy Chaos by George Roberts,
courtesy of the artist.

Polyester lithographic plates are easy to use and yield excellent, sophisticated prints. Making a polyester plate lithograph involves only a few simple steps. The artist first draws on a polyester plate using a black ball point pen or any of the



Hand printing a plate.

many methods outlined in this text. Once the drawing is finished, the plate is ready to print. With a sponge and water, dampen the plate and, using lithographic ink and a brayer, ink the plate. When the plate has been sufficiently inked, place it on top of a piece of paper. Using a wooden spoon, rub the back thoroughly. The pressure of the spoon will cause the ink to be printed on to the paper. A lithographic or intaglio press can also be used to print the plate. That is how simple and direct the process is. No etch, no chemicals, no rub up, no rosin or talc; just straight forward printing directly

from the imaged plate. Modifying the print is also easy. The artist can dry the wet plate and draw additional marks using the ball point pen or erase portions using a pencil eraser. When modifications are finished, wet and ink the plate to start printing again. No counter etch is necessary. The modifications will print as well as the original drawing. The uncomplicated sophistication of polyester plate lithography is one of the reasons the author is so enthusiastic about the process.

The author believes that polyester plate lithography has five characteristics that make it an excellent choice for artists. First, polyester plates are safe to use. They require no elaborate or expensive safety features in the studio or classroom. The only equipment artists need to protect themselves are Nitrile gloves, an apron, and occasionally a dust mask and an exhaust fan when using an air brush. The materials are also not harmful to the environment. No harsh chemicals are necessary for etching or clean up. Vegetable oil, diluted ammonia in water, liquid detergent and rubbing alcohol are all that is necessary.

Second, polyester plates are more convenient to use and require less technical knowledge than the old lithographic methods. A beginner can make and print a polyester plate lithograph in 20 to 30 minutes and have a clear understanding of the process. The new materials free artists from the technical complication of the old methods. This allows them to

concentrate on content, creativity and aesthetics.

Third, most everything used in association with a polyester lithograph are common materials that are readily accessible, yet technically excellent. Most of the materials can be purchased in a grocery, hardware or art supply store. They yield prints of the highest quality with minute detail and great artistic control.

Fourth, polyester plate lithography is more direct. The plate is imaged as simply as one would a drawing and then printed. The old methods required imaging, etching, rubbing up, washing out, rolling up, counter etching, reworking, etching again and so forth. Each step had to be done just right or the print could fail. Polyester plates can be imaged, proofed, reworked and printed with no steps in between.

Fifth, the plates can be printed by hand. This means ownership or accessibility to a press is not necessary. It also means that polyester plates can be printed on surfaces that cannot be run through a press, even three dimensional surfaces.

Equally important to printmaking in general is the fact that the new, safer methods and materials will allow printmaking to be taught in the secondary schools. Children begin to learn music in their earliest years. Many become accomplished musicians by the time they reach college. Most students do not have the opportunity to study printmaking prior to college, because its time-consuming, complicated nature and toxicity make it

difficult to teach at the secondary level. With the advent of the newer, safer methods and materials, it can become a part of the curriculum. All of the new techniques can be taught within the 30 to 40 minute time-frame of a secondary school class period, and the students can achieve excellent results. If printmaking can be taught in junior and senior high schools, our future printmakers will be much more advanced when they reach college and there will be more of them.

We are in the midst of a printmaking renaissance. The research into ImagOn and the safer intaglio materials and techniques, polyester plate lithography, water-based screen printing and water-based inks in general are among the significant and enlightened fine art media developments in the late twentieth century. Within the next few years they will become the norm in printmaking studios and classrooms. We will look back on this time of change in printmaking as an era dedicated to improving the methods and materials while making them safer and more environment friendly.



Photolithography

Polyester plates have directly linked printmaking to the computer. Now any image generated on a computer, photographic or otherwise, can be printed directly onto polyester plates. The equip-

ment required to make a photolithograph are a computer, appropriate software, (Adobe Photoshop is recommended), a scanner, a laser jet printer, and an ink jet printer or a copier. Making a photolithograph is quite simple. Scan a photograph, manipulate it in Adobe PhotoShop similar to the way one would in a dark room, and then print it directly to a polyester plate using a laser jet printer. The polyester plate with the photo imaged on it is now ready to print with no further steps required. The following are more detailed instructions for producing a photolithograph.

It should be noted that this text is not meant to be an instructional guide for using a computer. Therefore, there will not be detailed instructions as to how to use computers. There are plenty of classes one can take and texts to read to become computer literate. These instructions are being provided for those who already possess basic computing skills and who want to use the computer to create images for their prints.



Last Chance by Sue Wilson, Courtesy of the artist.

Making a Photolithograph

The following instructions are for an Apple Macintosh computer, Umax scanner and Hewlett Parkard 5000 Laser Jet Printer. The steps are listed to make them easy to find. The reference to "click" is an indication to use the mouse button.

Scanning

1. Start the computer and open the hard drive.
2. Open Adobe Photoshop.
3. Turn on the scanner. Sometimes a scanner needs to be turned on before the computer.
4. Place the photograph in the scanner.
5. Click the mouse button and hold on "file" and scroll down to "import." Highlight "UMAX Majicscan" and release the mouse button to open the scanner software.
6. Using the "scanner controls," follow the steps below.
 - A. Set the scanner to "flatbed (reflective)."
 - B. Set to "gray."
 - C. Set to "300 or 400 dpi or dots per inch."
 - D. Set at "100%."
7. Click the "preview" button on the control panel.
8. When the image appears in the window, move the marquee to fit the edges of the image. Use the mouse to click and hold on a corner and drag the marquee to the edge of the image.
9. Once the marquee is where it belongs, click the "scan" button on the control

panel.

10. The image will open as an Adobe Photoshop file and appear on the screen.

Making Adjustments to the Image Using Photoshop

1. To change the size of the image, go to "image" and highlight "image size."
2. In the new window under "print size" highlight the width number and change it to the new size. Do the same with the height and then click "OK." Make sure the size chosen is a size compatible with the printer.
3. Most scanned images need to be lightened to print well on the polyester plates. To adjust the value of the image, click and hold on "Image" and highlight "adjust." While still holding the mouse, move the curser over to "curves" and let go.
4. In the small curves window, move the diagonal line using the mouse and watch the values of the image change. When the image is satisfactory, click "OK."
5. Another method of lightening the image is to make it less opaque. This is accomplished in "layers."
6. To change the texture of the image, highlight and hold on "filter." Scroll down to the option desired, highlight it, and let go of the mouse. For instance, choose "texture" and then highlight "grain" and let go. In the new window move the slider on the "intensity" and "contrast" scale until the

desired effect is achieved. Click on "OK."

7. When the image is satisfactory, save it.

12. Click "print" and be patient.

13. The plate is imaged and ready to print as a lithograph.

Printing on the Hewlett Parkard 5000 Laser Jet Printer

1. Most laser jet printers can be used to image a polyester plate. The HP 5000 is superior to the rest because of its ease of use, its high resolution and the size of plate it can print. The HP 5000 will print a plate 11" x 17." Smaller HP printers also work well but do not print plates larger than 8 1/2" x 11."

2. Click and hold on "file" and highlight "Page Setup."

3. Choose the options wanted and click "OK."

4. Click and hold on "file" and highlight "print."

5. The printer screen will appear. Click and hold on "general" and highlight "image options."

6. In "image options," check "highest quality" and "enhanced."

7. Click and hold on "Image options" and highlight "resolution options."

8. Set the resolution option to 1200.

9. Next click and hold "Resolution Options" and highlight "Printer specification options."

10. Click on "media type" and highlight "transparency" or "rough" to print on the polyester plates.

11. Cut the polyester plate to a size that will fit in the printer and put it in place.



A polyester plate imaged using a laser jet printer.

Laser Jet Printer

The HP 5000 laser jet printer prints at twelve hundred dots per inch and the toner density is adjustable so there is more control over the final image. The heat for fusing the toner is also adjustable. At this time 11" x 17" is the largest size that can be printed on a laser jet printer. No additional heating is necessary to fuse the toner. The printer takes care of that task.

One very interesting possibility the polyester plates present is the use of images created on the laser jet printer combined with drawn images. One can start with the drawing or the laser jet printed image and layer any number of combinations. Use any or all of the tech-

niques described in this text in combination with one another.

Ink Jet Printer

Ink jet printers will image a polyester plate if they use waterproof pigment-based ink. All other inks will not image a polyester plate because they will wash off when the plate is wet during printing. The Epson 1520, 1200 and 3000 are excellent printers to use. They will print a plate as large as 18" x 24." The resolution is 1440 dots per inch and they print a random dot pattern. A plate imaged using an ink jet printer must be allowed to dry for as long as a week before the plate can be printed. The author has tried heating the plate to dry the ink without any satisfactory results. The detail and quality of the prints, however, makes this inconvenience a small one. In addition, a plate imaged with an ink jet printer requires a longer lithographic ink. Add a number three lithographic varnish to the ink to make it longer. When the plate is inking well, go back to a shorter ink to insure that the prints will hold up while editioning. At this time the use of an ink jet printer as an imaging device for polyester plates has not been perfected. But the author has printed from plates imaged with an ink jet printer.

If a computer , scanner, laser jet printer or ink jet printer is not available, use a copier. There are many copiers that can produce good quality prints. Put the photograph or other image in the copier

and load the polyester plate where the print paper usually goes. Make a copy to the plate. Some copiers do not fuse the toner well, so check the toner before printing. The best precaution would be to fuse the plate in an oven in order to make sure the toner will not come off the plate. See "Fusing the Toner" in the chapter on toner. Commercial copy centers, blue print and printing shops all have good quality copiers that can even make 18" x 24" copies.

Making Color Photolithographs

A color photograph can also be printed using polyester plates. For each color a separate plate must be made. A photo-



A print pulled from a plate imaged on an ink jet printer by Jim Ballantyne, courtesy of the artist.

graph is made up of four colors: cyan, yellow, magenta and black. To break the photograph down into its constituent colors, use the computer. Scan the color photograph and import it into Photoshop. The "channels" window will appear and have the photo broken down into its constituent colors, cymk (c = cyan or blue, k = black, y = yellow and m = magenta). If the photo has been scanned in rgb color (r = red, g = green and b = blue) change it to cymk by highlighting "image" then "mode." Under "mode," highlight "cymk" and let go of the mouse button. Notice that the amount of memory required for cymk color will be greater than rgb. If the channels window does not appear on the screen, highlight "windows," scroll to "show channels" and let go of the mouse button. The channels window will appear on the monitor. Each of the colors in the photograph will be represented on a separate line in the channels window. Highlight one of the colors at a time and it will appear on the monitor. Make adjustments to the individual channels if you like. If you do make changes in any of the individual channels, be sure to view them all together to see the effect of the changes. Do this by highlighting the top channel or the one labeled "cymk." Once you are satisfied with the photograph, highlight each channel individually and print it on a polyester plate. When each of the four colors (cyan, yellow, magenta and black) are printed on four different plates, the task is to choose the color each plate will be printed as a lithograph. One can either use lithographic inks called

process colors, which are designed to match the colors that produce a color photograph, or choose colors more creatively. When the colors are chosen, begin by printing the lightest valued color first and work up towards the darker colors, printing them one on top of the other. Each plate must be printed on top of the next in perfect alignment. Aligning the color from each plate is called registration.

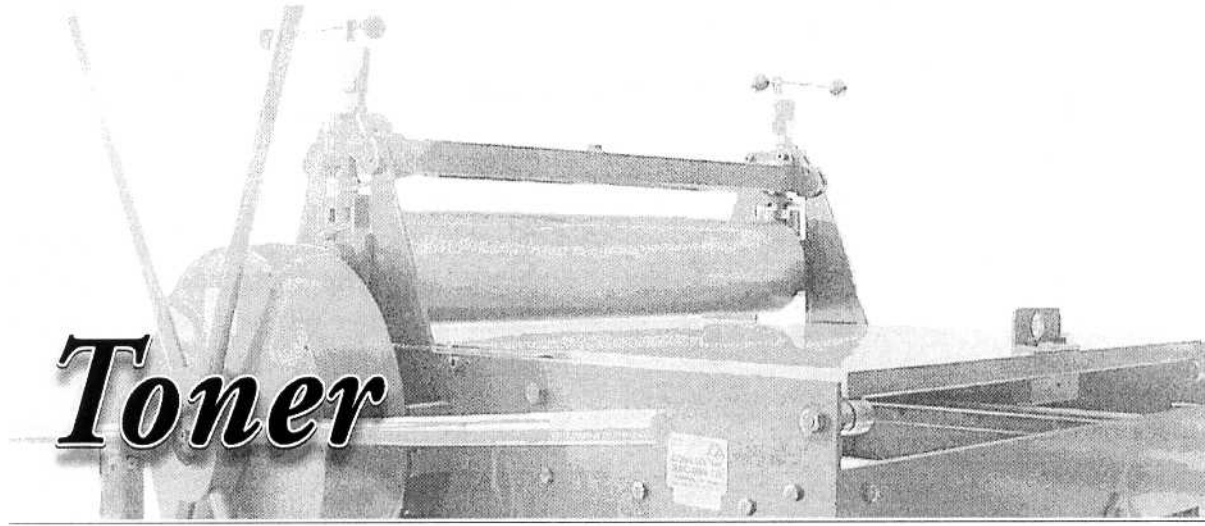


For registration information, see the chapter on color. Once all four plates are printed overlaying each other, the color lithograph is complete.



Color separations from a photograph, black, magenta, yellow and cyan.

Toner



Toner has been used by lithographers for many years. It is historically applied to the stone or plate as a wash or dry. Once on the stone or aluminum plate it



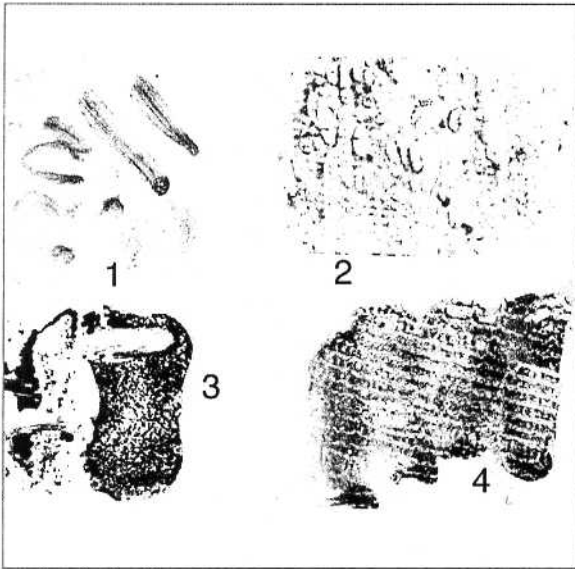
Toner wash.

is historically fused using white gas or acetone. Norm Levy at Mediastreet.com developed a method of fusing toner using heat which is safer than using chemicals. Once again the offset lithography industry is leading the way to safer, better products.

Toner is the powdered plastic beads used in copiers and laser jet printers. It can be obtained in refill bottles from office supply stores or one can get a couple of tablespoons from a used toner cartridge. Many businesses empty the excess toner from used toner cartridges into a waste container. Ask around to see if you can get a lifetime supply from these waste containers.

Toner Wash

One of the initial problems faced after discovering how polyester plates could be used for fine art printmaking was the problem of finding a way to use toner other than printing it on the plate with a laser jet printer. The author had first used toner mixed with water and alcohol to make a wash, and heard about toner powder being used as a drawing material. After experimenting with some variations, the author recommends the following formula: two parts rubbing alcohol, two parts water, one-half part toner, and one-eighth part Hunt Speedball Drawing Fluid or pancake syrup.



Toner wash texture. 1. Bush strokes. 2. Toner stamped on the plate using a sponge. 3. Toner with alcohol dropped on it. 4. Toner blotted using textured cloth.

Christine Nelson suggested the use of syrup for those that don't have Hunt Speedball Drawing Fluid in their studios. The function of the drawing fluid or syrup is to give the toner wash enough stability to stay where it is brushed on the plate. Other materials can be substituted. Soap and photoflo work, but they bubble leaving a different toner pattern on the plate. The formula can be adjusted to accommodate the artist's goals. Experiment with it. If a less controlled mark is desired, the drawing fluid can be omitted from the mix. If too much drawing fluid is used, it will prevent the toner from fully fusing to the plate. If a blue cast appears on the plate, too much drawing fluid was used. The plate will need to be washed off with water to start over. Toner prints best when it is gray. When the toner looks black on the plate, it is

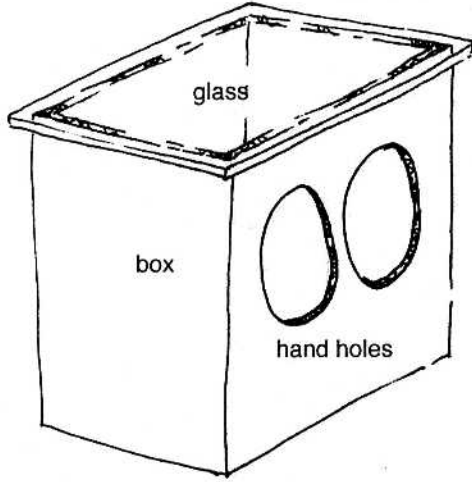
usually too thick. Thick hills of toner tend to chip off during printing or do not fuse well. Toner can be manipulated to gain a huge range of grays. When areas of black are desired, draw them with one of the other wash materials like Future Acrylic Floor Polish. Paint them on after the toner is fused. When mixing the powdered toner, it is wise to take some precautions. Wear gloves and a dust mask. Make a large enough batch so it isn't necessary to mix it often. Don Messec suggested using a cardboard box with hand holes and a glass top when



An example of chipping toner .

mixing the toner. With the toner mixing procedure occurring inside the box the dust will be confined making working with it safer.

Brush the toner wash on the plate in thin layers. While drawing, keep in mind that the toner prints a bit darker than the drawing looks on the plate. When the drawing is finished, let the plate dry. As it



Safe mixing box for toner powder.

dries, the alcohol, water and drawing fluid will evaporate leaving only the toner. When the toner wash is dry, it can be manipulated further. Use a cotton swab or paper towel to push the toner around or pull it off the plate.

A great variety of surface texture is possible using toner wash. The texture can be either negative or positive. Light negative texture is achieved by pressing material into the toner wash. Positive textures are created when toner tusche is applied to a textured material and then pressed to the plate. Many surface variations are attainable using a combination of these two methods. Toner wash can be pushed around with a cotton swab or other material. It is easy to manipulate. If one is not

satisfied with the original image, the toner can be washed off the plate to begin anew.

Fusing the Toner

The old method for fusing toner was to use white gas or acetone, which are toxic chemicals. Norm Levy at Mediastreet.com told me about the fusing ovens they sell specifically for Pronto Plates. With a little experimentation, other heat sources were also found. In any case, the toner will come off the plate if it is not fused to the surface. Fuse the toner to the plate by heating it in an oven at 250 degrees fahrenheit for about four minutes. Preheat the oven and place a cookie sheet inside. Put the polyester plate on the cookie sheet and watch the time carefully. Too much heat will warp and burn the plate. All ovens do not heat the same. Test the heating temperature and time in the oven you use. The toner is fully fused to the plate when it will not wash off with water. Test it by putting a little water on your finger and running it across a small portion of the plate. If the toner does not wash off, it is fused.

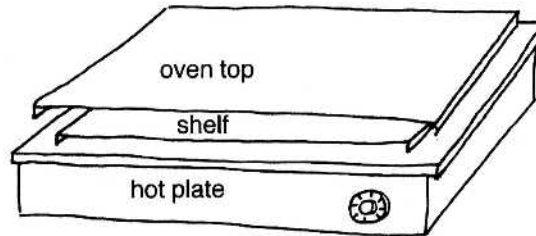
One of the fusing methods the author first used was to heat the plate with a quartz heater. The author passed the plate back and forth in front of the heater until the toner melted and turned shiny. If this method is used, keep the plate moving so the heat does not warp or melt the polyester plate. A melted section

of the plate will cause creases in the plate during printing. Also, avoid putting fingerprints on the plate because they will attract unwanted ink. Toner can be removed from the plate after it has been fused using wintergreen oil and a cloth or cotton swab.

Hot Plate Oven

Most printmaking studios do not have ovens but do have hot plates. A hot plate can be converted easily to an oven. To make one, have a piece of sheet metal cut an inch wider and longer than the size of the hot plate top. Three of the four edges of the sheet metal should be bent at a ninety degree angle so that the bent edges are one half inch tall. The bent sheet metal will constitute the top of the oven and should be placed on the top of the hot plate. If the hot plate is large, it may be necessary to reinforce the sheet metal top so it does not sag. To make a shelf for the oven, use a piece of sheet metal a little smaller than the top. If one quarter inch of all its edges are bent at a ninety degree angle, it can be slipped under the oven top so it sits a quarter inch off the top of the hot plate and forms a shelf. If the shelf sags, reinforce it on the bottom side. Keith Howard suggests attaching an oven thermometer in a hole in the top of the oven so one can always gauge the temperature inside. Once the hot plate oven is built, it must be tested to see what setting creates the proper temperature. The temperature should be between 200 and 220 degrees fahrenheit. Purchase a small, flat oven thermometer and place it on the

oven shelf or read the thermometer built into the top of the oven. Pick a setting and wait fifteen minutes to see what the temperature is in the oven. Adjust the setting until the proper temperature is achieved. When the hot plate oven is up



Plans for a hot plate oven.

to temperature, test a plate in it to see how long it takes to fuse the toner. In the author's hot plate oven it takes five to six minutes to fuse the toner at 220 degrees fahrenheit. The author has also had some success fusing the toner by placing the plate on a hot plate and watching it carefully. The plate will warp and burn quickly, so keep a wary eye on it.

Multiple Layers of Toner

Toner washes can be applied to the plate and fused any number of times. After fusing one layer of toner, a new layer can be drawn on top and fused as well. Keep each layer thin. Do not allow the toner to build up in hills on the surface of the plate or it will interfere with the printing and/or chip off the plate. Multiple fusing allows a great deal of freedom and complex detail in the creation of images. In addition, one can use a razor blade or dry point needle to scratch

white lines into the toner before or after it has been fused to the surface.

Transfer Method Using Toner

Acetone has been used to transfer toner from a photocopy for many years. It is applied to the back of a photo copy and allowed to soak in for a few seconds. It is then placed face down on a plate. Using a wooden spoon, burnish the back of the photo copy to transfer the toner from the copy to the plate. One should be very sure the texture or image is just right before transferring it onto the plate. One may want to distort an image through the transfer method or one may simply like the look of a transferred toner image. The author's students have produced drawings and lithographs using photocopies and acetone. Acetone is not an ideal substance due to its toxicity, and for this reason it is a good solvent to avoid. Since there are a number of reasons why one might want to transfer toner instead of working directly on the plate, the following method is suggested.

First, create the image, texture or whatever you desire on a piece of paper. Create the image using any of the toner drawing methods, a laser jet printer or copy machine. Once the toner image is satisfactory and fused to the paper, the image can be transferred to the plate. Place the plate face up on a table. Place the toner image face down on top of it. If there is a possibility that the paper will

move during the transfer, tape the two together. Use an iron to heat the back of the paper. Once the paper is warm, use the tip of the iron to burnish the back of the paper. The heat and burnishing will cause the toner to transfer to the plate. Inspect the plate from time to time to see that the image is transferring by lifting a corner of the paper. If the whole image is to be transferred, take great care to burnish every square inch of the paper. If one wants only portions or random sections of the toner to transfer, then one would only burnish those areas one wants to transfer. Once transferred, the toner is fused to the plate and ready to print. If one is unsure that the toner is fused, one can test it by washing water across an edge of the image using a finger to see if the toner will come off. If one wants to be absolutely sure the toner is fused, heat it in the oven as described earlier. An image transferred in this way will not have all the detail of the original.

Toner can also be transferred using wintergreen oil. A small amount should be applied to the back of the paper with a cotton swab or cotton ball. Allow the paper to sit for about a minute while the wintergreen oil soaks in and loosens the toner. Place the paper face down on a polyester plate and carefully burnish it using a wooden spoon or dresser drawer nob. The plate can also be run through a press to transfer the toner. Burnishing and the pressure of the press causes the toner to release from the paper and

adhere to the plate. Too much wintergreen oil will melt the toner causing it bleed. Neither transfer methods will transfer as much detail as in the original. The wintergreen oil produces a lot of odor, so use it in a well ventilated area or outside.

Toner Crayon

A toner crayon can easily be made or purchased. Litho Coal is the commercial name of the toner crayon. Both the hand-made and commercial product are an excellent means of imaging a polyester plate. The formula and method for making one by hand is as follows.

Take a two inch by two inch piece of newsprint and roll it into a tube one quarter inch in diameter. Fold over the bottom and tape it. That will function as the mold and container for the toner crayon material. Mix a couple of teaspoons of toner with alcohol until the mixture is the consistency of frosting. Thoroughly mix in three or four drops of gum arabic. The gum arabic acts as a binder. Next, spoon or squeeze the toner mixture into the cylindrical newsprint mold. When the cylinder is full, set it aside to dry. If one is making a fairly large batch, put it in a squeeze bottle so it can be more easily squeezed into the newsprint mold.

When the toner crayon is dry, tear back only an eighth of an inch of the newsprint to expose the crayon. If more is torn off, the toner crayon will break or crumble. Draw with the toner crayon as if

drawing with a piece of charcoal. The results will appear very similar to a vine charcoal drawing. When the drawing is finished, fuse it in the oven and print it.



Toner crayon drawing.

A toner drawing can be further manipulated using a cotton swab. The toner can be pushed around or pulled off the plate. Textures can be pressed into the toner to pull off a negative texture or toner can be applied to a textured material and stamped to the plate for a positive texture.

Wear gloves when handling toner. Any toner that comes into contact with the skin

should be washed off with cold water. Do not use hot water, as it will fuse the toner to the skin. Also it is possible that some toner may get suspended in the air. If the toner is being used vigorously wear a dust mask for protection. Wash off toner dust from any surface using a wet paper towel.



Drawing Techniques

Drawing Material

Any drawing material used to image a polyester plate must fulfill two important requirements of polyester plate lithography. First, the drawing material must be insoluble in water. It must be insoluble in water because water is used in the printing process to resist the ink. If the drawing material is water-soluble, it will be washed off the plate the first time it is wet with the sponge. Second, it must fill the pores of the plate. The drawing material must fill the pores of the plate to displace the water and attract the ink. Any material that fulfills those two requirements will image a polyester plate and print.

Keep in mind while drawing on the polyester plates that oil in the skin will transfer to the plate and print. Do not rest your hands or fingers on the plate while drawing. Use a piece of paper or a drawing bridge between your hands and the plate. Also, be sure to leave at least a one inch margin around the image. It will aid in printing by providing a place to clip the plate to the table. Another rea-

son for the margin is to keep the ink brayer from rolling over the edge of the plate and depositing ink on the edge, which would print as an unwanted black line. Ink would also be deposited on the glass around the print which would need to be cleaned up after each inking. One can avoid these problems by leaving sufficient borders.

One of the convenient characteristics of polyester plates is that they are semi-transparent. An artist can lay a preliminary drawing under the plate and use it as a guide to the marks being made on the plate.

China Marker

Images made with a China Marker are similar to those produced with a lithographic crayon on aluminum plates. The process is direct: draw with the china marker on the plate. While the china marker does not yield a huge range of values, it does provide a good black and several other tones. There is no fusing required for the china marker, nor is it



necessary to etch it. However, for some variation in the technique, the china marker can be melted on the surface of the plate. Stick the plate with the china marker drawing into a heated oven for several minutes or use a hair dryer to melt the china marker. One can also achieve greater variation in value by placing a piece of sand paper under the plate while drawing. The sand paper will break up the marks into a kind of dot pattern.

Press fairly hard when drawing to insure that the China Marker fills the pores of the plate. If it does not fill the pores, it will not print. It is possible to modify the drawing by scratching and scraping into it or by using sand paper. Scrape and scratch only the china marker. Deeper scratches into the surface of the plate will print as dark marks. Also be careful not to build up the china marker on the plate so that it is higher than the surface. If the marks are drawn so they are

Drawing material:

1. Stones Crayon.
2. Drawing pen and acrylic floor polish.
3. China marker.
4. Permanent marker.
5. Ballpoint pen.

above the surface, the marks will come off during printing. Use a razor blade to scrape off any hills of china marker.

Permanent Marker

Permanent markers have long been used by offset lithographers to correct small errors on plates. When the author first talked to Norm Levy at Mediastreet.com he told him how permanent markers and ball point pens were used. If they could be used to correct errors then they could also be used to image the plates. It was a good beginning.

Not all permanent markers will image a polyester plate. The author has yet to discover what makes the difference, but Sharpie and Micron pens work well. Draw directly on the plate using the variety of points available, from chisel to fine tip. Modifications to the drawing can be made using a pencil eraser or a razor blade. Scratching away white lines with a razor blade like a scratch board drawing works well. The eraser does lighten the marker, but when printed the variation is only slight. It can, however, erase to a white. Both water soluble markers and soft lithographic pencils can be used as a resist under the permanent marker. Apply either or both to the plate and draw over them with the permanent marker. Wash the surface with water and the water soluble marker and lithographic pencil will wash away, leaving white marks in the areas where they were used.

Ballpoint Pen

A ballpoint pen produces very successful line drawings on the polyester plates. Draw with the pen the same as on paper. Be sure to make dark marks by pushing fairly hard against the plate. Light marks will deposit ink on only the top of the plate texture and therefore will not print. The ballpoint pen ink must fill the pores of the plate in order for it to print. Modification can be made to the drawing using an eraser or a razor blade. Remember the precautions mentioned earlier about scraping.

Stones Crayons

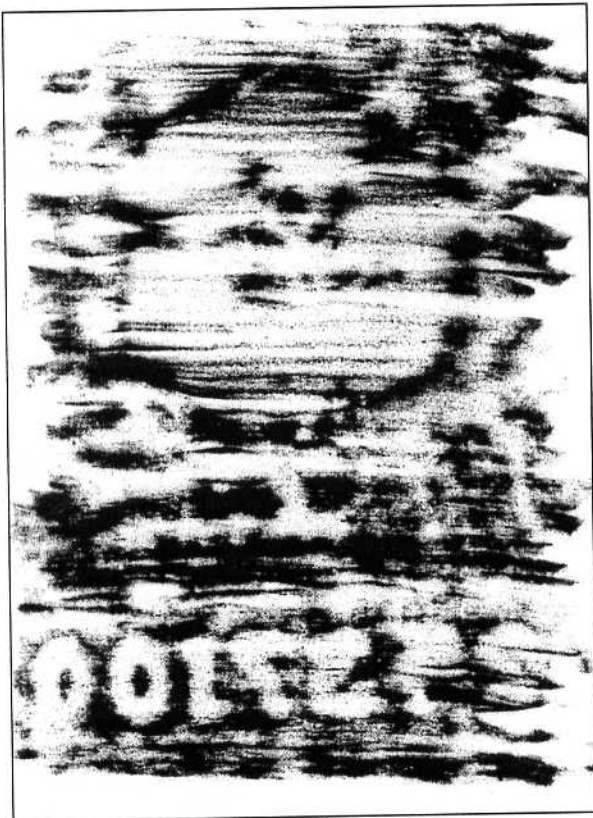
Another drawing material that works well on polyester plates is Stones Crayons. Greg Page first demonstrated the use of Stones Crayons as a polyester plate technique. Since then it has been found that the hardest of the crayons, a number five, is the best to use because it will not wash off the plate. Draw with it as you would on paper. Once again, be sure the crayon is filling the pores of the plate. Drawing too lightly will only apply crayon on the surface and therefore, it will not displace the water in the printing process. If the water is not displaced, the mark will not print. It will take some experimentation to find out which light marks will print. As a general rule, draw black to medium gray marks.

Graphite

An ordinary graphite pencil can be used to image polyester plates. Use an H or harder pencil and press hard while drawing to insure the graphite gets into the pores of the plate. The graphite marks will print black if black ink is used. A graphite look can be attained by using graphite or gray-colored ink. The graphite can be modified with an eraser. It should be noted that marks made with a graphite pencil print much like a ballpoint pen. Since the pen prints more reliably, the author recommends using it instead of graphite.

Rubbing

Because polyester plates are almost as thin as paper, they can be used to make rubbings from textured surfaces. Use a china marker or a Stones Crayon. Lay the plate face up over a textured surface. Draw across the plate and watch the image or texture appear. Draw fairly hard so the drawing material fills the pores of the plate.

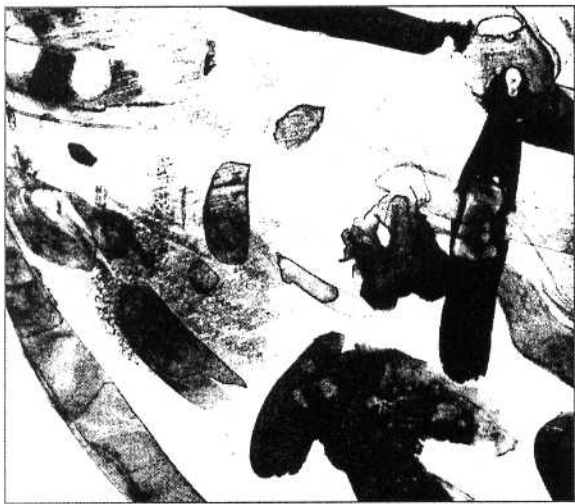


China marker rubbing.

Wash Drawing Techniques

First Principles

As with the drawing material, there are important guiding principles for



Wash drawing brush strokes.

using any aqueous media on polyester plates. First, any wash material must be insoluble in water when dry. Second, unlike other drawing material, washes will fill all the pores of the plate wherever they are applied. When all the pores of the plate are filled in any given area, it will print black. Even when a wash drawing material is thinly applied and

variation in value is visible on the plate, the whole area will still print black. A gray requires that some plate pores be filled with an imaging material and some in the same vicinity remain empty. The more pores filled in any given area, the darker the area will print. The more pores in an area that are not filled with an imaging material, the lighter the area will print. Any aqueous material will fill all the pores wherever it is applied, even when it is applied very thinly because a liquid will flow into the lowest portions of the plate. Other strategies must be used to get grays using wash drawing material. You will find strategies for varying the value in each media description.

Hunt Speedball Screen Filler

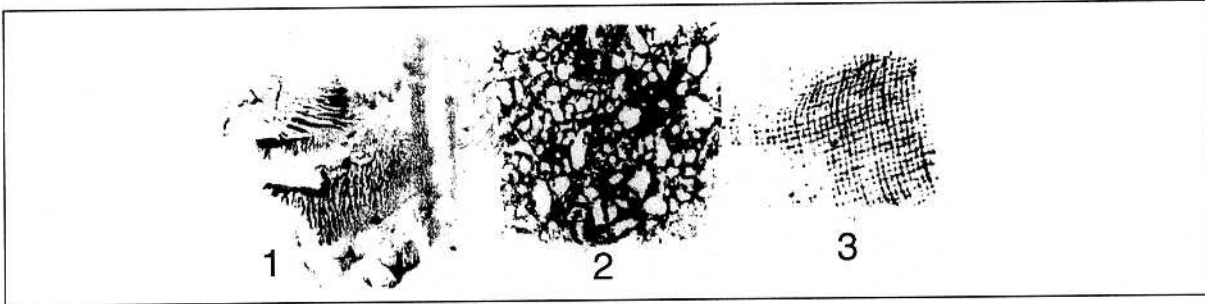
Hunt Speedball Screen Filler functions well as a wash drawing material. Thin it with water as much as three parts water to one part Screen Filler. Brush it on the plate or use a drawing nib to create lines. In either case, the marks will print black. Even if variation in value can be seen in the light areas they will print

just as black as the heaviest application. While the first print pulled from the plate may show the variation in value originally seen on the plate, the light areas will soon fill in with ink as the print stabilizes. Variation in value can be achieved with Screen Filler by using the following method.

changing the method used to apply it. Screen Filler can be applied with an air brush, as a texture transfer or spattered on to the plate. All of these methods of application will create value variation.

Texture Transfer

A sponge or other textured material



Texture transfers: 1. Applied using Mylar. 2. Applied with a sponge. 3. Applied with cheesecloth.

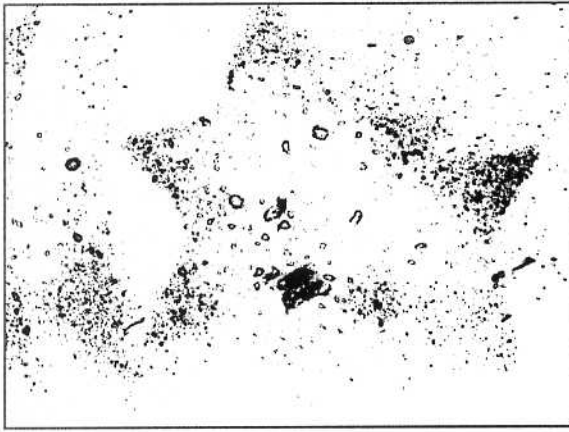
After applying the Screen Filler in varying amounts to achieve visible value variation, ink the plate. Be careful to ink the plate so all the variation remains. Use a stiffer ink and take care not to over ink the plate. When the plate is inked, pour a little fountain solution on the plate and rub it lightly across the wash using a sponge. The fountain solution will remove the Screen Filler where it is not covered with ink. When the thin Screen Filler is gone, water can occupy the areas and resist the ink during printing. This assures that the value variation will persist throughout the entire edition. Do not scrub too hard with the sponge or all of the Screen Filler will come off. If there is any sign the inked Screen Filler is coming off, wash the plate with water. Other means of creating value variation entails

dipped in or painted on with diluted Screen Filler can be dabbed onto the plate. The texture will transfer via the Screen Filler to the plate. To determine how the texture will look, it is helpful to test the texture on a piece of newsprint first. If the sponge is overloaded with Screen Filler, a blob rather than a texture will be stamped on the plate. To avoid blobs, dab the texture several times on the newsprint until the texture is showing clearly, then apply it to the plate. If too little screen filler is on the sponge, little or no texture will show on the plate. Don't over work the texture. That is, don't repeatedly stamp an area or it will fill in and print a solid black. When stamping the texture on the plate, place a section of newspaper over the texture and rub across it to insure even pressure. To

confine the texture to a specific shape, cut a stencil and place it on the plate before applying the texture.

Spatter

Spattering Screen Filler is simple and effective. Use a tooth brush or other stiff bristled brush. Cut a stencil to confine the spattering and place it on the plate. Dip a tooth brush in Screen Filler and

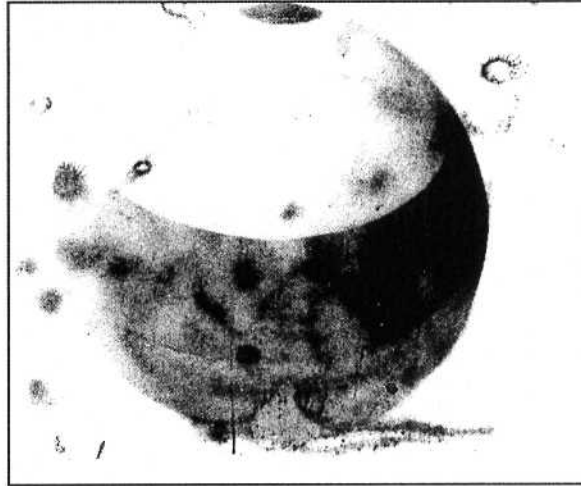


Spattering with a wash.

hold it so the brush is facing the plate. Stroke a palette knife or other similar instrument across the tooth brush bristles. Another method of spattering is to rub the tooth brush across a wire mesh. Either way the results are the same. The Screen Filler will flip off the brush and land on the plate in varying sized dots. The more the surface of the plate is spattered, the greater the density of the dots and the darker the surface will print. If the brush is overloaded with Screen Filler, large blobs will fall to the plate. To avoid this, test the spatter on a piece of newsprint before applying it to the plate.

Air Brush

To use Hunt Speedball Screen Filler in an air brush it must first be thinned. Thin it by adding two parts water to one part Screen Filler. If the Screen Filler is not diluted, it will clog the air brush. Add India ink to darken the Screen Filler so it can be seen. Test the air brush on a piece of white paper before applying it to the



Air brush drawing.

plate. If the Screen Filler is air brushed on the plate to the point where it is a dark gray, then the screen filler has been applied too thick and will print black. It must look light gray to print gray. Be careful not to over-spray the plate. Start with a very thin spray and build up the values layer by layer. Sophisticated images can be drawn with the air brush. The range of values that can be achieved are infinite. Use a stencil if small areas are to be air brushed or if specific shapes are desired. There are many books published about using an air brush as a fine art tool. Consult them to find out how to use the air brush more effectively.

Scraping Whites

Screen Filler can also be scratched or scraped with a needle or razor blade to produce white lines much like a scratch board drawing. Use the edge of the razor to produce broader white areas with some textural and tonal variation. As always,



Razor blade scratches.

take care to scratch only the Screen Filler off the plate. If the scratches are deep, they will print rather than be white. When the clear polyester under the textured surface can be seen, the scratches are too deep.

Shellac

Orange shellac is an inexpensive, readily-available wash material that is easy to use. Bill Hosterman first demonstrated to the author that shellac might be used to image a polyester plate. Bulls Eye orange shellac works well. Orange shellac is preferable to clear shellac because it is easier to see on the plate. To use it as a wash drawing material, first thin it with rubbing alcohol using one part shellac and four or five parts alcohol. The shellac can be applied with a brush or a drawing nib. The shellac creates beautiful surfaces and

can be removed in places to create light values using a cotton swab and alcohol. Be warned that sometimes the alcohol will make an area darker rather than lighter. If the alcohol is left in a puddle on the plate, it will tend to attract the surrounding shellac and make a black patch. To lighten the value, be sure to remove the shellac and the alcohol from the surface. Another method of creating variation is to blot the shellac with a textured material or a paper towel while it is still wet. The textured material will remove the shellac and create light areas of texture. Gum arabic can also be used as a resist under the shellac. Thin the gum arabic with water to create some variation. When the gum is dry, cover it completely or partially with thin shellac. When the shellac is dry, use a sponge and water to remove the gum arabic. The best uses of shellac are for blacks and as texture transfers. To manage a texture transfer, apply shellac to a textured cloth or other material and dab it onto the plate. It is wise to first test the texture on a piece of newsprint to be sure the right amount of shellac is on the cloth. If too much is on the material it will blob up on the plate.

Future Acrylic Floor Polish

Future is an inexpensive, and easily obtainable wash material. Because Future was designed as a floor polish, it is clear. However, as a printing media it is easier to use if it has some color to it. Toner can be added to the Future so it can be seen when it is brushed on the plate. The best

