Lithography
Polyester Plate Litho

Introduction

Polyester Plate Litho is very similar to the Photocopy Litho technique with the added advantage of being made from a durable polyester film allowing for larger editions. The plates can be printed on offset litho, hand litho presses and even intaglio presses with little or no pre-production processing. The plates can be printed directly from a laser printer, where it is possible to produce relatively high-resolution photographic imagery. Or, by creating imagery directly onto the plate through autographic (handdrawn) marks. Basically, any waterproof material that will bond itself (or can be heat bonded) to the plate will work.

Creating Your Image

Drawing Materials

Ball Point Pen, Sharpie Permanent Marker, China Marker, #5 Stones Litho Crayons, Photocopier Toner (Must be heat-set in an oven or on a hot plate at 225o for 10 minutes), india ink.
All of the materials listed above work very reliably, but the ball point pens should be allowed to dry for several hours or a day, before printing. Toner can be mixed 3 parts water (with a drop of dish soap to allow the powder to mix with the water.) to one part toner. The toner can be fused to the plate by laying the plate on one or two sheets of newsprint on a hot plate, and covering it with a cover made out of aluminum litho plates to help trap the heat and bake the toner onto the plate. The toner is completely fused when it turns glossy and doesn't wipe off the plate.

Creating Plates with Digital Images and a Laser Printer

Using Adobe Photoshop and a laser printer you can easily scan and print images onto polyester plates. The Konica Minolta MFD printers at Winchester School of Art are perfectly suitable for this. However, it is best to make a few adjustments to your print settings to make polyester plates print easily and accurately at the press.

For more details on bitmapping and producing halftone and colour separations see the bitmapping hand out.

It is essential that image areas are bonded to the surface. In some cases of digital imagery a too fast laser printer will not sufficiently seal the toner to the plate. To solve this run the plate through the printer/copier again. Simply "print" a blank document.Alternatively manually fuse the plate as described above

You will need

- Printing Paper
- Newsprint
- Sponge
- Container with clean water
- Water sprayer
- Gum arabic
- Litho/relief ink
- Plate-oil
- Polyester Litho Plate
- Brayer (ink roller)
- Toothpaste and Felt Pad
- Ink Knife
- Vegetable oil (for cleanup)
- Cloth Rags (for clean up)

Health and Safety
To avoid skin contact with inks and solvents wear surgical gloves or barrier cream.

General Setup

Prepare newsprint, and printing paper, making sure to add the 'T' and Bar registration marks on the back of the paper. Fill a container with water and about an ounce of Gum Arabic this will reduce th Ph of the water and help alleviate scumming. Rinse your sponges. Setup the press, checking pressure, and registration on your plates.

Inking The Plate

Polyester plates print best with inks that are moderately stiff with a fair bit of length. True lithographic inks for hand printing are very stiff and moderately short.

01. Squeeze out a tablespoon of ink onto the table.
02. Mix plate-oil with the ink, experiment to get the correct viscosity. It should hold its shape as it sits on the slab rather than immediately relaxing into a blob.
03. Roll out your ink with a brayer so you have a satiny ink surface with a slight sizzle sound as you roll the ink. If you have too much ink the surface of the ink will look velvety and make a loud sizzling sound.
04. Spray water on a clean work surface so that when you place the plate down it will be held by the surface tension.
05. Dampen the entire plate with a clean sponge. Wring out any excess water and again lightly sponge the plate.
06. Make two or three passes with the charged roller, and gently wipe the plate again with damp sponge.
07. Wipe up any excess water from around the plate with a cloth rag and using an old sponge that is a little damp wipe the water from the roller after each pass of the plate.
08. Repeat steps 6 & 7, Clean the edges of the plate with a little toothpaste and water and a scrap of felt.
09. Take a proof on newsprint. Make adjustments to the amount of ink on the slab, the number of passes and the charging of the roller as dictated by the proofs.

Press Setup

Polyester plates can be pribnted on either the Hunter Penrose Littlejohn etching press or offset litho press. The offset press requires a significant amount of time and patience in setting it up and is so more suited to editioning or large scale work.

Printing using an etching press

Set the roller so it is just in contact or just above the press bed.

Health and Safety
Improper use of the press can be dangerous and damage the equipment. Always ask the technician to set the press for you.

It is easiest to ink your plate on a separate glass slab before printing. Once it is inked, place the dried plate face up on the center of the bed and your paper face down on the plate. Cover the plate and paper with 2 sheets of newsprint. Place a rubber blanket on top and run everything through the press once. Felts are not needed.

Printing using the offset litho press

To print on the offset litho press, Locate your plate against the reear and side registery pins and under the plate clamps. Place your paper on the adjacent bed up against the registry pins and under the paper clamps. Both the plate and paper beds should be adjiusted so the rubber blanket is just in contact with the plate and paper. Using the handle carefully roll the offset blanket from right to left across both beds until it reaches the end and engages the blanket on the plate. Carefully rool the offset blanket all the way to the right side to the resting position.

Tips

Plate Size Vs Image Size

-To make printing easier, first mark out margins at least 1” wide on your plate within which you can draw your image. it can be difficult to ink an image that covers almost the entire plate. You must keep at least 1” margins on each side, but it is recommended that you make them 1.5” wide.

-This should also be considered when creating digital artwork, where the margins can be added in the software.

Registration

-You can put T & Bar registration marks on the back of your plates with a ballpoint pen; the marks will be visible from the printing side. You can register multiple plates easily on a light table.

-If you are printing multiples colors where accurate registration is critical, you will need to pre-stretch or ‘calendar’ your paper. This can be done by running your paper back and forth through the litho press 2 times between newsprint. Once this is done, draw your corresponding registration marks on the back of your paper.

Printing

-Too much ink can cause fill in on the negative areas of the plate. If the image on the plate looks good, but the impression is too light, increase the pressure on the press.

-Experiment with using dry or wet paper. For detailed prints, wet paper can help achieve greater details while softening the gradients of the halftone.

-If upon initial roll-up the non-image areas are accepting ink, you may want to increase the acidity of the water by using a citric acid solution as described above.

-If non-image area is still accepting ink, the ink might be too thin and should be modified to be stiffer by using Magnesium Carbonate.

-If toner or drawing media is breaking down during printing, the image area is probably not adequately fused to the surface and additional fusing is required. The drawing media or toner should be shiny when properly fused to the plate.

Clean Up

To save a polyester plate, print it several times without inking it to remove the excess ink. Rinse the plate with water and coat with a thin layer of gum arabic. If needed you can clean it further with water and toothpaste before rinsing. The next time you want to print it, use it as you would any other polyester plate. To clean up your ink and brayers, etc:

01. Put on a pair of (Black) Cleaning Gloves.
02. Scrape the excess ink off the slab with your ink knife and wipe it onto phone book pages.
03. Pour a small amount of vegetable oil onto the slab. Roll the brayers in the oil until the ink begins to dissolve.
04. With a dirty rag, wipe down the brayers and ink knives. Ensure you remove all the ink, especially from the edge of the rollers. Give them a final wipe with a clean rag.
05. Use the same rag to wipe up the oil and ink on the slab and then put it in the appropriate red bin.
06. Use Mr Muscle and a blue J cloth to clean up the oil and ink residue on the glass slab. Also clean down the press bed and tympan with Mr Muscle.
07. Rinse out your sponges with clean water and leave to drain by the sink along with the containers.
08. Put everything back in its place. Newsprint, inks, bottles, rollers etc!

Thank you for leaving the studio clean and tidy for the next person!