Photopolymer Plate Making for Intaglio Printing

Editing imagery for a successful exposure –

Photopolymer plates can be made to print photographic and digital imagery as well as hand drawing. These instructions focus on plate making from imagery that is ink jet printed on transparency film. It is also possible to make plates from an original drawing done directly on a translucent Mylar film. The variables effecting plate exposure by this way of working are the opacity of the drawing materials and the grain/frost on the Mylar surface.

Exposure tests that are specific to the materials and equipment you are using are the only way to determine the best exposure time for your plate.

For imagery prepared using Photoshop (scanned drawings/objects, photo based and digital images)

To compensate for the softening inherent in the process and to prevent loss of shadow detail, slightly exaggerate contrast in subtle value shifts, particularly in the darkest areas.

Depending on your printer and type of exposure unit, you may get a more accurate final print if you use levels/curve adjustment layers to alter the value range of your image. Units with a more powerful light source may overexpose light areas while remaining true in mid-tones and darks. To compensate, darken light tones. In my experience using fluorescent black lights to expose, I find no further adjustments necessary.

Image prep for film output-

Once you are satisfied with your image and ready to make a plate;

Flatten layers

Make sure the dimensions of your print out will fit inside your plate size with at least a half-inch plate border past the edge of the film. Cut the plate closer to the image before proofing.

Crop the image to add plate border, 1/16 or more. Because the polymer coating may begin to peel from its steel backing, it's easier to clean the plate edges before printing if the extend past the image.

Image resolution should be set at 360 or higher

Assign profile – gray gamma 1.8 (deepens overall tone of the image)

Film printing-

Print on Pictorico Ultra Premium OHD transparency film.

Be aware of dimpling inherent in some acetate, which cause problems with image to plate contact in vacuum frame. This appears in the final plate as random light spots and halos.

Use settings that will allow for best quality printing with black ink only.

Set up the document to print corner crop marks, which you can use when trimming the plate later.

Films are extremely fragile. Protect and handle with great care.

Dry film under a blow dryer at low to medium warm setting for about 20 minutes. This hardens ink film and film coating. This makes the image more durable and encourages tighter film to plate contact during exposure.
Plate Making- Double exposure using an aquatint screen

materials needed:

plate exposure unit with a vacuum frame
fine aquatint screen
image film positive
KM photopolymer plate
talc
webril wipes or soft cotton pads
soft bristle brush or compressed air for removing dust and lint
developing tray with magnetic bottom
developing brush or soft bristle paint edging pad
cool water (68 to 72 degrees F)
a watch or timer to time wash out
newsprint
blow dryer

Cut plate to the appropriate size on a shear. The Plate should be larger than the image film positive.

Trim film positive to be 1/2 inch smaller than the plate on all four sides. Do not trim right to edges of the image. The plate must be larger than the film to ensure good contact all the way to the edges of the image.

Talc the surface of the plate, gently, using a cotton pad. Use the talc sparingly. Remove all traces of talc and lint/dust.

**First, expose the aquatint screen** (emulsion side down) to the plate (emulsion side up).

When setting up the plate and film in the vacuum frame, make sure no dust or lint get in between the plate and film.

Let the vacuum run for 3 - 5 minutes before light exposure. Examine carefully for good contact.

This exposure will be slightly less than half of the total exposure time.

**Second, Expose the image.**

When the first exposure has ended, turn off the vacuum and remove the aquatint screen.

Check both the plate and film surfaces again for dust.

Place the film (emulsion side down) on the plate, centered, with 1/4" to 1/2" around the edges of the plate uncovered.

Let the vacuum run for 3 - 5 minutes before light exposure. Examine carefully for good contact.

The image exposure should be slightly longer than the aquatint screen exposure.

*Exposure times should be tested on scrap plates before the final plate is attempted.*

Using fluorescent black lights 14 inches above the vacuum frame and images printed from an Epson CX7800 in black ink on Pictorico film, the best exposures are 4:45 on the screen and 5:15 on the image, giving a total exposure of 10 minutes.

For a standard commercial exposure using a mercury halide light source, measuring the exposure in light units, we'll start with a 10.5 unit exposure on the aquatint screen and a 14.5 unit exposure on the image, giving a total exposure of 25 units.
Developing the plate-

Place the exposed plate in a developing tray. A magnet attached to the bottom of the tray will hold the plate in place during washout.

Pour enough cool water (68 to 72 degrees F) into the tray to submerge the plate and immediately begin gently brushing the plate consistently and evenly over the entire surface with a plate developing brush or pad for 45 seconds.

After the 45 second wash out, pour the used water out of the tray and pour a small amount of fresh water over the plate for a final rinse.

Immediately remove the plate from the tray and blot with newsprint. Blot lightly 3 times, each time with a fresh piece of newsprint. Do this lightly and quickly to avoid embedding paper fibers into the soft plate surface.

Dry the plate thoroughly with a blow dryer.

Post-expose the entire plate surface to harden. I use a post exposure that is twice as long as the total screen + image exposure.

Cut excess border off of the Plate. Leaving at least a 1/16" border around the image helps to keep the edges clean during printing without disturbing the image as the polymer coating begins to peel from its steel backing. Slightly round the corners of the plate. Remove any metal bur. Sand the edges of the plate with 600 grit or higher and burnish to prevent edges from holding ink.

- **Protect the plate surface with wax paper or newsprint while cutting and working on the plate edges. Carefully brush away all debris.**

Clean the plate with mineral spirits or thin mineral oil to polish and remove any paper fibers that stuck to the plate during blotting and edge preparation.

Print with tight pressure and begin with an ink mixture of at least 50% transparent base to extend the range of grays in the final print. Adjust your ink mix as needed.