Care and Use Instructions for Random Dot Contact Screens

USE OF AQUATINT SCREEN

This screen is primarily used for direct contact exposures to a photopolymer film such as DuPont's ImagOn. An initial exposure to this Aquatint Screen will create an overall rich black 'aquatint-like' base, in preparation for a second exposure to a wash drawing or continuous tone positive. Each Aquatint Screen has a random opaque dot structure. During exposure absolute contact between the screen and the plate is essential, use a vacuum frame and a strong ultra-violet light source for optimum results. Acceptable results can also be obtained by using a contact printing frame and direct sunlight, however maintaining consistency while using sunlight as a light source is problematic. Make sure your light source offers even illumination over the entire surface of your vacuum bed. Each light source will require tests to determine the proper exposure time. Once these tests have been successfully completed then the Aquatint Screen exposure will remain a fixed, constant time in all future work with that same light source, provided of course that the light source remains constant. To conduct the test:

1. Laminate your printing plate with ImagOn film.
2. Place a clean Aquatint Screen emulsion side (dull side) down on top of the ImagOn coated plate. The screen must be a 1/2" wider than the plate on all four sides to provide a good seal.
3. Close the glass and turn on the vacuum. Make a series of test exposures. Use an opaque material (a piece of mat board, Rubylith, etc.) to progressively block-out the plate from the light source. Maintain the vacuum throughout the test by moving the opaque material across the top surface of the glass. Begin with 10 second increments, working up to 60 seconds. This should get you in the ballpark of an exposure time.
4. Turn off the vacuum, remove the screen and store it in a safe location.
5. Develop your ImagOn plate, being careful not to aggressively wipe out any dot pattern. Rinse, dry and proof the plate.
6. Depending on the results of your first proof, repeat the test, refining the exposure as needed until you are producing a consistent, rich black.
7. After this initial exposure to the screen is determined, follow with a second exposure to a wash or pencil drawing, or a continuous tone positive.

CARE OF AQUATINT SCREEN

If the screen needs cleaning, use cotton balls dampened with negative film cleaner or Isopropyl Alcohol. Be extremely gentle when cleaning the emulsion side. Store the screen flat, either in a large sturdy envelope with nothing lying on top or hole-punch one end and hang on the wall. Handle the screen by the edges only, try not to bend or crimp during exposures. Make sure the sharp edges of your printing plate do not scratch the delicate emulsion side of the screen. Wipe dust off gently with a lint-free cloth or photo chamois. Dust and dirt particles trapped under the screen while in the vacuum frame can impress into the ImagOn emulsion and possibly damage and scratch the dot structure. Make sure the alcohol/water solution used to adhere the ImagOn to the plate has evaporated fully. Always work with the top protective layer of Mylar on the printing plate.

Using the Aquatint Screen
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Non-toxic Intaglio Printmaking by Keith Howard

Wash-Drawing Intaglio-Type is a non-etch technique designed specifically for those printmakers who want to create images thahave subtle ink and tusche washes, and hand drawn lines. It presents a more direct and painterly approach. In this technique the ImagOn coated plate is exposed twice in succession - first to an Aquatint Screen and then to the wash drawing. A further refinement of this process allows for a third Flash exposure, which can increase the degree of tonality within some printed images.

Drawing and Wash Media

With the Wash-Drawing Intaglio-Type technique the drawing or wash must be made onto a transparent or translucent surface. I recommend a frosted single sided architects drafting Mylar, which is a high quality tracing film suitable for all wash and drawing media. This frosted vellum is plastic, not paper, and does not wrinkle or buckle with wet media as tracing paper tends to do.

The mark making potential of the Wash-Drawing Intaglio-Type is enormous as almost every mark can be translated into the intaglio print regardless of how subtle it is. Most drawing material will work. (There are a few exceptions where the drawing on the Mylar appears quite substantial, but there is actually very little pigment to act as a light stopping stencil during the exposure step. Such media as felt tip markers and diluted India Ink do not work well.)Superior results are produced by gouache, acrylic, or lithographic-type wax pencils and crayons. High density pigment watercolour, Badger Acrylic Aquatint Solution and diluted Graphic Chemical Water soluble relief ink also work very well. Pigment dispersion on the tracing Mylar can be increased by adding liquid soap, rubbing alcohol, diluted ammonia or Fantastic household cleaner, and can create very interesting 'effects' within the wash areas.

Try mixing powdered photocopy toner, rubbing alcohol, and Future acrylic floor finish for a tusche-like wash. I recommend a ratio of 80% Isopropyl Alcohol to 20% clear Future acrylic floor finish, mixed with a great deal of powdered photocopy toner. Take precautions not to breathe in the toner and work cautiously to prevent toner powder from becoming airborne. Once the toner is mixed in a liquid solution it is safer to use. Dilute this toner mixture with water to create your imagery on the surface of the drafting film. The pigment density of the photocopy toner mixture is much higher than that of acrylic or gouache, allowing for a much wider exposure latitude. Another good wash and drawing medium is watercolour pencils. This technique is especially suited for multicoloured plates where each different coloured wash drawing, made onto its own sheet of drafting Mylar, can be overlaid on the previous drawing before making the plates. In this way it is possible to 'preview' the final print.

If you are not obtaining results very close to your original wash drawing stencil do not look for the fault in the ImagOn film initially, but rather the methodology for laminating, exposing and developing it. The greater the exposure the greater will be the contrast of an image. Over exposure will burn-out all the subtle details of a wash drawing. Under exposure will result in a darkened image.

The Aquatint Screen

Working with the Wash-Drawing Intaglio-Type technique generally requires using an Aquatint Screen. An Aquatint Screen simulates the results of a conventional etched aquatint by exposing a densely clustered random dot onto the ImagOn coated plate. This dot pattern provides the texture for the intaglio print. This is not unlike the manner in which photogravure plates are exposed separately to a gravure or aquatint screen and then to a continuous tone image. As such, this technique is not confined to just wash drawings, but any continuous tone film positive can be used. This will particularly appeal to printmakers who wish to have photogravure-like results in as little time as 15 minutes. The ImagOn plate is first exposed to the Aquatint Screen (after which this screen is removed) and then to the wash drawing on Mylar. The Aquatint Screen is required for all wash drawings and other continuous tone images, the exception is if the art work consists of fine ink or pencil lines. 'Open-bite' results will occur without this pre-exposure to the Aquatint Screen.

After you have acquired an Aquatint Screen it is important to test the screen to determine what exposure time gives the best density of black in the final print. This process of determining the optimum exposure may seem time consuming, but once completed the Aquatint Screen exposure will remain constant saving you considerable time in the future. Developing a keen understanding of exposure times will allow you to explore the creative image making process free of technical problems.

Testing the Aquatint Screen

Expose the Aquatint Screen directly to an ImagOn laminated plate in incremental time segments. Develop, dry, light-harden, and print this plate to see which exposure segment gives the best density of black. You will notice that an underexposed Aquatint Screen appears as an open bite, because the UV light was not left on long enough for it to breakthrough the dot pattern and expose and harden the ImagOn emulsion. Conversely, areas of the plate that were overexposed appear grey not black. Your segmented test print should have underexposed areas that display characteristics similar to open biting, and at least one overexposed areas that should look grey. Somewhere in between these two extremes will be the correct aquatint exposure. This area of the print will read as the blackest. You will need to repeat this testing sequence several times to further refine the final exposure. Once the optimum exposure time for this black area has been determined it generally remains fixed, as long as the UV light exposure system remains constant.

Exposing the Image

Once the exposure to the Aquatint Screen is complete remove the screen from the plate. Follow with the second exposure to the wash drawing or continuous tone positive. Place the image *face down onto the plate. Placing the emulsion (dull side) facing* down in direct contact with the ImagOn emulsion ensures the best results.

As with the testing for the Aquatint Screen exposure, conduct step tests to determine the approximate exposure that each drawing media requires. For instance, using a 1000 Watt Metal Halide light source, we find that gouache drawings on Mylar are about 12 light units, acrylic paintings on Mylar are about 16 light units, and photocopy toner drawings on Mylar are about 22 light units. These are approximate starting points for the exposure tests that should be conducted for each new image. Unlike the Aquatint Screen exposure, where once the exposure has been established it remains constant, the exposure times for wash drawings will vary slightly with each new image. I should emphasize again that these times from our studio should just serve as an example and will not apply specifically to any other light exposure system.

Third 'Flash' Exposure Technique

The concept of 'Flashing' the ImagOn film with a brief burst of UV light was first conceived of by Elizabeth Dove. This innovation allowed for an image refinement that retained the finest detail and subtlety in a wash/drawing after it was turned into an intaglio print. This Flashing technique makes it possible to extend the tonal range of the drawn media being translated into the Wash-Drawing Intaglio-Type. If this Flash technique is not used then you can only expect to translate about 80% of the tonal range from any wash drawing. Once you understand how to utilize this third Flash exposure then it is possible to translate about 95% of the tonality.

As with all exposure procedures this Flash exposure must go through stringent testing to determine its standardized exposure time. In this instance it is valuable to have an exposure unit that measures light units rather than time as this exposure is quite brief. Consistency is the key. The Flash exposure is done after both the first Aquatint Screen exposure and the second exposure to the image. It is done directly to the naked surface of the ImagOn film - no vacuum is required. (It is not unlike the Flash exposure given to the HCL lith film in the darkroom discussed in the section on Photographic Lith Film Halftones. The reason that lith film is Flashed is to extend the potential tonal range within the lith film positive.)

Calibrating the Flash Exposure

By now it is expected that you have done the tests to determine the optimum exposure necessary for the Aquatint Screen. A similar test must be completed to determine the standard Flash exposure for your unit. The Aquatint Screen exposure is followed by an exposure to the wash drawing image. After these first two exposures are complete, do a step test on this plate to determine how the third Flash exposure will effect the image. Leave one section of the plate completely covered so that you may compare the Flashed segments to the un-Flashed ones. Remember if this Flash exposure is too long then all that will happen is that the image will burn out. If not enough Flash is given then there will be little appreciable difference. Somewhere in between there will be a Flash exposure that will succeed in extending the tonal range of your image without burning out the black areas. Once this optimum exposure is determined it should remain constant. The Flash exposure *is very, very brief. As an example in our studio we use* acrylic wash drawing exposures of 16 light units, and our Flash is .5 light units. Another exposure unit in our studio uses an exposure to wash drawings of 12 seconds, with a Flash of just 1 second. With the Flash, consistency is the key to success. These Flash times are specific to our equipment. You will have to do a Flash test exposure for each new exposure unit you will work on.