

**Intaglio Printmaking Process**

**WHITE GROUND**

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## WHITE GROUND

### Introduction

White ground is an intaglio aquatint technique developed by Frank Cassaro during the twentieth century.<sup>1</sup> The primary goal of this process is to create a complex value range with one etch. In order to better illustrate this concept, four sample illustrations have been included. They were basically created with a brush, and those brush stroke textures are evident in the printed images.

The formula for white ground is simple and a mixed batch will last forever, (or until it is completely used). The prepared mixture can be stored in a plastic or glass container with a tight-fitting lid. If it hardens and separates, add water and stir until it's workable again.

### Recipe for White Ground

1 part	00 Light Plate Oil (or raw linseed oil)
4 parts	Ivory Snow Soap Powder
2 parts	Titanium White Pigment
	Water*

### I. Safety Precautions

Since the initial stage of this process involves loose, powdery particles comprised of raw pigment, it is advisable to wear a face mask during preparation.

### II. Preparing White Ground

Mix the soap powder and white pigment together. Then gradually work in the plate oil with a spatula. This will produce a lumpy substance.

\*At this point, I recommend deviating from the original

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<sup>1</sup>Ruth Leaf indicates that Frank Cassaro invented this formula while working under Rackham Grant, and that it was published in "Artist's Proof," Magazines and Annuals 1961-1971, see Etching, Engraving and Other Intaglio Printmaking Techniques, 58, 229.

recipe, which calls for two (2) parts of water. Since white ground has an eternal life, "revitalization" occurs by adding water. Therefore, it is best to add this last and sparingly.

Begin by adding small amounts of water, while constantly combining the mixture. When the substance reaches a thick paste consistency, do not add any more water. Perhaps, one and a half (1 1/2) parts may be necessary, but probably not the entire two (2) parts.

### III. Preparing the Plate

White ground may be used on either copper or zinc and its application methods are endless. It may be applied either under or over the aquatint. Illustrations I and II were created by painting white ground directly on the plate with the aquatint over, and Illustrations III and IV were created by painting white ground over the adhered aquatint.

#### A. White ground under aquatint

If application is desired under aquatint, it is very important to prepare your plate carefully. In order to ensure that white ground spreads evenly, the plate must be completely de-greased. This is accomplished by proceeding first with the normal "new plate" preparation process, then rinsing it with white vinegar, water, and finally, blotting it dry. The white vinegar rinse will put a mild etch over the entire plate and de-grease it at the same time. At this point, you are now ready to work.

#### B. White ground over aquatint

If application is desired over aquatint, preparing the surface with white vinegar is not necessary. However, the aquatint application is. The best method for applying aquatint for white ground work is by using an aquatint box. A very fine dusting, which covers the complete surface evenly will produce the best results. Once the plate has been dusted, be sure to heat and adhere the aquatint adequately. At this point, you are now ready to work.

### IV. Applying White Ground to the Plate Surface

As mentioned before, application of white ground can be done in a variety of ways. However, for instructional purposes, brushing it on will be the method discussed here. Begin by mixing a little hot water with the ground so that it produces a workable, yet still somewhat pasty, solution. Using hot water tends to make the mixture "creamier" and, thereby spreading more smoothly. The more water that is added, the thinner and "washier" white ground becomes. Very thin white ground results

in an overall darker image.

Apply the mixture to the plate in whatever configuration you desire. The theory to keep in mind while working with this medium, is that you are creating "whites." At this stage of the image creation, the whites, as well as the value changes, are exactly what is visible on your plate. The ability to see this as you work, makes the theory of the process easily understood.

If, for instance, you apply the substance in a "washy" manner, similar to an ink wash consistency, you will obtain a very dark image, (see sample illustrations). However, if you wish to create a "pure white" area, the ground must be thickly applied, (see sample illustrations). Often one "coat" will not be sufficient. Therefore, a short drying time (usually a few minutes) between applications may be necessary.

One of the ways in which this medium interacts with the acid during the etching stage, is that the water in the bath dissolves some of the ground, especially since it is partially composed of soap. Remember that the oil and pigment will act as an acid resist, yet the rest of the ingredients are "water soluble." However, if you wish to employ another form of acid resistant, such as stop out or hard ground, this has to be applied to the plate before the white ground. As you become proficient with the medium, its properties and capabilities will become more apparent.

Now, comes the difficult part, waiting. Once the image is created, the ground must dry. Drying times vary, however, at least 24 hours are necessary. I have let plates dry for as long as a month before etching and actually have discovered that I am most pleased with the results if they dry for about three (3) days.

#### **V. If You Make a Mistake**

"Mistakes" are **not** possible with white ground. If you discover that you don't like something, simply wash it off and start again. If you have small areas that need changes, just let it dry for a short while and rework those areas, either by adding water and re-configuring and/or by adding more white ground. White ground can be manipulated for as long as it's necessary. You can add more to the plate, thin it out with water, wipe it off, or draw through it, (see sample illustrations). Whatever it takes to complete your image, is acceptable. Just remember, the more you can see your plate, the darker the final image will be.

#### **VI. Etching the Image**

For a technique such as this, a weaker acid bath produces

the best results, in other words a 10:1 or 12:1 solution. Since part of the success of this process depends upon dissolution, the longer the plate can remain in the acid, the better the etched image will be in the end.

#### A. White ground under aquatint

If you have prepared your image directly upon the plate and it has had sufficient time to dry, it is now time to aquatint. As mentioned under the previous instructions for preparing your plate in the "over aquatint" section, the aquatint is best applied by using an aquatint box. If one is not available, however, in both methods a fine, evenly distributed and evenly covered layer is most desired.

Adhering the aquatint to the plate over white ground is an interesting process. After the plate has sat on the hot plate for an adequate amount of time, it will begin to turn yellow, as the rosin melts. If you allow it to sit for a long length of time, you may actually create another texture by chance. It is possible that thick areas of application will randomly "crack." This can be an interesting effect, yet it is quite uncontrollable, in other words, don't plan for it, but if it happens and you like it, all the better.

Once your plate has been removed from the heat and it has cooled, you are ready to put it in the acid bath. During the etching process, you cannot successfully "feather" your plate. If you run a feather across the surface, you will discover that you remove the protective ground in the areas where the feather comes in contact with the plate. So, unless you want "black" stripes across your image, you must only lift your plate from the acid and let the "bubbles" drain off. Even during this process, the possibility that you may leave fingerprints in your image area exists. Once again, the longer white ground remains in the bath, the more fragile it becomes, as it interacts with the liquid solution. This is designed to be part of the process.

The very best etch happens, I believe, if the plate can remain in the bath for at least 45 minutes. This is not at all possible, if the bath is too strong. In this case, all of the ground will quickly disappear, and not only will it etch "black," but it probably will go beyond that and etch "gray", as the open bite process begins. Furthermore, if the bath is too weak, it may take too long to etch. The ground will also dissolve before any deep etching has taken place. As you can imagine, this is the part that is most crucial.

#### B. White ground over aquatint

If your image has had sufficient time to dry, then you are now ready to etch. Since the aquatint is already on your plate,

you simply have to place it in the acid. As discussed in the preceding directions, during the etching process, you cannot successfully "feather" your plate. If you run a feather across the surface, you will discover that you remove the protective ground in the areas where the feather comes in contact with the plate. So, unless you want "black" stripes across your image, you must only lift your plate from the acid and let the "bubbles" drain off. Even during this process, the possibility that you may leave fingerprints in your image area exists. Once again, the longer white ground remains in the bath, the more fragile it becomes, as it interacts with the liquid solution. This is designed to be part of the process. It is even more fragile when working in this manner, since the protective covering of aquatint is not there.

Timing for this etch is best done by "eye." As the ground begins to lift, and it will--the hotter the acid bath, the faster the ground will dissolve--you should use your own discretion about how dark you want it to become. Remember, once the ground lifts off, there is nothing but aquatint between your plate and the acid. Once again, the milder the bath is, the easier it is to control the etching process.

## VII. Cleaning the Plate to Prepare for the Printing Step

This varies depending on how you applied the white ground.

### A. White ground under aquatint

Remember what is on top, is what comes off first. Aquatint dissolves with denatured alcohol, and that is what is on top. Once this is removed you are left with the ground. Since this is primarily "soap," begin by washing it off with water. Once that seems to have reached its effectiveness, there will probably remain a slight residue, which looks like a "milky" film. This is probably oil and pigment and is easily removed with a solvent, such as mineral spirits. You are now ready to print.

### B. White ground over aquatint

Remember what is on top, is what comes off first. With this technique, it was the ground, so begin by washing it off with water. When the water rinse is no longer effective, you have probably reached the aquatint. At that time, you should proceed with denatured alcohol. If a "milky" film still remains, it is probably a mixture of the oil and pigment, try using a solvent, such as mineral spirits. This may not completely clean your plate, as it can mix with some of the aquatint. If it still does not appear clean, then interchangeably rinse it with denatured alcohol and solvent (mineral spirits) until the surface is free of all residue. You are now ready to print.

## VIII. Variations

What has been previously described is an initial process for using white ground. Once you have become proficient in its application and confidently understand how it applies to the plate, it can be manipulated in many ways. You are now ready to use it in a manner that will best enhance your work. Some of the ways in which that is possible are as follows.

### A. Applications

It's possible to brush a medium layer of white ground over the entire plate and press texture into it. You can run a dry brush through it, wet wash through it, or once it's dry, draw through it with a hard drawing tool. It's also possible to blot it with towels, or rub sections away--the possibilities are endless.

### B. Rework

During the working state process of a plate, white ground may be applied for rework purposes. This is especially helpful, as you can see the previous etch on your plate as you are working. Keep in mind, that if you are fond of particular areas and do not want them to be destroyed by another round in the acid, you must either stop these areas out in advance or apply the white ground thickly enough to ensure that the acid does not reach them.

### C. Plate finishing

Oftentimes, when an image "seems finished", but not quite satisfying, perhaps white ground is the answer. Some of the textural effects, as well as the directional motion that happens with brush strokes may be exactly the appropriate solution. In addition, something about this technique tends to exhibit the suggestion of "water," and it may even look "watery" during the application process. Be sure to do your best to use this to your advantage without allowing it to limit your vision for the final image.

## IX. Summary of Steps

### A. White ground under aquatint

1. Follow steps for new plate preparation.
2. Clean with white vinegar rinse.
3. Apply white ground.
4. Let dry for at least 24 hours.
5. Adhere aquatint and cool.
6. Etch and clean plate.
7. Print image.



**B. White ground over aquatint**

1. Follow steps for new plate preparation.
2. Adhere aquatint and cool.
3. Apply white ground.
4. Let dry for at least 24 hours.
5. Etch and clean plate.
6. Print image.

## X. What Went Wrong and Why

### Problems

White ground doesn't apply evenly, it separates on the plate.

White ground isn't workable.

White ground lifts in the acid too quickly.

There are large open black areas in the image that were not made during the original application.

The printed image is all gray.

### Cause and Solution

The plate has not been "de-greased" sufficiently. Wash off white ground, follow white vinegar rinse steps and start again.

The medium is too thick. Add more hot water to thin and try again.

The acid is too hot.

The drying time of the white ground was not long enough.

The aquatint was not completely adhered.

All of the above possibilities must be solved by completely starting over.

Somehow the ground was removed during the etching process. For instance, see Illustration III. During the etching of this plate, the bubbles were gently brushed away with a feather, which resulted in a black diagonal across one side. The only solution for this problem is scraping, burnishing, and reworking.

The original aquatint application was not sufficient.

The plate was etched too long and/or too hot and foul biting occurred.

The only solution for this problem is scraping, burnishing, and reworking.

The printed image is too light.

The original white ground application was too thick and/or it was not etched long enough. Reapply the white ground and/or redraw in whatever manner you wish, then etch again.

The printed image is too dark.

The original white ground application was too thin and/or it was etched too long. The only solution for this problem is scraping, burnishing, and reworking.

## BIBLIOGRAPHY

Leaf, Ruth. Etching, Engraving and Other Intaglio Printmaking Techniques. New York: Dover, 1976.

Illustration I



lines  
drawn  
through  
dry  
medium

very  
washy

thick  
paste

medium  
wash

washy

White ground under aquatint

55 minute etch 12:1

paper wipe



- lines  
drawn  
through  
dry  
medium

- very  
washy

- thick  
paste

- medium  
wash

- washy

White ground under aquatint  
55 minute etch 12:1

paper wipe



Lines  
drawn  
through  
dry  
medium

very  
- washy

- thick  
paste

Leather  
stroke

- medium  
wash

- washy

White ground over aquatint  
45 minute etch 12:1

paper wipe



Illustration IV

White ground over aquatint  
30 minute etch 12:1  
Paper wipe

Paint brush application  
Minimal rework: Hard ground  
line etch + plate polish