

KEEPING PACE

A Monthly Newsletter Devoted to the Darkroom Arts

Volume 102 February 1996

Using UltraStable Pigments in Your Own Darkroom

The production of a pigment print is not only exciting, but very easy to accomplish, if you use the UltraStable process.

It begins with the realization that the old method of producing the black and white paper prints known as "bromides" are no longer needed.

This news is great for 2 reason.

First; it is almost impossible to find a rich enough photographic paper that could match the paper of the 1940's.

Second; The fact that a polyester film could be used as the transfer tool registration could finally be done in an automatic system.

No longer is it necessary to have to register the separate pigments onto a sheet of temporary support paper through the back of a sheet of celluloid, wasting time.

It begins of course with a set of separation negatives made to the size of the print you want to produce. You can't change your mind once this particular size has been chosen.

It isn't necessary to have a set of screened separation made because the process also works with continuous tone images.

More about this later.

Then after the negatives are made, they must be exposed by contact onto a sheet of the color pigment that matches the corresponding color separation negative. by an ultraviolet light source. Where does one find such a light source. The most obvious place to find this kind of light source is through a graphic arts dealer. The printer known as a platemaker is what you will need.

These are simple items that

are found in graphic art magazines such as "Horse Trader" or "California Printers" (PO Box 11766 Santa Anna, CA 92712) or any yellow pages of a large city. There are various sizes available.

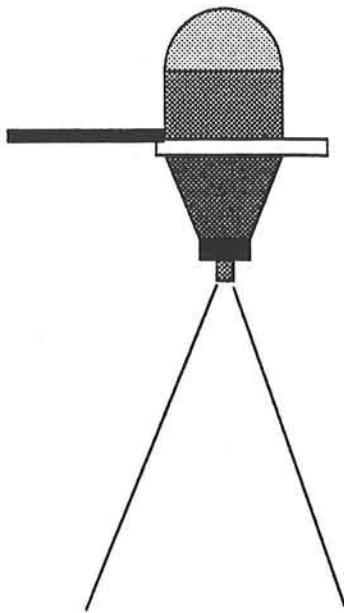
It is simply a light source and a method of timing using regulating devices that measure the light output and can be set as units rather than time in seconds. It is usually contained so that exposure of your skin from the ultraviolet light is not excessive.

These units were used to produce plates that were sensitized to this particular light source, (ultra Violet) It was required that the plate material was pre-sensitized to the light source so that only the portions exposed to the light were affected.

This same procedure is what makes the process so appealing to many people.

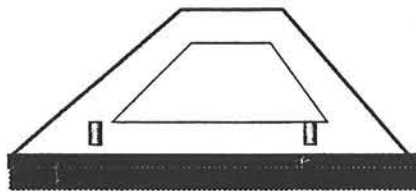
First of all the three separation negatives must be in register. This is insured by making sure that the enlarger used to produce the three separations is equipped with a registration carrier, and is able to be locked into an immovable position. All of the necessary masking, including contrast, highlight, and color correction must be accomplished by contact. All of the necessary items needed to produce enlarged separations must fit into the carrier of your enlarger and must be in register. More about this later.

The large separations are also punched during their production thereby assuring that the process of registration is carried along with the process.



The enlarger must not be able to move in any direction.

The vacuum easel can be made by any competent worker, or you can always purchase one from a number of sources, including my friend Warren Condit. It must also include a set of pins that will fit the required registration punch.



These items are absolutely needed so that confusion will not reign.

The obvious next question is "What kind of enlarger should I get?"

First things first.

A diffusion enlarger or a condenser enlarger?

If you like to use a diffusion enlarger it's benefits are a much smoother background with less dirt or scratches showing.

It has the proper kind of light source, which is a filament burning light with a full spectrum of color, as opposed to a cold light system, which is color blind and can only see a limited amount of color.

If the cold light is a 5000°K system, it may still be short of the real components of light.

The condenser enlarger using an enlarging bulb will divulge more edge effects and allow the negative to appear sharper.

These are important optical illusions that we need to make the print look right.

The next question is what size?

If you are shooting with a 35mm camera, then the choices are small. The small Omega, as nice a job as it is, will be unable to have a quality registration carrier attached to it. The smaller carrier may be difficult to add pins to it and still have an accurate punching system.

My advice would be to get a 4x5 enlarger and use a smaller lens (Apo) to make the enlarged separations. This would enable you to get a carrier system that will hold up. Condit makes such a system. His carrier arrangement will fit the Omega, Saunders, Beseler, Durst, ZBE and many, many more. If you like condenser systems, as I do, then any simple enlarger will do. Make sure that the size of the condenser lenses are the same size or larger than the lens size.

The condensers supplied by Durst are extremely accurate and clean. The light source easily goes straight through their condensers.

Let us assume for the moment, that you think you are capable of making enlarged separation negatives. What film would you use to make the separations?

There are a number of films on the market that will easily fill the bill for you.

I personally like Super XX but Kodak has seen fit to let this great film disappear.

However, other Kodak films such as T-Max have been used with great success.

The new family of films provided by Ilford are excellent.

The main ingredient is that they be panchromatic and must have a smooth and fairly straight curve shape.

I will not go into the technical aspects of producing a matched set of separation negatives at this point. This project will take more pages than is allowed here in my newsletter. **However, suffice it to say, they must not only be a matched set, (by grey scales) but they must consist of the proper density range that will fit the required range of the pigments.**

Let me stick to the actual performance.

The negatives have been made by enlargement to the size of the print.

This is done by projecting the image onto a sheet of film, with the transparency's emulsion facing the sheet of film on the easel, with it's emulsion facing up. In other words, emulsion to emulsion.

You will see why in a moment.

After the light source settings and filter placements, expose the three images onto the registered films on the easel and then process the films.

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This step is critical. Use fresh developer and process one sheet at a time, with a fresh change of developer for each sheet.

Use large trays and have them sitting in a water bath of the correct temperature.

This stage is very critical. When all three negatives have been exposed and processed, make sure to verify all of the steps and results so that you will not be disappointed in the following print.

I want to concentrate on the actual handling of the materials so that you can appreciate the simplicity of the process.

The three negatives are completed. They have the punched holes that indicate that they are in register. (Let us hope so)

Before any attempts to produce a print, you should be aware of the following possible problems.

Each of the pigments has it's own speed. Does this sound strange?

Back in the 1940's when I was involved with Carbro, the source for pigments came from 2 suppliers.

The best colors came from Tri Chrome company in England.

Even though the colors were more pure, the speeds of the different materials caused headaches. No matter how accurately we made our "bromides" the final print was either over or under exposed in one or more colors.

This was not due to any inexperience we had in the process, but because the three colors were not working at the same speed.

We proved this by making three bromides consisting of the same exact grey scale.

We attempted to run the print and assemble the three pigments. They were off considerably.

We then turned to our other source, McGraw Colorgraphic, a subsidiary of Carnation Milk Co. in Los Angeles.

The main reason they were in business was because of Paul Hesse, a great photographer who always made a Carbro of his work.

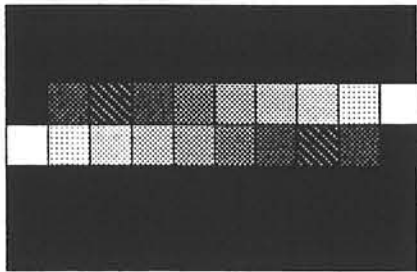
These pigments were on the button for speed. One to one to one.

However, the colors were not as clean or as pure as the English version. We decided to use the American brand.

Now, here we are in 1996, and the only real supplier is Ultrastable.

In order to find the exposure times for the UltraStable pigments I recommend the following procedure.

Purchase two 21 step grey scales (film tablets) place them in opposing positions and mount them into a sheet of opaque material so that no other light escapes from the sheet except for the grey scales.

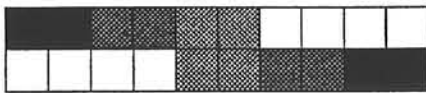


Notice how the center of the images meet in the middle of the scale.

Now, make a series of different exposures on each pigment sheet using an ultra violet light source and a working intergrator. Record the different units of light for each exposure.

Do this for all three pigment colors.

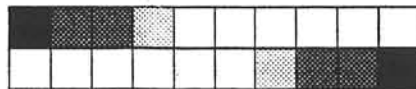
If you get a result that looks like this:



This indicate that you are over exposed. Notice how the middle areas are crowded.

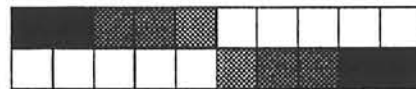
This may require more than one attempt to find the correct exposure.

If your result looks like this:



This indicates that you are underexposed.

However, if your image looks likes this:



This indicates that your exposure is fine. Record this number for future work.

Charles Berger has informed me that every effort is being made to accurately produce the different colored pigments so that the exposures can be a "one to one" exposing system. However, the color of the tube, even though it is ultra vilolet, may be off and this alone can cause problems with the accuracy of the exposure.

However, once the material has been evaluated for it's speed, and you have checked the accuracy of your grey scales imprinted in your separation negatives. you must decide on a color balance based on the readings of the grey scale, any corrections you may want based on your own intuition, and proceed to make a small test print.

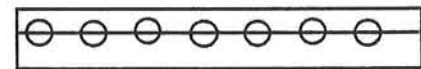
The darkroom needs are simple.

You will need a sink of the correct proportions.

If you are making a 16x20 print, I would build a sink made from exterior or marine plywood to these dimen- sions:

24 inches from front to back, 6 feet long and 8 inches deep. Mount the sink at an angle so that it can drain.

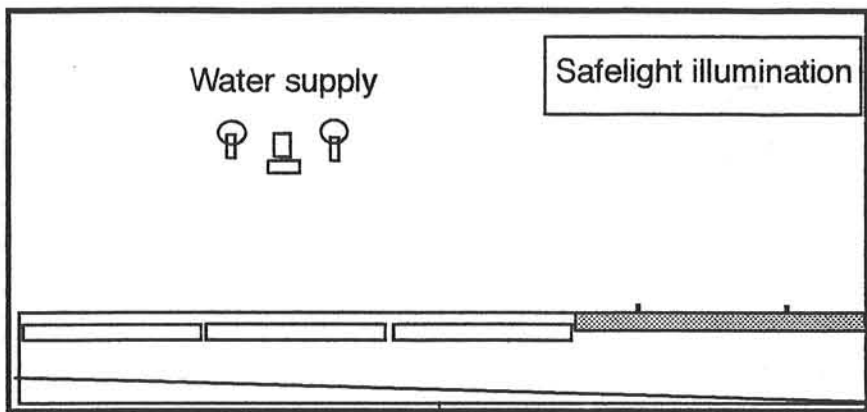
Build a rack that will support the trays using 3/4 PVC pipe and do this.



From a piece of lumber (2x4) drill holes though it that match the outside dimensions of the PVC pipe. Then cut the 2x4 lumber in half, right through the holes. Then either hot glue or screw the two halves to the inside of the sink so that the PVC pipe, when cut to the width of the sink will fit into the half holes and if the lumber is placed accurately, using a level, the trays will sit flat and even while the sink drains towards the drain hole. Otherwise, you will have trays sitting in hot water when you don't want them to.

At one end of the sink, place a sheet of granite or plate glass (1/2 tp 3/4 inches thick)

In this flat surcface you will need to place a set of regis- ter pins.



The above drawing indicates how the trays could be placed. The transfer area at the right could be either stone or glass, If you already have a large film punch such as a Kodak Dye Transfer punch or a Condit punch or any of the punches sold by graphic art supply companies, then simply first punch a sheet of polyester film. Place this sheet of film on the transfer area in a comfortable position. Tape the sheet in place. Then, with a marker, make dots where the center of each hole appears. Make sure that you have a set of pins that match the holes in the film. Remove the film from the transfer area. Using a carbon bit that is slightly larger than the pin post of any pins you have, drill into the glass or stone until the entire post is seated and has much room around it. Then using a 2 part epoxy cement, that requires time to set, place some cement into the holes.

While the cement is still fresh and pliable place the pins' posts into the holes. Then place the punched sheet of paper over the pins and make sure that it fits perfectly.

At this time, place a heavy weight on the pins (a few books) and let this cement "cure" overnight.

The next day, remove the film. If it is stuck, cut it out. Using a single edged razor blade scrape off any excess cement that may still be clinging to the transferboard.

Now, when you are ready to make a transfer, you will be **more than ready.**

Now, for the actual exposures of the pigments. Remember, you are just using 3 colors, Cyan, Magenta and yellow. Punch the yellow pigment and place it on the pins of the vacuum easel (which must match the pins on the transfer area.) Then place the separation negative, emulsion down over the yellow pigment.

Close the vacuum easel, and if you are using a flip top platemaker, flip the easel, and if you are not using this kind of easel, make sure to stay behind some kind of protective area when exposing.

Set the intergrator at the units you want to use. Activate the vacuum, and when the correct pressure is reached, make the exposure.

Your darkroom safe lighting consists of many "bug" bulbs which works well because the pigments are not susceptible to the color of the bulb, but only to the ultra violet light source.

After exposure, remove the separation negative from the easel and carry the yellow pigment sheet to the sink. During this time a receiver sheet should have been soaking in the far left tray. The right hand tray should be filled with cold water. Soak the pigment sheet for a minute using the right hand tray. While this pigment sheet is soaking, remove the receiver sheet from the tray, place it on the pins, emulsion up, and roll down the sheet. This will help to set it in place on the transfer board.

Then remove the yellow pigment from the right side tray and place it on the pins, making sure to stay away from touching the image area onto the receiver sheet.

Very carefully place the roller against the pins, and with one clean and steady move, roll the yellow sheet in place.

You can squeegee the two sheets into a tighter position, but I don't think it will be necessary. After a minute or so, add hot water to the middle tray. (between 110° and 120° F)

Pick up the sandwich from the transfer board. Very carefully, slide it into the tray of hot water. Let it sit for a while until you can see little bits of color oozing out from the edges of the yellow sheet.

What has happened here is this. The pigment sheets have been pre-sensitized to the ultra violet light source which allows any exposed area to harden and not be susceptible to being dissolved.

As the color keep oozing out from the edges the yellow pigment paper begins to loosen. Slight lateral movement in the tray will keep this action growing. Eventually, the entire sheet can be removed. What is left is a blob of color on the receiver sheet. Keep washing this sheet using hot water. Eventually, all of the unhardened emulsion will have gone down the drain, and what is left on the receiver sheet is a yellow image.

Don't even think of touching the image. It is so soft that even thinking about it will damage the emulsion. Hang this yellow sheet in a nice and warm (not hot) dryer that contains a gentle moving current of air.

While this sheet is drying, march back to the vacuum easel. This time we are using the magenta pigment and the separation negative that belongs to it. Expose this sheet in the same way as you did the yellow.

Hopefully, by this time the yellow receiver sheet is dry. It must be. After the exposure of the magenta, we will go through the exact same steps as before.

Take the receiver sheet with the dry yellow image and soak it in cold water. Soak the magenta sheet in another tray of cold water. Again, after a minute or so, place the receiver sheet with the yellow image on the pins again. This time do not squeegee or roll, Make sure the pins fit nice and snug. Then remove the magenta image from it's' cold water tray and face down, carefully attach it to the pins, make sure it is aligned properly, place the roller in position, and then with one steady and even move, roll out the image.

It won't be obvious yet as the magenta is covering any visible image.

After a minute or so, remove the sandwich from the pins and again place the entire sandwich into the hot water tray.

Wait for the telltale signs of color oozing out from the edges of the sandwich. Remember, one image is already set on the receiver sheet.

As the paper becomes loose, remove it gently from the receiver sheet. Continue to wash the receiver sheet until all of the magenta pigment is gone, except that which we need for the print.

Now we have two images on the same sheet, in register and just awaiting the arrival of the cyan image. After you are finished washing, place the receiver sheet into the same gentle dryer.

While this combination is in the dryer, prepare the cyan for it's voyage.

Again, repeat the same steps and after the cyan is completely washed off, you should have a complete print. However, wait for the print to dry before ordering the champagne. You will never, I repeat, never be satisfied with the first print. This is against all reasonable thought.

I have only once in my 50 years made a print using multiple negatives and make a good print on the first shot.

Charles Berger also has a formula for reducing any possible stains from the white portions of the paper.

That is it. You can choose from a variety of receiver sheets and give your individual work a "look" of it's own.

In fact, Charles offers a receiver sheet for the Dye transfer Process and it is called UltraLana Paper. It is coated by the same people that do his pigments. All that is needed is to place the paper into the standard paper conditioner formula and it works very well.

The next step in this UltraStable process is the making of your own separation negatives.

This is the most important part of any multiple film process. The separation negatives. Remember, this will separate the men from the boys.

All other print processes have the distinct advantage of having the manufacturer have over 90% surety of it's outcome. The rest of us will take their material and have fun finding out what the limits are and what filter pack to use.

But when you decide to use separation negatives to make a color print, you are treading on ice.

The reason for not getting in too deep at this time on "how" to make separation negatives is simple. It takes more than 40 pages in my book on Dye Transfer in which I describe the entire procedure. It is not for the weak. However, I am so interested in this process that I am planning to write a book about making enlarged separation negatives for the UltraStable process.

I don't know when it will be finished, but I do plan to do it.

In fact, if you just want to make prints and have little or no equipment, all you need is a service company that can scan your photographic transparency and produce a set of 4 color litho screened negatives and all you will require is an ultra violet light source and a sink. The rest is easy. This will initiate you into this world of pigment printing without getting too involved yet. See if you like what the process can do for you. Can you dodge and burn with this process? Of course you can.

The process is different in the way it works, but if you can handle a roller, you can do this.

With this system you can also make your own black and white prints so that you can measure areas that are similar and neutral by examination. You will learn what the litho people have to do.

I have news about the return of the Dye Transfer process. Dr. Patterson has the coating people doing one more coating with an improved formula that will increase the speed to what Kodak has had for almost 50 years. The announcement is overdue. I am sitting on pins and needles to find out when the good doctor will make the big announcement. I must have received at least 30 calls from people that are trying to reach him. Some are disappointed because they have been waiting so long.

Remember this, all of this research and recoating costs much money. He has spent it from his own pocket because he wants to make sure of the continuity of the process. His phone bills alone must be staggering. Imagine the cost of making a coating and improving on it each time he makes a new effort. Give the man room to breathe and to work. I am sure that the news is imminent.

I know of many darkroom workers that have stocked their freezers with film and paper. The time will come when the resurgence of the process will be announced. The process is far from dead.

Check for yourselves. Call any gallery and ask what kind of print do they prefer.

In a recent conversation with Joe Holmes, one of the most creative scenic photographers in the world, he has informed me a his new approach to getting his work out.

For many years he has devoted himself to making spectacular Cibachrome images His own proprietary invention for a light source for his enlarger is just one of his may accomplishments. The prints he produces are beyond imagination. You have never seen such rich colors as he has in his work. He is now at the point where he too has succumbed to the computer. He is now scanning his images using a high end rotary scanner and works with the images using "live picture". a program that is immense in it's corrective aspects.

From these he plans to make a new transparencies from which he can then produce even more sensational color prints.

Many of my associates have gone from one end of the computer world to the other. Some who have been in the forefront of the Dye Transfer field have switched back and forth. I guess, when you come down to it, it is hard to beat the quality of a Dye Transfer print.

I have almost 100 prints in my closet and many prints on my wall in my home, and whoever visits, whether it be a photographic associate or

or not, the acceptance of the work is always nice to hear.

My method of making a "bump" highlight mask has been criticized recently. I was informed that my method was inferior to pre-masking the highlight areas.

Well, there are times when pre highlight masking works well and there are times when it doesn't.

For instance, I have a transparency of a castle sitting up high on a rock overlooking the ocean. The picture was taken late in the day with a fantastic sky with very little detail in the buildings themselves. However, the sky itself is great because it has a bright and open cloudy sky with a sunset appearance. The trouble with masking this image is that it needs about as 35%to 40% contrast reduction mask. If I don't use a pre-mask the sky will look flat when the contrast mask takes over. If I use the pre highlight mask it will help. However, down in the dark area of the shoreline is a streak of white foam climbing to the beach. This part needs to be "bumped."

However, the mask I make (using LPD 4) will actually be a positive image. In order to get the details at the bottom of the shoreline I will wash out the sky.

What to do?

Here was my solution. Make a reversed highlight mask (the Bump Mask) and work to get the information I need at the shoreline. Now the rest of the sky is going to wash out all of my saved detail. Simple.

Opaque out the sky area and only save the shoreline. It worked. My student in Germany will be pleased when he gets his version of a test I am currently giving him.

I wish I could afford to publish this newsletter in color so that things I explain could be easily seen. I will look into this problem soon. Maybe instead of publishing the entire letter in color I will simply slip in a separate sheet describing the problems in question.

For those of you who care, I am now on the internet. My moniker is:

rapace@popd.ix.netcom.com

It took a while to get hooked onto this system. If any of you are so connected and would like to give me your address, let me know by reaching me at the above address.

Thanks.
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