

## TONERS

Toning may be used as a protective measure or as a way to add interesting shifts in the tonal characteristics of a print for aesthetic reasons. Follow the instructions in this booklet combined with those included with whatever chemistry you are using. There is no set way to tone prints. This is a very personal part of fine photographic processing. Superior results are the result of continued experimentation. Try as many variations on any of these processes and please share your results with the rest of the class.

### TYPES OF TONERS

Three categories of toners are available that alter the tonality of photographic prints. The result is a wide range of colors other the basic black and white provided by silver based printing papers. There is also a whole range of non-silver based photographic processes that are taught as part of a Non-Silver Alternative Photo Processes course.

Each photographic paper will react with each of these toner differently. The type of developer you use and the method of fixing you employ will all affect the look of the toning. Even different types of negatives will respond differently to the same toning. The only way to find out what does what to whom is to experiment with the many different combinations and variations and share this information with your fellow students.

### SILVER CONVERSION TONERS

These toners chemically change the silver in the emulsion. These include Selenium, Sepia, Poly-Toner, Copper / Brown, Yellow / Gold Toner, Blue Toner, Halo-Chrome, and Protective Gold Toner.

### COLOR COUPLER TONERS

These toners plate the silver with a color dye. These include the Edwal and Berg Color Toners and Rockland Select Chrome.

### DYE TONERS

These toners add a uniform color to both the emulsion and the paper. Rockland makes Print-Tint toners. In addition, anything that will stain paper can be used to change the tonality of a photograph, tea, coffee, wine, beets, blood, urine, etc....

### BATCH TONING

It is not necessary to tone at the same time you are printing. Prints that have already been processed and dried can be toned at a later date. It may be a good idea to finish all your printing, making several copies of the final image, and then come into the lab some other time and have a toning party with some other students. It is advisable to hold on to even the mediocre prints to use for experimentation.

### SAFETY

All toner chemicals are VERY TOXIC! Always wear gloves, and a vapor mask is recommended. Do as many prints at once, in an attempt to reduce unpleasant environments as well as save on chemistry. It may be worth your time to arrange to tone with other students and experiment together. Report any successful toning adventures to the entire class, please. Report toning disasters too!

### TRAYS

Trays and any other tools used with toners must not be made of metal, which will chemically react. Pour out exhausted Toners at the end of the session as close to the drain as possible. This will avoid excess contact with the stainless steel sinks. Toners have a tendency to stain our plastic trays, so be sure to clean everything thoroughly with tray cleaner available from the Lab Monitor.

## SILVER CONVERSION TONERS

These toners convert the silver in a photographic image to some other insoluble material. This alters the color of the print without affecting the photo paper. The colors available range from a subtle brown or purplish tinge all the way to bright pinks or reds, with more vibrant colors coming from using more than one toner on a print.

The way you process your print greatly affects the action of toners. The type of developer used, the length of development time and temperature can generate wide variation in the toning results. Consistency is important, so you can gain control of this seemingly personal process. When you are in the experimentation stage, write everything down so that when you get something unexpected, you will know how you got it.

**SEPIA REDEVELOPING TONER** is a two step process where the toning is preceded by a bleach that removes the color from the silver. The silver is then converted and a brownish tone is imparted. The bleach attacks the highlights first, and the sepia will only tone the silver that has been affected by the bleach. This makes it possible to split tone by bleaching for only 10-20 seconds, rendering the highlights brown and leaving the shadows black. It is possible to combine Sepia with other toners for varying effects. It is important to remove all traces of yellow created by the bleaching by rinsing the print before toning. After Sepia toning you must fix the print, Perma Wash, and then do a full final wash. The effect of Sepia toning can be reversed by placing the print into Dektol.

**SELENIUM TONER** was primarily developed as a protective toner that coats the silver grains in the emulsion. This increases the archival properties of the print. As a result the image will take on a darker and richer appearance. Photos should be printed with less saturated shadows than normal if they are to be toned in selenium. If selenium is over done it creates a color change from blue-black to purple-black to a reddish tone depending on the paper used. Many people find this color change desirable. Selenium works from the shadows up, making split toning possible. It can also be combined with other toners but must be used last, as it seals the silver crystals.

**KODAK POLY-TONER** is a variable solution which imparts tones all the way from the cold tone of Selenium through the warm brown of Sepia all the way to an orange color. A range of dilutions and appropriate processing times are described on the package.

**BERG PROTECTIVE GOLD TONER** will produce rich blue-blacks when used on its own or can create rich reddish tones when used after Sepia toner. Full directions are on the package.

**BERG BROWN / COPPER TONER** will produce more reddish-brown tones than sepia if you use a strictly non-hardening fix before hand. If a hardening fix is used the print will split into copper shadows with grey highlights. In either case the print can be pulled from the toner prematurely to increase the split toning effect. For more subtle effects dilute this toner 1:1 or 1:2.

**BERG GOLDEN / YELLOW TONER** can produce a bright metallic orange or yellow tone. For a more subtle golden yellow effect dilute the toner 1:1 or 1:2. The effect of Golden / Yellow and Brown / Copper can be reversed by placing the print into Dektol.

**BERG BRILLIANT BLUE TONER** produces a bright blue tone similar to cyanotype. The best results come from prints that are lighter than normal. Berg says that redeveloping in Dektol 1:6 can reverse the effect of either Berg Blue or Berg Cooper toners.

**ROCKLAND HALO CHROME** converts the silver image to a metallic mirror look by fusing together the black colloidal silver particles. Either a silver on white or black on silver appearance can be obtained. See the instructions packaged with the toner solution.

## SEPIA TONER

Sepia Toning falls in the category of a conversion toners because it chemically alters the silver in the print. Sepia toning is a two chemical process. First the color is removed from the silver in the emulsion by a bleach. The bleach is thoroughly rinsed off. Then the sepia toner imparts a new color to the silver, usually a brown to reddish-brown tone, depending on the negative, the paper, and how they were processed.

The toner is supplied as a set of two small packets, each of which makes up one quart of chemistry. One packet makes the bleach, the other is the toner. Set up three trays, one for bleach, one for a water rinse, and the third for the sepia toner. Label these trays so it is clear to everyone in the lab what chemistry is being used where.

### BLEACHING

The Bleach bath removes the color from the silver in the print. The longer you leave your print in the bleach the more color is removed. The bleach attacks the highlights first. Only the silver that has been affected by the bleach will change color in the sepia bath. You can use this fact to control the balance of black to brown to white by how long you bleach. Bleaching by as little as 10-20 seconds removes just some of the color. The shadow areas will remain black while the highlights will turn brown when toned. Bleaching a lot removes most or all of the color, yielding a print that will be almost exclusively brown and white when toned. Keep your eyes open when bleaching. It is very helpful to have an untoned reference print in water nearby to refer to.

### RINSING

Take the print out of the bleach and hold it over the bleach tray letting as much bleach drain back into the tray as possible. Be aware that the print continues to bleach while it is draining. Then immerse the print in a tray of water to rinse. It is imperative that all bleach be rinsed from the print before immersing it in the toner. Too much carry over of bleach into the sepia tray will contaminate the toning chemistry and it will become useless. The water in the rinse tray should be changed whenever it gets too yellow.

### TONING

The rinsed print is then immersed in the toner bath. The change in color happens relatively quickly, and after several minutes the print will not turn any further brown. If the effect is not strong enough the print may be re-rinsed and then put through the cycle again. A fully sepia toned print will not look as dark as an untoned print because the black color of the silver is being replaced with sepia which is brown. It is recommended that you **print darker** than normal if you know you will subject that print to sepia toning.

### FIXING and WASHING

It is recommended that you re-fix the print after sepia toning, since sepia is a redeveloping toner. Use a non-hardening fix and follow the steps listed on the Fiber Base Printing - Archival Processing page. This same information is displayed in cookbook style on the chart above the sink. Complete the processing with a full final wash.

### CAPACITY

Do not mix up any toner just to tone a couple of prints. One quart has a capacity of toning 40 8" x 10" prints, more if the image is significantly smaller than the full paper size. Unless the chemicals are exhausted, leave the filled trays out in the lab and clearly label what is in which. This will allow other students to tone their prints without bankrupting the Photo Lab.

## SELENIUM TONER

Selenium toner is best known as a protective toner and is used by most people printing high quality prints as a standard step in the finishing steps of the processing. It is possible to use stronger dilutions and extended times to create a color change in the print. Ansel Adams warns about this 'undesirable' change, but we are in art school, which tends to reverse normality.

### PROTECTION

Selenium works from the shadows up. It coats each silver crystal in the emulsion. This makes each grain slightly larger and slightly darker. The result is a darker, richer print. It is advisable to print your photos a little bit less saturated in the shadow areas than usual to compensate for this shift. Use Rpaed Selenium toner mixed 1:9 from the gallon jug or dilute to 1:20 for an even more subtle protective layer.

### COLOR CHANGE

Leaving prints in selenium for a longer period of time will cause a shift in color toward the blue-black and even a violet-black, depending on the paper used. When used after Sepia a reddish color is imparted. On the other hand a very quick immersion in selenium can produce a drastic change in only very certain areas of the shadows and midtones. This is called split toning and can be very difficult to control. Many artists pride themselves, however, on their magical ability to split tone.

### TONING WHEN PRINTING

If you wish to use selenium during the initial printing regimen, the entire process is detailed in the *Fiber Base Paper - Archival Printing with Toning* page, further on in this booklet. After an initial treatment in Perma Wash, a hypo-clearing agent, followed by a quick rinse, the print is transferred to a tray of Selenium mixed with more hypo-clear. (Kodak recommends transferring the prints from the fix2 tray directly into the selenium toner with hypo-clear. We have found that this causes staining problems that they say this technique will cure.) The nominal timing is 2 to 5 minutes. The actual timing depends on the desired effect. It is very helpful to have a reference print in another tray of water for comparison. Selenium can be hard to see until after the print has dried down.

### BATCH TONING AFTER PRINTING

Since selenium is a coating toner it is always used last, except for protective gold toner, which also coats the silver. If you want to use other toners in combination, eliminate the use of Selenium in your standard printing scheme. Process your prints according to the *Fiber Base Paper - Archival Printing* page. Do a final wash and dry your prints to be batch toned at another time. When toning at a later date and when toning in combination with other toners, merely set up a tray of selenium, and process prints that are already wet. Everything else is the same as mentioned above. Toning should be followed by a final wash as usual.

### TOXICITY

Selenium is a deadly poison. It acts like Mercury – once in the bloodstream, it will never leave. The Selenium in the lab is quite dilute but precautions must be taken so it does not touch your skin. **ALWAYS WEAR GLOVES** when using Selenium toner, especially when setting up your trays and when cleaning up.

If you spill any toners onto a table surface, be certain you clean it up. The solutions are clear when being used, but they dry to form brightly colored puddle stains. After finishing a toning session, scrub down the area where you have been working with Soft Scrub.

## COLOR COUPLER and DYE TONERS

### COLOR COUPLER TONERS

EDWAL COLOR TONERS are available in red, yellow, green, blue and brown and may be mixed together to make intermediate colors. It is also possible to use the toners sequentially, washing in between in water baths to prevent contamination. A wash in Hypo-Clear is necessary before using these toners to remove all traces of fix in the print. See the directions that accompany the toners.

BERG COLOR TONING SYSTEM come in a wide range of colors and work much like the Edwal chemistry. Berg provides an activator solution which helps keep the paper from turning color. These toners are in a completely different class from the Berg copper and brilliant blue toners and should not be confused with them.

ROCKLAND SELECTACHROME is another type of color coupler toner that contains the three primary colors that can be mixed in various proportions to create any color desired. With multiple exposures and redevelopment, a combination of colors can be applied to a single photograph.

### DYE TONERS

ROCKLAND PRINTINT toners come in a set of the three primary colors which can be mixed to create any color which will stain the printing paper without altering the silver parts of the image. These toners can be applied with a brush to do selective toning.

### STAINING

Anything that will stain photo paper can be used to change the color of a print. This includes tea and wine. Have a good meal and then tone your prints in the leftovers. Bodily fluids can be used to good effect. Blood is quite often appropriate around matting time. André Serano is quite famous for his photograph of Christ suspended in urine.

### MANUFACTURERS

BERG COLOR TONE produces a bulletin of helpful toning hints and books about toning. For technical information they can be contacted at Berg Color-Tone, Inc. PO Box 430 East Amherst, NY 14051 phone:714-684-0511. Their products are widely available at photo stores including Abbey Camera in Philadelphia.

ROCKLAND also makes a range of interesting products such as Liquid Light (liquid photo emulsion that can be applied to any surface), AG-Plus (Liquid Light for transparent surfaces), Fabric Sensitizer (Liquid Light that will not stiffen material), and Silkscreen Emulsion. Products and information can be ordered from Rockland Colloid Corporation, PO Box 376, Piermont, NY 10968 phone:914-359-5559 fax:914-365-6663.

## TONING TIPS

### PAPER RECEPTIVITY

Each photographic printing paper has its own inherent tonality. These tones run from cold through neutral to warm and some call themselves very warm. «see the *Selected Fiber Base Papers page*» Each brand of paper also has its own response to toners. Some tone very quickly while others are very reluctant to tone.

In very general terms the major brands of photo paper respond as follows:

FORTE	most highly receptive
AGFA	highly receptive
KODAK	normal receptiveness
ORIENTAL	less receptive
ILFORD	least receptive, most controllable, most subtle results

### CROSS TONING

It does not necessarily follow that a warm tone paper should only be processed in warm tone toners. In fact, quite the opposite gives very pleasing results. Below are two examples:

Cold Tone paper in a Warm Toner, e.g. AGFA Brovira in Sepia

Warm Tone paper in a Cold Toner, e.g. AGFA Portriga Rapid in Selenium

### SPLIT TONING

Some toners affect the shadows first while others start with the highlights. It is possible to stop the toning process before it is completed, allowing only the shadows or only the highlights to tone. This creates images with more than one color. This is a relatively uncontrollable effect and is usually spoken of in secretive terms amongst the people who actually practice it. They do not want anyone to know that it more chance than deliberate creativity.

Split Toning examples:

quick immersion in Bleach before Sepia toning lets only the highlights tone, leaving the shadows their original black tonality of the paper

quick immersion in Selenium can result in only the shadows being toned, leaving the highlights their original white to grey

### COMBINING TONERS

All toners can be used sequentially, but in a particular order. The silver conversion toners should be used first in the order of sepia, poly, copper, selenium, gold. Any of the color coupler toners may then be used, followed by any of the dye toners. The print must be thoroughly washed between toners to avoid contaminating the toners with each other. Prints toned in different toners *can not be washed together*, because the toners will migrate from print to print, eliminating all your hard and careful work.

Toner Combination examples:

Sepia then Selenium creates a mixed tonality.

Since selenium is a coating toner, it is always used last.

Double Tone by using considerable sepia then considerable selenium.

The interaction of the two will produce a more reddish tone on warm papers

Two Tone by using moderate sepia then moderate selenium.

This renders only the highlights sepia, and the only the shadows selenium.

Tri Tone by using light sepia and light selenium.

This makes sepia highlights, selenium shadows, and keeps the mid tones grey.

## TONING TIPS, cont'd.

### SELECTIVE TONING

It is possible to only tone specific areas of a print by masking or covering specific areas. The most accessible mask is rubber cement, thinned with a little rubber cement thinner. It can be a little difficult to apply because of its consistency and since it is clear, it may not be obvious where it has been placed. Photo Maskoid Frisket is the brand name of a compound which also resists toner. If you purchase the transparent red rather than the opaque red, you can easily see what has been masked out and what hasn't. It is also a little easier to apply.

It is recommended that you use inexpensive brushes to apply masks, since this process will probably ruin them. Since toners react with metals, avoid any brushes with metal ferrules, or coat any metal parts with rubber cement.

### BLEACHING

Sometimes the bleach used before sepia can create an interesting look just by itself. With the right negative the tones can split between yellow, brown and black. The result looks like a posterized effect. The only problem is that you lose some of the detail in the high end. It is recommended, therefore, that bleaching be done to relatively dark prints, as you would do for sepia toning. Also keep in mind that not every print has to conform to the earmarks of perfection. Sometimes no highlight or shadow detail is acceptable and even desired. It just has to be clear that that is the intended look.

## FIBER BASE PAPER - ARCHIVAL PROCESSING with TONING

### DARKROOM PROCESSING

<u>DEVELOP</u>	<u>2 ~ 3 minutes</u> (or time recommended by the paper manufacturer) use constant agitation
<u>STOP</u>	<u>30 seconds</u> with constant agitation use the SPRINT BLOCK STOP BATH mixed 1:9 from the white cube
<u>FIX 1</u>	<u>half the minimum time</u> recommended by paper manufacturer with intermittent agitation use FRESH NON-HARDENING FIX from the vat in the film lab check FIX with Hypo-Check but do not discard until exhausted
<u>WASH 1</u>	<u>5 minutes</u> in running water with intermittent agitation
<u>HOLD</u>	<u>in water</u> for batch processing in outer lab collect all your prints of the day for batch processing in the Film Lab.

### FILM LAB PROCESSING, TONING and FINISHING

<u>RINSE</u>	<u>5 minutes</u> in running water with intermittent agitation
<u>FIX 2</u>	<u>half the minimum time</u> with NON-HARDENING FIX use the time recommended by the paper manufacturer a second fixer bath of non-hard fix is be used to ensure clean processing
<u>RINSE</u>	<u>5 minutes</u> in running water with intermittent agitation
<u>PERMA WASH</u>	<u>5 minutes</u> with continuous agitation
<u>WASH 2</u>	<u>30 minutes</u> in running water with frequent shuffling
<u>SELENIUM TONER</u>	with <u>PERMA WASH</u> <u>2 to 5 minutes</u> with constant agitation mix RAPID SELENIUM TONER 1:9 from the gallon bottle <i>NEVER LET SELENIUM TOUCH YOUR SKIN -- this is extremely toxic stuff!!!</i> Any other toner may be used in this position of the process utilize toners in the proper sequence if using more that one
<u>FINAL WASH</u>	<u>60 minutes</u> in running water with tray siphon shuffle the prints periodically so they do not stick together
<u>SQUEEGEE</u>	<u>gently</u> on a <i>clean</i> , hard surface
<u>DRY</u>	<u>in the Archival Print Drum Dryer</u> turn the Print Dryer on, set the temperature and speed place the prints face down on the conveyor belt distribute the prints evenly, placing 2 smaller prints side by side or - by hanging them on the clothes line, with two prints back to back all four corners pinned together don't put prints where someone else's prints can drip onto yours or - you can dry your prints by placing prints between sheets of blotter paper for a short amount of time (I.e to transport home where they can be dried on a line or a screen

## BLEACHING

Bleaching is used more as a last resort device than a standard processing step, except when Sepia toning. Bleach can be used to remove silver from a print not unlike Farmer's Reducer. The entire print can be lightened, as in preparation for Sepia toner, or specific areas can be removed for special effects. If you have small black spots on a print (like dust spots in reverse), they can be easily removed with tincture of iodine that is sold at drug stores.

### PROCEDURE for Overall Bleaching

mask \_\_\_\_\_ any areas you do not want to bleach  
with rubber cement or Maskoid Frisket

Fix \_\_\_\_\_ the print in Non-Hardening Fix as a pre-soak

Bleach \_\_\_\_\_ for 15 seconds with agitation  
be careful not to over-bleach, you can't un-bleach!  
stains will appear - do not worry they will wash out

rinse \_\_\_\_\_ thoroughly in running water

repeat \_\_\_\_\_ the above process if more bleaching is necessary

Fix \_\_\_\_\_ in Non-Hardening Fix until stains are gone  
should be less than 5 minutes

rinse \_\_\_\_\_ the print in water to remove the Fix

remove \_\_\_\_\_ any mask that was applied

Perma Wash \_\_\_\_\_ as usual

Final wash \_\_\_\_\_ as usual

### CHEMICAL RECIPES

The SCAT Photo Lab only has the bleach that comes with the Sepia Toner. Please don't use one without the other. It is possible to mix other types of bleaches. You will have to do this on your own.

#### Standard Bleach:

water to start with	750 ml	24 oz
Potassium Ferricyanide	3 gm	1/2 tsp
add water to make	1 liter	32 oz

#### Permanganate Bleach:

##### Stock Solution A

warm water	200 ml
Potassium Permanganate	1 gm

##### Stock Solution B

water	200 ml
Hydrochloric acid (concentrate)	20 ml

this acid is extremely corrosive and dangerous even when diluted

Working Solution - mix fresh solution for each use  
mix equal parts Solution A and Solution B  
use 2 or more parts water for milder action