

FIBER - BASE PRINTING PAPER

Fiber-base paper is the traditional photographic printing medium. The emulsion is applied to a fine quality paper that has no plastic resin coating. This makes the print appear closer to a lithograph. It generates higher quality than Resin Coated paper because of its finer grain structure and higher silver content. The generally slower emulsion gives more control over the printing process.

TONALITY

Fiber paper comes in a range of tonalities from a deep cold blue-black tone, through rich neutral papers, to warm papers and even warmer emulsions that are brownish in color on an off-white base. There is a chart in this booklet that details most of the fiber based papers available and their respective characteristics.

PAPER BASE

The color of the paper base itself varies to compliment the differences in the emulsion tonality. The paper can run from bright white to off white to creamy white to a yellowish cast.

SURFACE

There is also a full range of paper surfaces. Be careful because varying manufactures use the same names for considerably different surfaces. What is glossy for one is closer to a luster for another, and some semi-matte papers are deadly while others are beautiful.

The smoothest surface is matte or semi-matte. This sometimes reflects too much light and become an obstacle to look through. The pearl or luster surfaces are moderately flat and can be the least obtrusive for fine art work. The glossy papers run from a moderate gloss that is okay to high gloss that is unbearable. This is the paper of choice for movie stars. (Tacky cliché alert!) Pretension is not a valued attribute in the art world.

CONTRAST

Fiber-base paper is most often used as graded paper. This means the contrast grade is set and the paper is not altered by the use of multi-grade filters. Graded paper will give greater image clarity and finer detail than multi-grade. This is because graded paper is optimized for a particular contrast, not compromised to work over a varying range.

ARCHIVAL PROCESSING

Since fiber-base paper does not have a resin coating it absorbs a significant amount of fixer. For this reason it is necessary to be careful when processing these papers. A minimum amount time in two fix baths, followed by rinsing in a hypo-clearing agent and a long final wash is necessary to keep prints from staining and eventually discoloring.

TONING

Toners such as Selenium were originally developed to add a protective coating to the silver crystals in photographic prints to increase their longevity. A color change from subtle to drastic may also be desired. Some other toners such as Sepia, Brown, Polytoner, and Blue are available which do not protect but affect color and enhance the aesthetic value of the images. Consider the adage "form supports content" when deciding which toner, if any, to use with which prints.

There is no one way to tone prints! This is a very personal procedure and is arrived at only through much experimentation and experience. Please share your discoveries.

SELECTED FIBER-BASE PAPERS

<i>brand</i>	<i>name</i>	<i>grade</i>	<i>tone</i>	<i>surface</i>
AGFA	Brovira	1-5	cool	glossy, lustre
	Insignia Fine Art	1-4	warm	glossy
	Portrigr Rapid	1-3	warmer	glossy, semi-matte
FORTE	Fortezo Elegance	1-3	warm	glossy, matte, semi-matte, satin, lustre
	Bromofort	1-5	blue-black	glossy, matte, semi-matte, satin, lustre
	Polygrade	var.	neutral	glossy, matte, semi-matte, satin, lustre
	Warm Tone Poly	var.	warm	glossy, (developer changes tone)
ILFORD	Galerie	1-4	neutral, rich	glossy, matte
	Multi-grade FB	var.	neutral	glossy, matte
	Ilfobrom	1-5	neutral	glossy, matte, semi-matte
	Warm Tone MG	var.		warm
KODAK	Elite Fine Art	1-4	neutral, rich	high lustre
	Ektalure	var.	warm	lustre (hand-coloring) off-white
	Kodabromide	1-5	warm	glossy, lustre
	Polyfiber	var.	neutral	glossy
LUMINOS	Classic Glossy	2	neutral	glossy
	Classic Pearl	2	sl. warm	pearl
	Charcoal R	2	sl. warm	flat, rough texture, off white base
	Tapestry X	2	sl. warm	flat, rough texture, cream base
ORIENTAL	Center F	2-3	warm	glossy
	Seagull G-2	1-5	cool, rich	glossy
	Seagull Select VC	var.	cool, rich	glossy
	Seagull Portrait FB	2-3	warmer	lustre, semimatte, cream base
MITSUBISHI	Fiberbase FD	2-4		glossy

FIBER PAPER PROCESSING TIMES

Developing time and fixing time vary for each individual type of photo paper. The recommended times are listed below. In addition the speed of the emulsion also varies considerably. To give you a head start on printing on various papers, the paper speed ISO is listed for papers at grade 2 contrast.

<i>brand</i>	<i>name</i>	<i>tone / base</i>	<i>develop</i>	<i>fix (minimum)</i>	<i>grade 2 speed</i>
AGFA	Brovira	cool	1.5 - 2 min.	3 min.	ISO 250
	Insignia	warm			ISO 250
	Portrigr-Rapid	warmer			
FORTE	Fortezo	warm	1.5 - 2 min.	5 min.	ISO 160
	Bromofort	blue-black			ISO 200
	Polygrade	neutral?			
	Warm Tone Poly	warm?			
ILFORD	Galarie	neutral	1.5 - 3 min.	1 min.	ISO 400
	Multigrade FB	neutral			
	Ilfobrom	neutral			
KODAK	Elite Fine Art	cold	2 min.	5 min. / 5 min.	ISO 320
	Ektalure	warm / cream			
	Kodabromide	neutral			
	Polyfiber	neutral			
LUMINOS	Classic Glossy	sl. warm	1.5 - 2 min.	5 min.	ISO 160
	Classic Pearl	sl. warm			
	Charcoal R	warm / cream			
	Tapestry X	warm / cream			
ORIENTAL	Seagull G	cold	2 - 3 min.	3 min. / 3 min.	ISO 500
	Select VC	cold			ISO 125
	Portrait FB	warmer			ISO 250

Develop cold and neutral tone papers in Dektol 1:2 or soften contrast with Dektol 1:15
 Develop warm tone papers in Platinum II 1:9, or HQ Warm Tone 1:10

PAPER DEVELOPING

Kodak DEKTOL is one of the most universally used developers. It is a high energy developer producing fine grain and a relatively cold or hard tonality. It is used at 1:2 or 1:3 for standard strength but can be diluted to 1:9 or 1:15 for extended range development. The same print processed at 1:2 and 1:9 for a longer time can look radically different.

Edwal PLATINUM II is a warm tone developer for rich prints. It is usually used at 1:9 but can be diluted to 1:15 or 1:19 for extended development. It is stored in a white gallon jug.

Forte ZONAL PRO FACTOR ONE is Forte's equivalent to Kodak Dektol. It is usually mixed out of its grey quart jug at 1:15.

Forte ZONAL PRO HQ WARM TONE is Forte's warm tone developer. The standard mix ratio is 1:10. This developer also produces 1/2 to 1 full grade less contrast than Dektol or Factor One.

SPLIT DEVELOPING for Contrast Control

This process will produce contrast grades in between the existing grades. It is useful for negatives with a wide tonal range. Negatives with extended shadow detail can be opened up.

Basic Procedure:

select a paper that is a grade *higher* than what you desire
use Platinum II 1:9 or HQ Warn Tone 1:10 developer first
or even more diluted, such as 1:15
these are softer contrast warmer tone developers
develop for about half the normal developing time
bring up the highlights and midtones as desired
then use Dektol 1:2 or Factor One 1:15 developer second
these are harder contrast colder tone developers
develop for the remaining developing time
this brings up the shadows and renders the bottom end dark and rich
the result will be a contrast that is 1/2 grade lower than normal
the ratio of developing times can be adjusted for even finer control
the hard developer needs at least 30 seconds to displace the soft
finish processing as normal in stop and fix

Local Area Contrast Control:

develop the print in soft developer as normal
rinse the print and squeegee off all water
use cotton swab to apply hard developer exactly where you want more contrast
finish processing as normal in stop and fix

FIXING FIBER BASED PAPER

KODAK RAPID FIX is a standard high energy hypo-fixer. Its purpose is to dissolve the silver salts that were not struck by light from the photographic emulsion. It is not until after the fixer stage that the photo is no longer light sensitive.

The ingredients of Kodak Rapid Fix - Part A and their functions are:

ammonium thiosulfate to dissolve the silver salts (silver halide crystals)

alum to harden the gelatin (potassium aluminum sulfate)

acid to neutralize the developer (acetic acid)

a preservative to keep the solution clean-working

(sodium sulfite to prevent the precipitation of the colloidal sulfur)

a buffer to keep the hardener active (boric acid)

Never use exhausted fix! Both over- and under-fixing are harmful and rapid fix can easily be over done. It is important to test for exhausted fix.

See below for capacity, testing, and replacing fix.

HARDENER is an extra added ingredient that is packaged separately as Kodak Rapid Fix - Part B. It is added to the fixer when processing film and sometimes when processing RC paper. It keeps the emulsion from getting scratched by reducing swelling during long washes that makes the gelatin soft and vulnerable. Some protection is needed if heat drying prints since heat drying is hard on the print surface. If line or screen drying, it is not necessary to use fix with hardener. It also helps protect the emulsion after the print is dry.

Hardener retards washing, however, so reduce or eliminate its use if possible, especially when processing fiber based prints. If toning is anticipated, use non-hardening fix, as the hardener prevents the toners from changing the tonality of the silver.

PROCEDURE: Two-Bath Method for Archival Fixing

use two bath fix for maximum permanence

use first bath in darkroom, with or without hardener, depending on future processing

first bath does the heavy work

fix for HALF the minimum recommended time, agitate for at least half the fix time

hold prints in recycling water tray, away from heavy traffic and RC prints

use a second bath in Film Lab, always use non-hardening fix

batch process all prints from the holding tray,

fix for HALF the minimum recommended time

shuffle prints for the entire fix time

CAPACITY

The potency must be checked periodically by dropping two drops of Hypo-Check into the corner of the first fix bath. It helps if there is a dark piece of photo paper under the area that is being tested. If a milky white precipitate is visible, the fix is exhausted and should be discarded. Replace the first bath with the second bath and mix a new second bath. This is the most economical way to go and makes prints more permanent.

Fixing in weak or exhausted fix is the prime reason for muddy prints, stained prints and poor toning response.

WASHING

Heico Perma-Wash and Kodak Hypo-Clear are washing aids that help remove the fix that tends to stay impregnated in the fiber base paper. Immersion in a washing aid for 5 minutes can greatly reduce washing times.

Final Washing removes all fix remaining in the photo.

FIBER BASE PAPER - ARCHIVAL PROCESSING

DARKROOM PROCESSING

<u>DEVELOP</u>	<u>2 ~ 3 minutes</u> (or time recommended by the paper manufacturer) use constant and consistent agitation various developers can be used with fiber-base papers. Kodak Dektol can be used at 1:2 standard dilution Edwal Platinum II is in a white plastic jugs under the sink mix 1:9 for normal development, 1:15 for softer tonality let the other students know what tray contains which special chemistry.
<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 use intermittent agitation if these prints will not be toned, use NEW FIX with HARDENER, stored in a vat in the Film Lab if toning these prints later, use FRESH NON-HARDENING FIX also stored in a vat in the Film Lab check FIX periodically 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 the outer film lab

If these are work prints, the first Fix 1 can be for the full minimum recommended time, and Fix 2 in the next stage can be eliminated. Work prints can be washed for 30 minutes, but must not be dried in the Archival Drum Dryer, otherwise the drying belt will get contaminated and that will ruin the dryer for the rest of the students in the Lab!

FILM LAB PROCESSING 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 half the time recommended by then paper manufacturer
<u>RINSE</u>	<u>5 minutes</u> in running water with intermittent agitation
<u>PERM WASH</u>	<u>5 minutes</u> with continuous agitation
<u>FINAL WASH</u>	<u>60 minutes</u> in running water with tray siphon place prints FACE DOWN in the wash, so the emulsion will stay wet shuffle the prints often so they do not stick together
<u>SQUEEGEE</u>	<u>gently</u> on a <i>clean</i> , hard surface wash the squeegee first to avoid contamination
<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