

ALTERNATIVE FILMS

SLOW EMULSION FILMS

Slow emulsion films have smaller grain structure, which reacts more slowly to light.

Kodak PlusX - ASA125,

Ilford FP4 - ASA125 , Ilford PanF - ASA 50,

All can be developed in Edwal FG7 at the same developing times for Kodak PlusX

TechPan can also be developed in Technidol LC developer for extremely fine grain

Technidol is available in small packets dispensed by the lab monitors from the office.

aesthetic considerations-

the smaller grain provides enhanced detail.

your images will have less contrast.

therefore these films are great for images which have a lot of texture and definition.

slower film speed means shots require more light

this means you have to either open up your aperture or slow down your shutter speed

since one uses small apertures to get more detail,

you probably will not want to lose your depth of field

i.e. you will be taking shots at slower shutter speeds,

which means you will probably need a tripod or some other way to stabilize the camera.

VERY FAST EMULSION FILMS

Very fast emulsion films have larger grain structure allowing faster reaction to light.

Kodak 2475 Recording film - ASA 1000, Fuji Neopan 1600,

Kodak T-Max 3200 - ASA 3200

Recording film has very pronounced grain and can be developed in Edwal FG7

Fuji Neopan has a beautiful tonality when developed in Gamma Plus developer

T-Max should be developed in Edwal TG-7 or Kodak T-Max developer

aesthetic considerations

these films are designed to give reasonably good negatives in low light situations

or shots where you need both a lot of depth of field and a fast shutter speed.

the grain is much more apparent in an enlarged print.

your images will have considerably more contrast.

some people like the stylistic look of chunky grain and high contrast.

if this is your goal you may prefer to push process ASA400 film rather than use these films.

TECH PAN - *film from heaven or film from hell*

Kodak Tech Pan film rated at ASA 25 and developed in Kodak Technidol LC developer will give exceptionally fine grain and remarkable detail.

Tech Pan can, however, be thrown to the other side of the spectrum by shooting it at ASA 200 and developing in Kodak Dektol paper developer for 3 minutes at 68 degrees.

yes- Dektol, the stuff that you use to develop your RC prints, located in the left-hand storage vat behind the main darkroom sink, diluted 1 part developer to 2 parts water.

This method of shooting gives outrageous contrast and highly stylistic negatives.

An extensive list of processing possibilities is included with each roll of film.

This is very unusual film which changes considerably depending on the lighting conditions.

Try some test shots to see if you like what you get, or don't get, as the case will be with all of your shadow detail!

E X P E R I M E N T !

EDWAL DEVELOPERS and NORMAL DEVELOPMENT

EDWAL recommends a range of adjusted developing times for various films. ASA 400 is not the correct film speed for most 400 speed films when using their FG-7 developer. The following information, including the opening paragraph, comes from Edwal Imaging, in the form of a technical data sheet for FG7 and TG7 developers.

These results are useful only as a guideline. "Correct" development times can be determined by the individual user in relation to the type and color temperature of the illumination used during exposure, contrast range of the subject matter, condenser vs. diffusion vs. cold-light enlarger light source used during printing, fiber based vs. resin coated paper used, contrast and D-Max desired in the final print, toning procedures required, eventual use of the finished product, et al. Each factor is an integral part of an incorporated whole which will influence the quality and look of the final print, hence personal development procedures.

EDWAL FG7 1:15 DEVELOPING TIME TABLE FOR 35MM FILM AT 70° F

<i>Mfg</i>	<i>Film</i>	<i>ISO</i>	<i>70° F</i>
KODAK	Pan X	25	10'
	Tech Pan	32	5' @ 1:30
	Plus X	80	8'
	Tri X	320	12'
	TMax 100	64	12'
	TMax 400	250	13' 30"
	TMax 3200		15'
	TMax 1600		13'
	Infrared		12'
	Orthographic		12'
ILFORD	FP4+	80	9'
	HP5+	320	12' 30"
	Delta	160	13'
AGFA	Pan 25	25	7' 15"
	Pan 100	80	10'
	Pan 400	400	17'
FUJI	Neopan 100	200	9'
	Neopan 400	320	11' 30"
	Neopan 1600	1000	11'

EDWAL TG7 1:7 DEVELOPING TIME TABLE FOR 35MM FILM AT 70° F

<i>Mfg</i>	<i>Film</i>	<i>ISO</i>	<i>70° F</i>
KODAK	TMax 100	50	9'
	TMax 400	250	10'
	TMax 1600	800	13'
ILFORD	Delta	160	10' 30"

EXPANSION and COMPRESSION

BASIC EXPOSURE

Expose for the shadows when reading the meter on an SLR camera. The density of the shadow areas of film cannot be changed very much through development. It is important to get just the right amount of light hitting the film in the shadows. This means setting the exposure according to the tone of the subject in the shadows areas. The best way to judge exposure is to meter the darkest shadows of the scene with detail. The meter will tell how to make this area render middle grey. Underexpose 2 stops below the meter recommendation. This will render the shadow area dark grey as it should appear.

TONAL RANGE

The highlights, however, can be adjusted considerably through development. The tonal range of the subject must be determined. This can be done by taking a meter reading of the darkest shadows and then the brightest highlight. The difference is the tonal range in 'stops'. Typical film has a range of 9 or 10 stops. If the tonal range of the subject is significantly greater than this or considerably less, the density of the highlights must be altered by over or under developing the film.

EXPANSION

The tonal range of film can be expanded by overdevelopment. The amount of extra time to develop varies with the type of film and the brand of developer. In general, overdeveloping by an extra 10% will add an extra stop of tonality, up to 3 stops.

COMPRESSION

Similarly, the tonal range of film can be compressed by underdevelopment. The adjustment again varies with the type of film and the brand of developer. In general, underdeveloping by an extra 5% will reduce an extra stop of tonality, up to 3 stops.

DEVELOPMENT ADJUSTMENT

A general working model would be to mark every roll of film with the tonal range of most pictures, designating a range of either very flat, flat, normal, hot, or very hot. Then adjust the developing time in increments of - 10%, - 5%, 0, +10%, +20%.

Read the book "Zone System for 35mm Photographers" by Carson Graves for a more detailed explanation of these controls.

EXPOSURE VARIATIONS

Some people routinely shoot Kodak Tri-X at ei 200 or even ei 100 with little change in development time. It depends on the visual effect one is trying to achieve.

Fuji Neopan 1600 can be developed in Gamma Plus to produce negatives with a long tonal range. This film can also be overexposed one or two stops and then underdeveloped to compensate. This results in very fast yet relatively fine grained film.

ALTERNATIVE EXPOSURE and DEVELOPMENT TECHNIQUES

PUSH-PROCESSING *under-exposure and over-development*

It is possible to deliberately under-expose your film and then compensate by over-developing it.

The result is high contrast, fat grain and no shadow detail.

The effect is dramatic, but can be gimmicky if not properly considered.

What actually happens is the film does not really receive the amount of light necessary to render a properly exposed negative. Thus there will be no details in the shadow areas. When the film is over-developed the grains of silver that have been struck by light will be greatly enlarged, making the highlight areas of the negative appear relatively normal.

Some people like this look and use it deliberately. Some people are forced to use this technique, such as dance photographers, because there is never enough light, always too much movement and deep depth of field is needed to get all the dancers in focus. Through time, however, so many dance photographers have used this technique that up-and-coming dancers now ask specifically for "contrasty, grainy photographs" like the professionals have.

ASA 400 film can be pushed 1 stop to EI 800 or 2 stops to EI 1600.

A 3 stop push to EI 3200 is possible but not recommended.

Developing times are increased by 50% per stop using normal developer.

Higher concentration dilutions of developer can be used, such as Edwal FG7 at 1:3 dilution, if you do not want to develop film for two hours. This dilution yields excessive grain and no shadow detail.

High-energy developers such as Ilford Microphen are also available which will give you a less extreme negative.. (necessary if you want to go the ASA 3200 route)

See the *Push-Processing* cookbook style instructions on the Film lab wall.

"PULL" PROCESSING *over-exposure and under-development*

Although not a term used by the photo world in general, "pull" processing seems an applicable tag for the technique of deliberately over-exposing film and then compensating by under-developing.

The result is negatives with lower contrast, smaller grain and bright highlights.

What actually happens in this situation is too much light hits the film and the highlights get over saturated. Yet when the film is under-developed the grains of silver remaining small and do not overlap, which keeps the highlight areas from blocking up. At the same time the film renders more subtle gradations in the tones near the shadow end of the negative.

This technique will produce brilliant highlights, allowing you to print the rest of the picture darker while maintaining white whites.

ASA 400 film can be "pulled" 2 stops to EI 100. Kodak Tri-X works the best in this situation.

Developing time can then be reduced by about 30%, which doesn't sound like much but will suffice.

INFRA-RED FILM

The spectrum of visible light covers from low frequency red through yellow, green, and blue and up to high frequency violet light. Panchromatic film, which most B&W film is, responds to all of these frequencies of light. (pan = all, chroma = color) Infra-red film, however, is also sensitive to frequencies of red light that are even lower than those our eyes can see. (infra = below) These frequencies are more associated with heat generation than light reflection. Organic materials such as trees and skin will appear lighter than normal film and inorganic materials such as water and sky will register darker. Buildings also tend to reflect a high amount of infra-red radiation.

AESTHETICS

There have been large numbers of infra-red photographs made of nice landscapes and pleasant portraits, and these have become clichés. The point is that if the technique is stronger than the content of the photo, you have lost. Most of these typical photos are merely surface and were not interesting to begin with. And if an image is not interesting to start, no technical trick will help you. So let form support content and make intriguing photographs that use the infra-red look as a secondary device that enhances the image already being made.

FILM CHARACTERISTICS

Both Kodak and Konica make infra-red films, HIE 135-36 and 750nm respectively. The Konica film draws its name from its peak spectral sensitivity of 750 nm which is the center of the infra-red wavelength band. The images from these films tend to be grainy and contrasty. There is a significant loss in shadow detail while the highlights tend to glow. The result is a somewhat surreal or dreamlike look. The Konica film has been said to be, "so bad that it is cool". But this film is new on the market and this page will surely read differently next year after we have more experience with it.

FILTERS

The infra-red effect can be altered by filtering out varying degrees of visible light coming from the subject. Yellow, orange, and red filters remove successively more light. Even when used with conventional film these filters create more contrast and tend to darken the sky. <see Filters page> When used with infra-red film they shift the balance between the visible and low frequency light. A number 15 orange filter renders some shadow detail and reasonable contrast by passing a small amount of the blue-green bands of the spectrum. A 25A red filter is most often used because it produces a very dramatic effect while still letting some visible light to enter the camera. A 29 red filter is even darker. It is also possible to use a 87C dark red filter which blocks out all visible light. It is impossible to see through this opaque filter to compose your picture. This may pose a problem or can be seen as an interesting challenge.

INFRA-RED FILM, cont'd.

EXPOSURE

Kodak rates their film at ASA 50. Konica rates theirs at ASA 32. In reality there is no good way to use a meter for these films since meters are designed to measure light in the visible spectrum only. The exposure is made mostly by the heat that is generated by your subject. Infra-red film tends to wash out in the highlights. If you have broad areas of whites or organic material in bright sun, expose for the highlights. Exposures change not only according to the season but by the time of day you are shooting. The infra-red light in the sky changes hourly! A more pronounced effect will occur on a bright sunny day than on one that is overcast because there is more infra-red radiation present. Proper use comes from experimenting and becoming used to the way your chosen subject responds to specific atmospheric conditions.

One general suggestion is to find what you want to photograph and then shoot a roll bracketing at least two stops up and down from what you think will be correct. Then you can zero in on the correct exposure values for that situation and you can re-shoot more film with less bracketing. Another approach is to make one exposure for the highlights. Then average this exposure with a reading of the shadows and shoot again at this new rating. Inside the carton is a table of suggested exposures according to lighting conditions these are also good starting points for experimental exposures.

FOCUSING

Infra-red lightwaves are considerably longer than those of visible light and they focus at a different location in your camera. It is necessary to first focus normally then shift the focus manually by taking the number of feet or meters you are focused on and shifting your lens so that number lines up with the small red dot on the barrel of the lens. The image may look out of focus to your eye but the film will respond correctly.

STORAGE

It is best to purchase infra-red film from a store that keeps the film refrigerated at below 55°F or below. It is also recommended that you refrigerate it at home until about an hour or so before being shot. If there will be a significant time between when you shoot and when you process the film, the film should go back into the fridge for this period.

LOADING

Due to the extreme length of the infra-red light, the felt edge of the film cassette will not keep the light from entering the cassette and fogging the film. Kodak recommends that its infra-red film be loaded into the camera in total darkness. Konica claims that this is not so much a problem with their emulsion.

ORTHOCHROMATIC FILM

Orthochromatic films go the other way from infra-red film in that they are only sensitive to the violet, blue and green end of the spectrum. They are not sensitive to the red end. This film, then, can be handled under safelights just as photo printing paper.

LITHOGRAPHY

Ortho film is most often used in the printing business to produce plates for offset lithography, and therefore is quite often known as Litho film. A lithographic printing press can only print a solid color of ink. Shades of ink are produced by printing many small dots of varying sizes very close to each other, giving the illusion of grey tones. When processed in special chemistry (KODALITH A & B developers) the litho film develops as pure black or pure clear. When the film is used to shoot text and graphic design work and these images are called line shots. When photographic images are reproduced the negatives are shot through dot screens which break an image up into small dots. These images are called screened shots. The number of dots per inch determines the resolution of a printed image. The daily newspapers use 50 line screens while fine art publications use 150 to 200 line screens.

CONTINUOUS TONE

When litho film is processed in Dektol, however, one can get continuous tone images. The result is still very grainy and contrasty. There are other orthochromatic sheet films which will give you very high quality negatives, holding the fine grain resolution of your original negatives. Kodak fine grain positive film 7302 is available in 8" x 10" sheets. Be careful in the TUCC darkroom because the safelights are not as dark a red as these films want them to be. Have the Monitor close the wings of the safelights. Don't leave you film exposed too long or too close to the safelights.

SHEET FILM

The negatives being discussed above are the same size as the printed page will be, which means we are talking about sheet film being handled much the way you are used to handling photo paper. The value of this is that you can print enlargements from your 35mm negatives onto pieces of sheet film and then do things to alter these film images, either chemically, such as solarization, or physically, such as draw into or scratch them.

PRINTING

The first image you make will be a film positive, much like regular print, only on film instead of paper. You will then have to make a contact print to of this image to get a negative, from which you can then contact print onto paper to get your final image. This gives you two chances to alter the image. Realize that marks made on a negative image will look considerably different than those made on a positive.

MASKS

It is possible to mask of parts of an image with material called Rubylith, which is a layer of clear plastic coated with a layer of red. The red layer can be cut away by slicing it lightly with a razor or x-acto blade and then peeling away the undesired parts. The clear plastic will then hold the red pieces in position and it can be aligned with an enlarged image to allow only certain parts of the image to print through. Any opaque material put onto mylar or clear acetate can be used as a mask just as easily. Text can be produced with rubylith or by putting Press-Type onto sheets of clear mylar to burn writing into or mask writing out of a photographic image. The difference is whether the majority of the mask is black with clear "holes", or clear with black areas.

REDUCTION

Farmer's reducer, named for Howard Farmer, its inventor, can be used to lighten or reduce the density of overexposed or overdeveloped negatives. It is also possible to use this process to reduce a print after it has been fixed. This is basically a LAST RESORT PROCESS! Reducer turns the silver in the emulsion into a compound that is soluble in fixer. You must be careful to not go too far, as you cannot reverse the process. Light grey areas are particularly vulnerable. It is easier to use burning and dodging to achieve the desired tonalities when printing, but sometimes, like when solarizing, you do not have the kind of control you need, then reducing comes in handy.

Overall Print or Negative Reduction

presoak the image in water
immerse the image in a tray of Reducer for 30 seconds to 1 minute
remove the image before it is as light as you want
transfer the image quickly into a tray of running water
repeat the procedure if image is not reduced enough

<u>rinse</u>	images until yellow stains are removed
<u>Fix</u>	as usual
<u>Hypo-Clear</u>	as usual
<u>Final wash</u>	images as usual

Localized Print Reduction

<u>presoak</u>	the print in water
<u>dry</u>	the print surface with a sponge
<u>apply reducer</u>	to the print with Q tip or cotton wad
<u>flood</u>	the print with water <i>before</i> the result is obvious
<u>repeat</u>	this process three or four times, or until the results are satisfactory
<u>rinse</u>	prints until yellow stains are removed
<u>Fix</u>	as usual
<u>Hypo-Clear</u>	as usual
<u>Final wash</u>	prints as usual

CHEMICAL RECIPES

REDUCER:

Stock Solution A

water	500 ml	16 oz
Potassium Ferricyanide	37.5 gm	2 Tbs + 1 tsp

Stock Solution B

warm water	2 liters	2 qt
Sodium Thiosulfate	480 gm	26 Tbs

Fix (non-hardening)

water	860 m	127.5 oz
Fix A (from brown cube)	125 m	14 oz

Working Solution - mix fresh solution for each use then discard
add 30 ml of Solution A to 120ml of Solution B or Non-Hardening Fix
add 850 ml of water to make 1 liter of working solution
stir thoroughly!
use more water for slower action on prints
use less water for faster action on negatives

Bleach

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

FARMER'S REDUCER: from: Phil Davis

Stock Solution A

water	100 ml
Potassium Ferricyanide	4 gm

Stock Solution B

warm water	300 ml
Sodium Thiosulfate	60 gm

Working Solution - mix fresh solution for each use then discard
add 1 part Solution A to
16 parts water, then
add 3 parts Solution B and stir thoroughly!
use more water for slower action on prints
use more water for faster action on negatives

PERMANGANATE BLEACH:

Stock Solution A

warm water	200 ml
Potassium Permanganate	1 gm

Stock Solution B

water	200 ml
Hydrochloric acid (concentrate)	20ml

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

INTENSIFICATION

It is possible to increase the density of underexposed or underdeveloped negatives using a chromium intensifier. This is also a LAST RESORT PROCESS! It is not recommended that you use either reduction or intensification as a regular part of your photo processing. There are much easier and more controllable ways to get the same effects. Although careful documented experimentation may yield a desirable result that can be repeated.

The results of this process resemble the appearance of push processing for several reasons. Since it involves building up a metal such as chromium onto the silver that already exists on the emulsion, it alters the highlights greatly. Where there is little silver in the shadow areas, there is little change in the image. The build up also creates an increase in the size of the grain. The net result of all of this is increased contrast.

Negatives that need intensification must be processed in hardening fixer, which is the standard in the TUCC photo lab. Negatives must also be properly fixed or they will stain.

PROCEDURE

<u>presoak</u>	_____	the negative in water
<u>immerse</u>	_____	3 to 5 min. in Intensifier (part A) with constant agitation
		the image will turn to a pale yellow stain
<u>rinse</u>	_____	1 min. in running water
<u>soak</u>	_____	2 min. in Clearing Bath (part B) with constant agitation
		the stain will clear
<u>rinse</u>	_____	1 min. in running water
<u>Redevelop</u>	_____	in Dektol, mixed 1:3, until it looks good to you
<u>Stop</u>	_____	in Stop Bath
<u>wash</u>	_____	as usual, Fixing is not necessary

This process may be repeated if the image is not satisfactorily intensified