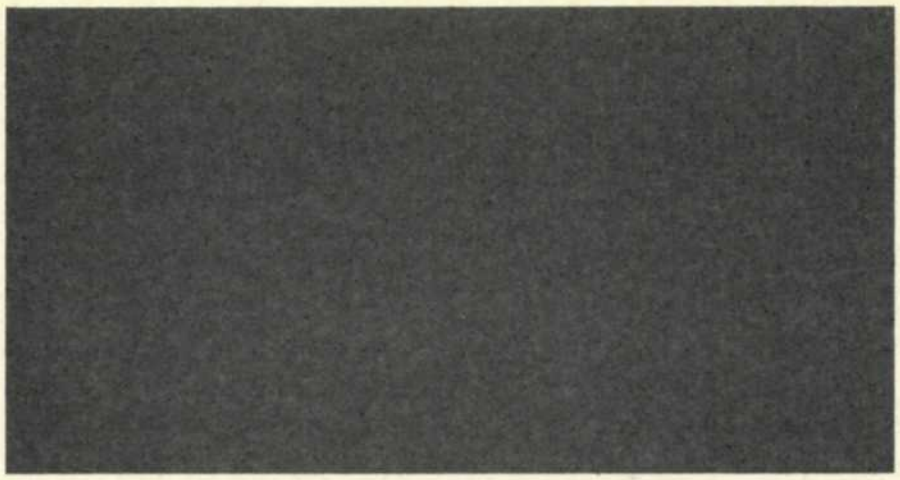

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EXPERIMENT WITH KODAK'S TECHNICAL PAN FILM, 2415

By Jack and Sue Drafahl

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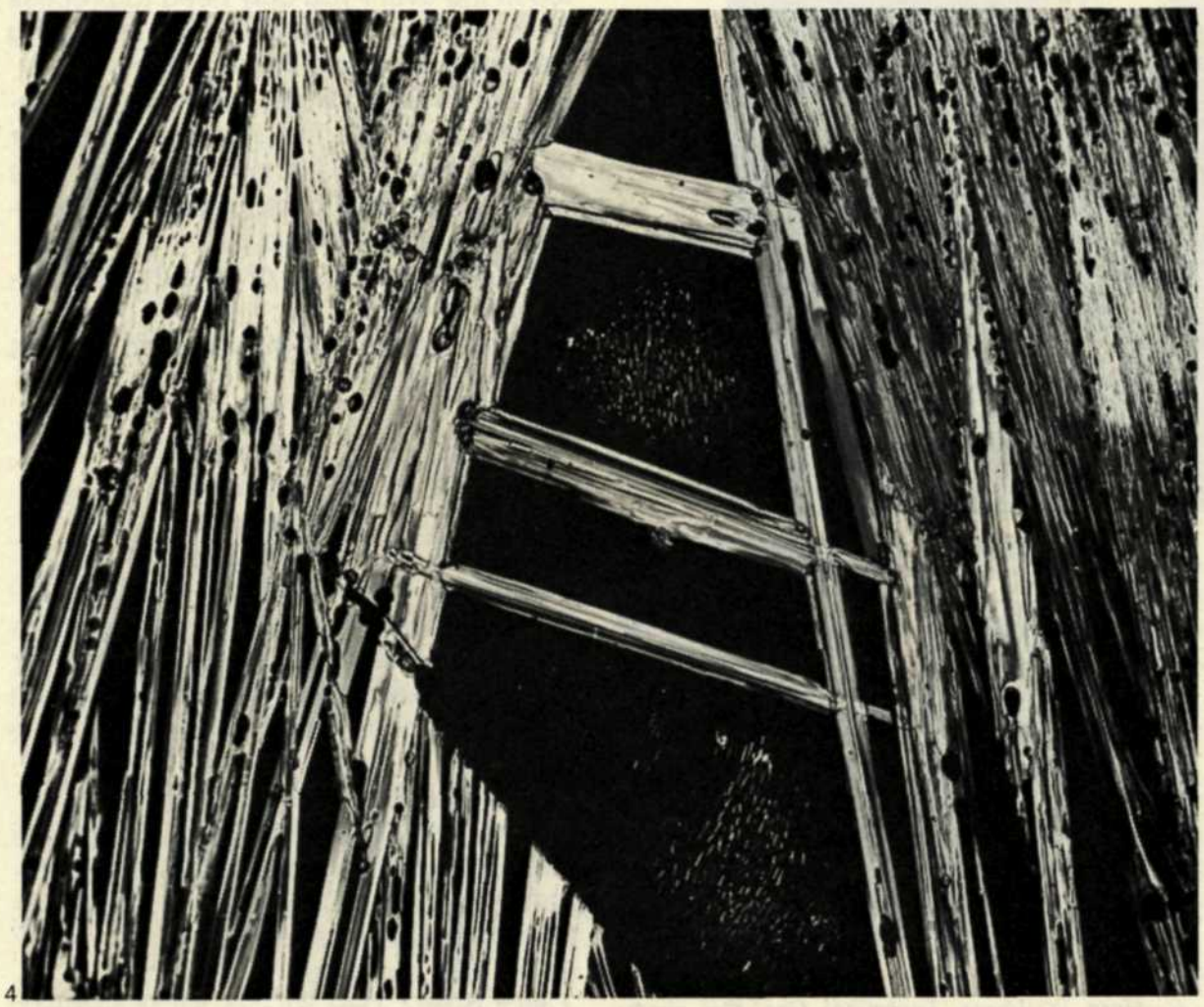
A high-contrast scientific film can render beautiful pictorial studies, yield continuous-tone results, and uncover faulty camera techniques all at the same time!



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Black-and-white photography has added a new member to its film family: Kodak Technical Pan Film, 2415. The fact that it is offered as a scientific tool to be used for photomicrography, solar and lunar photography, as well as a myriad of special applications, with only brief mention made of its possible use as a pictorial film, seems to have provoked photographers into a frenzy of creative experimentation.

Since Tech Pan's introduction, many have attempted to find ways to use it for pictorial photography. Inasmuch as it is a high-contrast film, the main problem lies in reducing that contrast. One may well ask, why change a scientific film that normally has high contrast to an average-contrast film just to capture some everyday scenes? Up to now Kodak Panatomic-X film has been considered the ultimate continuous-tone Kodak 35mm black-and-white film because of its fine grain and high resolution, but Kodak's Technical Pan film takes fine grain and high resolution one step further—and therein lies your answer. An 8×10 enlargement from a 35mm Tech Pan negative can resemble the same enlargement made from a 4×5 negative! Other desirable characteristics include a thin Estar base, scratch-resistant emulsion, variable E.I., and short negative-printing times. Inducement enough for a bit experimentation, indeed.

Amidst all these glowing pluses, however, exists a major problem. To develop this film, Kodak recommends POTA developer for low-contrast development. This developer is difficult to locate, expensive, rates the film at E.I. 25, and requires long developing times. Other developers such as H & W developer and

TECH PAN FILM

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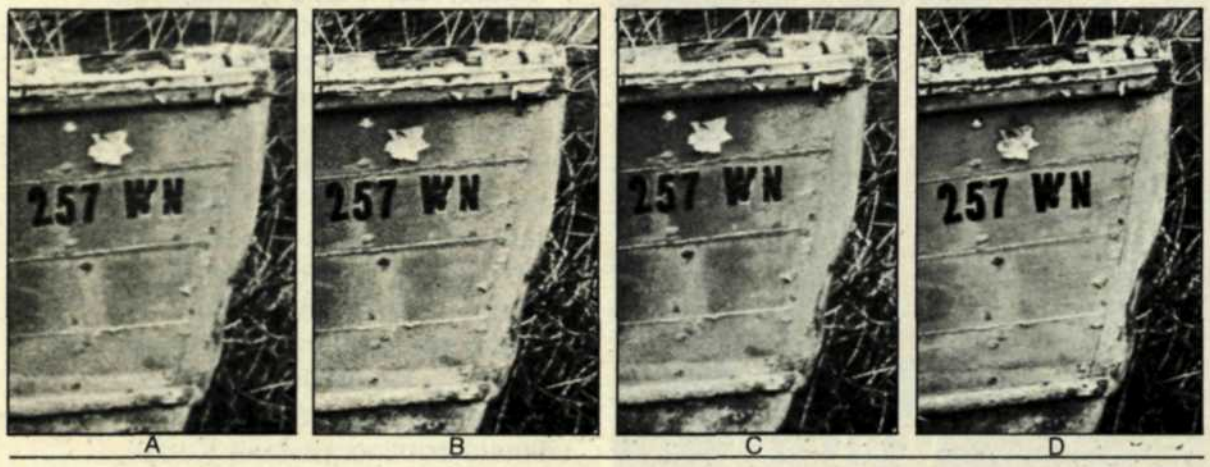


A B C D

6. Here is where Technical Pan film really shows its stuff. An 8×10 enlargement of an E.I. 32-rated Tech Pan negative shows excellent quality. The four comparison photos show the same scene, a segment enlarged 20X, shot with four different films—you compare the results.
6A. Tri-X
6B. Plus-X
6C. Panatomic-X
6D. Tech Pan

Perfection XR-1 developer work well with Tech Pan, but again require long development times, are somewhat expensive and usually rate the film at a low E.I. Compensating developers, two-developer baths and even water baths work to some extent with Tech Pan film, but after extensive research, one developer seems destined to be the companion to Tech Pan: Edwal FG7. It is readily available in camera stores, is inexpensive, increases the film's E.I. and shortens the development time. In order to retain low contrast, sodium sulfite must be added, however.

A simple formula for achieving perfect Tech Pan negatives is as follows:
1. Take 16 ounces of 68°F. water;
2. Add one level plastic film can of sodium sulfite. Stir well;
3. Add one level plastic film can of FG7. Mix well;
4. Pour mixture through a filter (a coffee filter works well) to remove any undissolved sodium sulfite grains.

DEVELOPMENT PROCEDURES

1. Load Tech Pan film in total darkness onto a 35mm film reel. Scissors will be necessary since this film does not tear.
2. Load reel into the bottom half of a double-reel tank and place an empty reel on top in the event you only need to process one roll of film. Close lid. The remaining steps can be done in room light.
3. Pour in 68°F. water sufficient to completely cover the film. Agitate gently for one full minute. Pour out the water. The water will be dark blue to black in color—this is normal with this film.
4. Pour in a minimum of 16 ounces of developer at 68°F.

Develop the film for the required time as per this chart:

E.I.	TIME
32	2 minutes
64	3 minutes
125	4 minutes
250	5 minutes

5. Agitate the film in the manner described no matter how long a development time is required: gentle agitation for the first 15 seconds, then gentle agitation for five seconds every 30 seconds from then on.
6. Use stop bath and fix normally.
7. Use freshly mixed Kodak Photo-Flo 200 for *each roll* of film. This is very important because if not done correctly, extensive spotting will occur.
8. Dry film as usual.

CHOOSING THE RIGHT FILM SPEED

The following list will help you choose the correct E.I. when shooting Technical Pan film. Remember only one film speed can be used for each roll of film. Be sure to carefully mark each roll with the correct E.I. to ensure proper development.

E.I. 32 can be used in all situations: sun, shade on bright or dark objects. It can also be used indoors with tungsten lights or electronic flash.

E.I. 64 can be used indoors with electronic flash. It can also be used in sunlight as long as there are no bright whites or extremely dark areas in the scene. It works very well on overcast days.

E.I. 125 should be used with flat lighting only. It should not be used indoors.

PRECEDING PAGES:

1. Rated at E.I. 64, Tech Pan does an admirable job in less-contrasty lighting situations. Here, flat lighting and low contrast of scene are enhanced by the Tech Pan treatment.

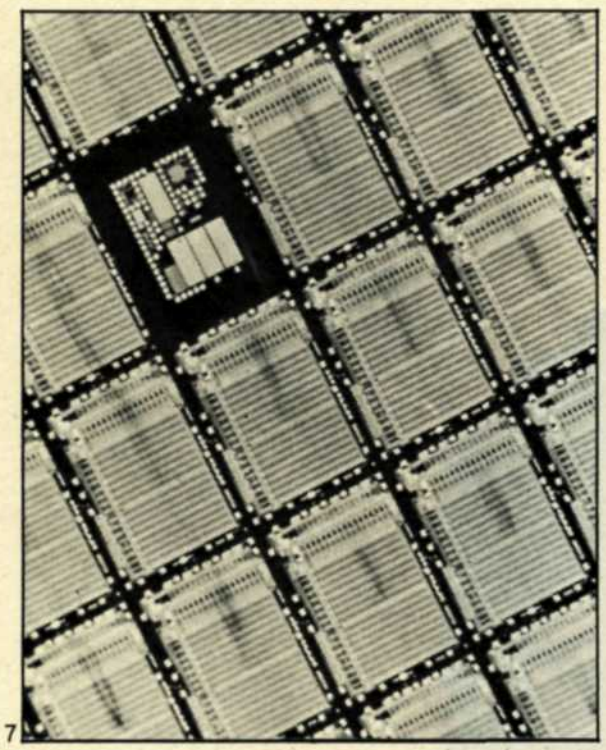
2. Rating the film at E.I. 250 will produce high-contrast special effects and should be reserved only for special situations. Here, note the lack of shadow detail and high contrast of the recorded scene. If the photographer wished detail in the shadows, the film should have been rated at a lower E.I. and developed accordingly.

3. Rating the film at E.I. 125 will increase the contrast of your results slightly so this film speed should be reserved for scenes of very low contrast.

4. As a scientific film, Technical Pan produces high-contrast images with extremely good sharpness. This negative of a urea specimen was rated at E.I. 100 and developed in Kodak HC-110, dilution F for six minutes.

5. Pictorially, Tech Pan can be used outdoors even under the brightest conditions. Here, Tech Pan was rated at E.I. 32 and developed in modified FG7 for three minutes. Notice the detail in the deep shadows of the log and the bright highlights of the sea foam.

TECH PAN FILM



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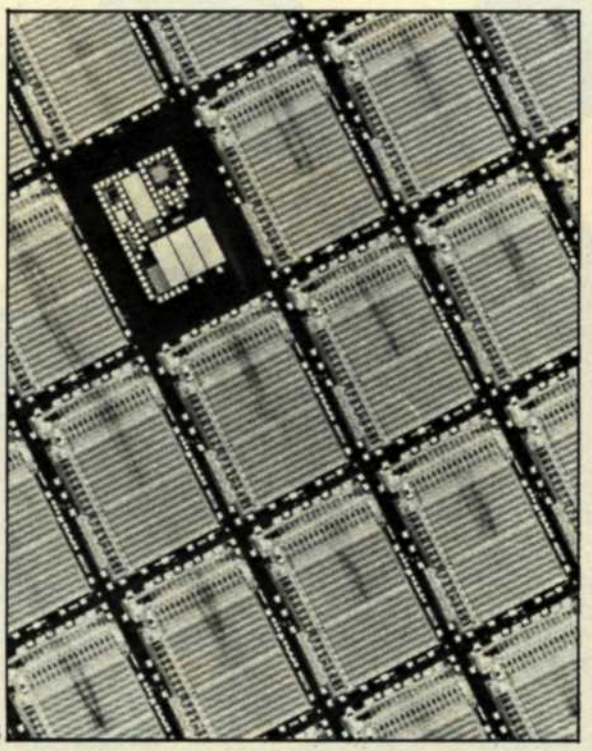

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ALL PHOTOS BY THE AUTHORS.

7. & 8. When using conventional films, most times poor camera technique is masked by the film's inability to resolve fine detail. In photo No. 7, mirror slap causes an undue amount of image blur because of the high magnification. After taking precautions (photo No. 8) as outlined in the text, image is razor sharp. A black card held over the lens with the camera's shutter on B was used to make the exposure.

9. Rated at E.I. 32 and developed with modified FG7 developer, Technical Pan film can be used in almost every situation, even a high-contrast scene such as direct flash.

This film speed works well on overcast days, in the fog or in outdoor scenes that have no dominant highlights or shadows. It works extremely well with long lenses, 300mm and longer.

E.I. 250 outdoors will produce high-contrast negatives for special effects.

Upon examination of your first Tech Pan negatives you may be amazed as well as dismayed. Because Tech Pan film has such high resolution and such small grain, your negatives look beautiful, but upon closer examination you may be surprised to discover lens distortion, camera movement or even misfocusing! These minor faults were previously hidden by the larger grain pattern and lesser sharpness in other black-and-white continuous-tone films.

DISCOVERING FLAWS IN SHOOTING TECHNIQUE

Tech Pan's high resolution makes it a great tool for checking camera vibration, lens sharpness, precise focusing and the precision of your basic camera techniques. Most photographers assume that when slow shutter speeds are required, a tripod and cable release will solve all the problems of camera movement. We regret to inform you of the cold, hard facts. Mirror slap can occur, causing some loss of sharpness even if you use a tripod and cable release. After completing several tests using Tech Pan film, the negatives were examined using a high-power magnifier, and the results indicated definite mirror slap, especially when the shutter speeds were from 1/15 second down to ½ second.

To cure the problem of mirror slap, the photographer can gently push down on the top of camera during exposures of one second and shorter. A better way to ensure stability in your tripod is to attach a heavy weight to the bottom of the center column of the tripod.

For exposure times greater than one second, a black-card shutter is recommended. To successfully execute this method, a black card is held in front of the camera lens and the shutter on the camera is locked open on B (Bulb). The black card is then removed from the front of the lens and exact timing is achieved

by means of a stopwatch. When the required exposure time is achieved, then carefully replace the black card in front of the lens and close the shutter.

Some lenses seem to induce mirror slap more than others. Telephoto lenses from 200mm and up, for example, because of their weight, require tripods and heavy weights to steady the tripod, and high shutter speeds in order to obtain sharp photos.

Another area in which you might notice mirror slap is the equipment used for close-ups such as macro tubes, slide copiers, copy stands and microscopes. A quick test using Tech Pan film on each of these setups will enable you to find the cause of your unsharp negatives. Once the cause is located, you can then set out to improve your close-up equipment. For example, you can start using flash with your macro tubes, and your copy stand can be reinforced. Your slide copier can also be reinforced or even converted to flash. When photographing through a microscope you can use the black-card shutter as mentioned before.

Some photographers have difficulty obtaining sharp pictures and usually put the blame on their own inability to focus the camera properly, or worse yet, the camera's lens. But there is another possible cause for poor focus and it takes Tech Pan Film to discover it.

Mount your camera and lens on a tripod and carefully focus on different subjects at various distances from the camera. For each subject take two or three photos on Tech Pan film taking care to avoid mirror slap. Make notes indicating subject matter, and record the focus marked on the lens.

After taking each set of photos, refocus the lens at a point you perceive to be 10–20 percent in front of the subject, and another photo at 10–20 percent behind the subject. Remember to carefully record your information.

Process the film and view the negatives with a high-power magnifier. First, check the accurately focused photos. If they seem sharp, then your camera body is well focused. If not, check the photos that were back and front focused. If either of these photos is sharp, run the test again. If your results are the same, you may need a corrective eyepiece on your camera or else your camera needs repair (the focusing screen may be a different distance from the lens than the film plane).

Tech Pan is a great tool for testing lens resolution. Mount your camera and lens on a tripod or copy stand. A commercial lens-resolution test chart should be used. In lieu of the test chart, a page from a magazine that has type in all four corners can be used. Focus the camera carefully and make sure to avoid any mirror slap. Make several exposures at different image sizes and different f-stops. Make sure your camera back is parallel to the test target.

10. Edwal FG7, sodium sulfite and a plastic film can for mixing are all you'll need to turn Kodak Technical Pan Film, 2415, from a high-resolution scientific film into a continuous-tone pictorial film.

Process the film and view with a high-power magnifier. Examine the negative for sharpness in the center as well near the edges. Look for any distortion near the edges of the chart. Should you discover that the straight lines in the resolution test chart are not as straight on your test negatives, then you might consider using that lens only on subjects containing no dominant lines, or else put the lens up for sale.

Compare your negatives from each f-stop tested. Determine the sharpest negative. In most cases, the sharpest f-stop on your lens should be around two f-stops down from the widest opening.

Once you have all your testing done on Kodak's Tech Pan film, it's now time to go out and take some great pictures. One of the biggest advantages of Tech Pan film over Panatomic-X, Kodak Plus-X or Tri-X Films is that it enables you to make high-quality enlargements up to 20×24 inches. When enlarging Pantomic-X, Plus-X or Tri-X to 20×24, grain becomes most apparent, contrast drops considerably, and image resolution falls apart. Tech Pan, on the other hand, maintains extremely fine grain and normal contrast with little resolution loss at 20×24. It's available in 36-exposure cassettes and 150-foot bulk rolls (35mm), as well as the 4×5 sheet-film size.

If you decide to give Kodak's Technical Pan Film a try, expect to produce some dynamite negatives and noticeably improve your 35mm camera techniques all at the same time. □