

## KODAK Technical Pan Film 2415

(Pictorial Applications)

### Features

A combination of grain and resolving power that provides enlargements of excellent quality at 25X or more. Grain is unnoticeable in most prints, resulting in a silky-smooth gradation of tone much better, size for size, than current films. The results from a 35 mm negative look like they came from a 4 x 5 camera.

Extremely high resolving power (400 lines/mm) -- far better than most camera lenses require and twice the value of Kodak Panatomic-X film.

Contrast variable over an extreme range to meet most any challenge you will encounter -- from high-contrast slides to pictorial negatives, depending upon development.

A versatile film that can also be processed in a wide variety of hand and mechanized processors, producing a wide variety of special effects.

Excellent characteristics for astrophotography, particularly lunar and solar photography.

A technical film equally at home for photomicrography, macrophotography, copying, laser recording, and other types of scientific and technical photography.

A film that is available over the counter in 135-36, 35 mm x 150-foot, and 4 x 5 sizes, with a minimum-order quantity of one roll or package.

### Short History

It will come as no surprise to people who have been following the changing scene of scientific and technical photography that Kodak technical pan film is now available from photographic dealers. This extremely versatile film owes its present form to several other Kodak films. In the past, Kodak offered solar flare patrol film SO-392, a high-contrast film with excellent grain characteristics used worldwide for Hydrogen-alpha solar flare studies at solar observatories. The same product, offered as Kodak photomicrography monochrome film SO-410, was used principally for photographic recording through light microscopes. It was used also in a variety of other scientific and technical applications.

In 1977, both films were replaced with a similar but much improved film (SO-115). This product had, among other refinements, greater green speed and a dyed-gel backing for suppressing both curl and halation. The improved green sensitivity increased this film's usefulness in applications where more uniform spectral response was desirable, particularly in photomicrography and metallography where green filters are frequently employed. At the same time, its extended red sensitivity made the film attractive for recording scenes illuminated with He-Ne or Krypton-red lasers.

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## 2. Extended-Red Sensitivity

Because the sensitivity of this film extends further into the red region than conventional panchromatic films, the recording of red objects will be slightly lighter than normal in the print. In some cases this characteristic may be desirable. For example, it helps reduce the effect of some types of skin blemishes. In other cases, filtration may be required. In particular, Caucasian flesh tones in full sun may look too light and possibly "pasty." This effect is less evident in shade portraits outdoors because there is less red light present. In some cases a Kodak Wratten filter no. 38 or a Kodak color compensating filter CC40C, used without invoking a filter factor, may be sufficient to "remove" the extra red sensitivity. Because of variations in circumstances and tastes, experimentation is in order. Some people use no filter at all and like their results. Filtration is usually not required in scenic pictorial photography.

## 3. Speed

An exposure index of 25 is low enough to require a tripod for optimum results, especially where good depth of field is required. Because this film has such excellent grain and resolving power, it literally begs to be enlarged greatly -- a situation that brings out and enlarges blurred images that would go unnoticed at normal magnifications. In addition, because it was originally intended as a high-contrast film and is used as a pictorial film only by processing in special low-contrast compensating developers, this film may have less overexposure latitude than other pictorial films you have been using. It is advisable to take readings from a Kodak neutral test card or use spot-meter readings from the highlight and shadow areas and average the results. For best results, exposure bracketing is recommended. You may want to experiment with exposure and processing to produce your own "customized" film speed and developing conditions to suit specific operating conditions.

## 4. Development

POTA developer contains 1-phenyl-3-pyrazolidinone (Kodak balancing developing agent BD-84 or Phenidone developing agent). As a result, it is especially prone to aerial oxidation and aging effects. This developer should be mixed directly before use, used as a one-shot developer and discarded immediately. Developers of this type are susceptible to changes in water purity and pH. Therefore, distilled or deionized water is recommended although success has been reported with ordinary tap water. Because of the film's excellent image-structure characteristics and its attendant great enlargeability, it should not be squeegeed or sponged prior to drying. This usually produces fine scratches that show up at high magnification but normally go unnoticed. Instead, to prevent water spots, treat the film in a Kodak Photo-Flo solution for 30 seconds (see directions on bottle), and hang it up to dry. Be careful not to use vigorous motions, and try to avoid excessive bubbles. If excessive bubbles are encountered after treatment, dip the film, for a few seconds only, in clear water and then hang it up to dry.

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## 5. Resolving Power and Granularity

To utilize fully the capabilities of this film, use clean, high-quality optics, optimum apertures and make steady exposures at both the camera and enlarging stage. Excellent 8 x 10 enlargements have been made from 35 mm negatives that are scarcely discernible from prints made from "ordinary" 4 x 5 films. High-quality 25X enlargements have been made which were no more grainy than 8 x 10 enlargements made from 35 mm negatives of Kodak Tri-X film. If your results are not sharp with this film, chances are your lens or technique needs improvement. In these respects, this film is quite unforgiving.

You may notice also that your concept of depth of field needs to change with this film. People have a tendency to think of discrete limits for depth of field; e.g., from 11 feet to infinity. In reality, while the focus is acceptable over this range, it actually is sharpest at the point focused upon (22 feet) and decreased in sharpness on either side. Of course, when you enlarge a negative, the "circle of confusion" upon which depth-of-field tables are based is also enlarged which, in effect, decreases your depth of field. You may find that you have "degrees of infinity" and less depth at these higher magnifications than you thought you had. You may want to determine your depth of field based upon apertures one to two stops larger than the aperture you are actually using in order to compensate for this effect.

As you realize from the foregoing, Kodak technical pan film 2415 is an extremely versatile film. While we have little experience in all applications, some people have even used it as a high-contrast film for reverse-text slides by processing it for 3 or 4 minutes in Kodalith liquid developer or Kodak Dektol developer (full strength).

Try speeds of 25 and 50, respectively. Others have even experimented with the Kodak direct positive film developing outfit to make positive black-and-white slides. Still others have copied B/W negatives with this film to make B/W slides with excellent results. Again, we encourage you to experiment. We think you will find this film is all we say it is -- and maybe more.

General Comments

Phenidone "A" does not dissolve readily in water. When preparing POTA Developer, the process can be accelerated by heating the mix water to approximately 100°F. (The solution should be cooled before use, of course.)

The activity of POTA Developer is highly dependent upon the pH of the solution and also its age, measured in minutes and hours. Accordingly, it is good practice to use solutions which are freshly prepared with distilled or deionized water.

Scientific and Technical Photography

Professional and Finishing Markets Division

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(Note: Kodak, Panatomic-X, Estar-AH, Photo-Flo, Tri-X, Kodalith, Dektol, and Wratten are trademarks.)

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