

## KODAK EIR INFRARED

### TRANSPARENCY FILM

By Sam Proud

In February 1997, at the Photo Marketing Association meeting in New Orleans, Kodak announced a new infrared film to replace the long standing Ektachrome Aero Infrared (EI) film. EI film had appeal for scientific applications and limited appeal to amateur and advanced amateur photographers for its interesting artistic effects. The big problem was the film could only be developed using the out dated E-4 process that only a few labs in the country still offered. The cost of processing was expensive due to the small volume of film the labs handled. Processing cost around twenty five dollars or so per roll.

What made me excited about Kodak's EIR film was that it could be processed at home in traditional E-6 chemistry. I love new toys, especially photographic ones so as soon as my local photo shop got their first shipment in I went down and bought a couple rolls to see what EIR was going to do. I have to admit my hand winced when I pulled out forty dollars for the two rolls but the results for the first try were outstanding. If you are looking for a new look to wake up your eyes then this may be it. What you see is definitely not what you get! The colors are vibrant and high in contrast, grain is moderate in structure. After shooting a few rolls you can start to get a perception of what your transparencies will look like. Since I have been using this film I now not only look for color and composition in standard transparency film but now what it might look like if I shot it in infrared. All of sudden ivy covered buildings take on a whole new perspective. EIR is not for everyone and it's not meant to be. But if you're looking for something new to experiment with, this is something you must try.

EIR is not a true infrared film as it records in a range from 400 to 900 nm (nanometers). The average human eye can see reflected light from 400 to 700 nm\*. The 900 nm range is where you are just starting into the infrared range of the spectrum. In short EIR responds to certain image colors as we do and then it can go beyond the visible portion of the spectrum.

Kodak rates the film at 200 ISO for E-6 development and ISO 100 if the film is processed using AR-5. The recommended ISO's as published have taken into account the filter factors of the Wratten 12 or deep yellow filter needed to make this film work. I exposed the film at the recommended 200 ISO. The camera used for the initial test was a Bronica ETRS with a 35mm back and a 50mm PE lens with a Tiffen deep yellow # 15 filter. The meter used was a Minolta Autometer IV. Weather conditions, especially temperature, may have an effect on the film's recording of colors so for the record the first roll was exposed on a cloudless day in strong sunlight between 1 and 2 p.m., with an outside temperature around 82 degrees. Subsequent rolls were exposed at ISO 200 with a Canon EOS A2E.

Published data from Kodak indicates that the film has a latitude of plus or minus 1/2 stop. On an over and under test of two stops I found that one stop under can produce a good transparency but one stop over will produce a washed out transparency with little color or contrast.

#### Loading and Processing:

Kodak states that the film must be handled in complete darkness. It may have been a bit of overkill, but for that initial roll of film, I first loaded the camera, and then later loaded the exposed film onto the reels, in the darkroom using a changing bag for extra insurance. On subsequent rolls I did away with both the changing bag and darkroom and loaded the film in the camera under subdued light without any indication of fogging.

As mentioned before there are two ways to process the film. The standard E-6 method and the AR-5 process. The AR-5 is a process used to develop aerial film and when EIR is processed the film will produce a more accurate but less saturated color transparency. The E-6 will produce higher contrast and more saturated colors. According to Kodak there are only three labs in the country that can run the AR-5 process.

For this test the film was developed in freshly mixed Tetenal E-6 three bath and six bath kits. Processing was done in a JOBO ATL-1000 and an ATL-3000 using both 2500 and 1500 series tanks. The process times were standard Tetenal / Kodak E-6 times. Temperature controls of 38° Celsius  $\pm\frac{1}{2}$  degree were adhered to.

Kodak states in their data sheet that the film must be kept under 55° Celsius otherwise fogging may occur. To emphasize this constraint I should note that Kodak ships the film in boxes with ice packs to protect it from heat. This may raise a few questions as to processing in a JOBO drum or processor and following Tetenal or JOBO's instructions that recommend a five minute prewarm of the drum before the process is started. From the tests conducted the brief elevation in temperature and the material used in JOBO drums have no fogging effects on the film.

#### Outside IR Sources:

Kodak points out in the data sheet that the process should be carried out in total darkness. This indicates a concern for (but is not limited to) IR sensors in film processing machines, night vision goggles used in labs, or cameras that use infrared devices for film advance. The best advice I can give is "photographer beware". Unfortunately the only way to be sure your images will process properly is to test the film yourself in your camera with your processing technique or with the lab you work with. If you are using an outside lab make sure that the lab is aware of the special handling instructions. The film canister only shows the film can be processed using the AR-5 method so you may want to take the data sheet that comes enclosed with the film or a copy of the Kodak data sheet with you to remove any doubts of the film contaminating the lab's chemistry.

If you are processing film yourself check your darkroom for any external light leaks, then recheck your darkroom for any internal light. Telephones, motion detectors, glow in the dark markers, fluorescent lights, any LED's or LCDs or furnace pilot lights that might emit light can cause fogging. Twenty minutes in your darkroom may save you hours and dollars of frustration. This is not only a rule that should be practiced for EIR film but for any film you are working with. Don't forget to check yourself! We all take a lot of the things we wear for granted like watches and pagers, and some now have continuous glow dials that could easily fog any film. As a friend of mine once said "if you find a light leak in your darkroom chances are the film found it first" !.

#### Slide Duplication and Internegatives:

For the stock shooters you will be happy to find out that EIR does very well with duplicating film. We took several transparencies of different exposures to a custom lab for duplication. We then brought them back and set them side by side to the originals. In a blind test no one could tell the differences between the original or the duplicate. For those of us who just can't bring ourselves to the point of making our friends sit down and look at slides, prints from EIR can be made easily by use of an interneg or Ilfochrome process. Both will produce, as expected a higher contrast print but in some cases may make the print more dramatic than the original transparency.

#### Canon Cameras:

Canon EOS cameras may pose a special problem with EIR film. With the exception of the Canon EOS, EOS 1 and the EOS 1N, the film transport system uses an infrared eye to advance the film

by counting the sprocket holes. According to Canon, the IR film advance can fog infrared film as much as 15% into the image area, however this fogging factor may vary from camera to camera and model to model. As mentioned earlier in this article, many of the rolls tested were done in two Canon A2E's. Some fogging of the lower sprocket holes was noticeable however it did not affect the image area. Again if you're using a Canon EOS you must test your equipment to see if this is going to be a problem with your cameras.

Additional information and footnotes.

Additional information can be found at Kodak's web site at [www.kodak.com](http://www.kodak.com).

\* Basic photographic materials and processes