



## Chromogenic B&W Films

Chromogenic black-and-white films are wonderful things. They're ISO 400 black-and-white films that are processed in standard C-41 color-print-film chemicals, so they can be processed at any handy lab that does color-print films. The resulting negatives consist of dyes like color negatives, rather than of silver like conventional black-and-white film negatives, so they print equally well on condenser and diffusion enlargers (there's no Callier effect). Chromogenic films have lots of exposure latitude—images exposed from EI 50–800 will generally yield good prints. And while they have ISO 400 speed, they have the grain of an ISO 100 film.

What are the drawbacks? Well, you can't control their contrast through development, as you can with conventional black-and-white films—bad news for Zone System practitioners. And the dye images probably aren't as "archival" as the silver images of conventional black-and-white films.

Currently, three manufacturers market chromogenic black-and-white films:

Ilford (who started it all with XP1 400 back in 1980) offers its third-generation version, XP2 Super 400. Kodak offers three: Black & White 400 (a consumer-oriented film), Professional T400CN (best printed on conventional silver-based black-and-white papers) and Professional Portra 400BW (designed to be printed on color papers). And Konica offers Monochrome VX400.



**Top:** Ektachrome E100VS pushed to EI 200 is our standard "bird" film, allowing us to get sharp in-flight shots with a hand-held 400mm f/5.6 lens. (And it really enhanced the early-morning light!)

**Above:** Fujichrome Provia 400's speed is sufficient to freeze a hummingbird in mid-flap (the exposure was  $\frac{1}{6400}$  at f/4 with a 300mm lens). Provia 400 has always been on the cutting edge; the current version, Provia 400F, is truly amazing.

**Below:** Kodak Professional Portra 800 was designed for ambient-light portraits, but it works well for fast action, too.

## Our Favorite Action Films

- Fujichrome Provia 400F
- Fujicolor Superia X-TRA 400
- Fujicolor Superia X-TRA 800
- Kodak Supra 800
- Kodak Ektachrome E200

### in bright sunlight:

- Fujichrome Provia 100F @ EI 200
- Kodak Ektachrome E100VS @ EI 200



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close. But for general action photography, without press credentials and the close access they provide, our favorite action films are pretty much the same ones we prefer for nature photography: Fujichrome Provia 100F, Kodak Ektachrome E100S and VS (all frequently pushed to EI 200), Ektachrome E200 and Fuji Provia 400F. We also like the ISO 100 and 400 color-print films, and go to ISO 800 when light levels require it.

## Films for Low-Light Photography

Naturally, fast films come to mind when the subject of low-light photography comes up. But you can use slower, finer-grained films if you're shooting nonmoving subjects and can mount the camera on a sturdy tripod. The main consideration then is possible reciprocity failure (or, more accurately, failure of the reciprocity law). There's a whole article about that elsewhere in this issue, but in brief, the reciprocity law of exposure ( $E = It$ , exposure is the product of the intensity [ $I$ ] of the light and the amount of time [ $t$ ] the light strikes the film) doesn't hold true at very long (or very short) exposure times. For example, shooting for  $\frac{1}{250}$  at  $f/5.6$  produces the same exposure on the film as shooting for

**Below:** Hand-holding long lenses in low light requires fast film. Kodak Professional Supra 400 provided enough speed here (assisted by the image stabilizer in our Canon EF 300mm  $f/4$  IS lens) to catch this sunrise-hour scene.

**Below right:** "Available dark" is hand-holdable with a fast lens and Kodak Ektachrome E200 pushed to EI 800 for this shot.



**Above:** The light level wasn't very high for this pre-sunrise scene, but a fast lens and ISO 100 slide film pushed to EI 200 allowed it to be photographed sharply hand-held.  
**Below:** Fujichrome 400 was our favorite hand-held low-light photography slide film until Fujichrome Provia 400 replaced it on our list. This Provia 400 sunrise image shows why. Now, there's Fujichrome Provia 400F, which is even better!





**Left:** Slide films come in two varieties: daylight-balanced, and tungsten-balanced. Daylight films show things correctly in daylight, and produce a warm cast when exposed by tungsten light. Tungsten films reproduce things correctly when exposed by 3200 K tungsten light, and render things cooler when exposed in daylight. For night scenes, both types of film produce interesting results—use daylight film for a warmer rendition, and tungsten film for a cooler one. (Both shots were made with a tripod-mounted camera on slow slide films.)

**Below:** Blurred-motion effects require slower films that permit using long exposure times. Mount the camera on a tripod so nonmoving portions of the scene remain sharp.

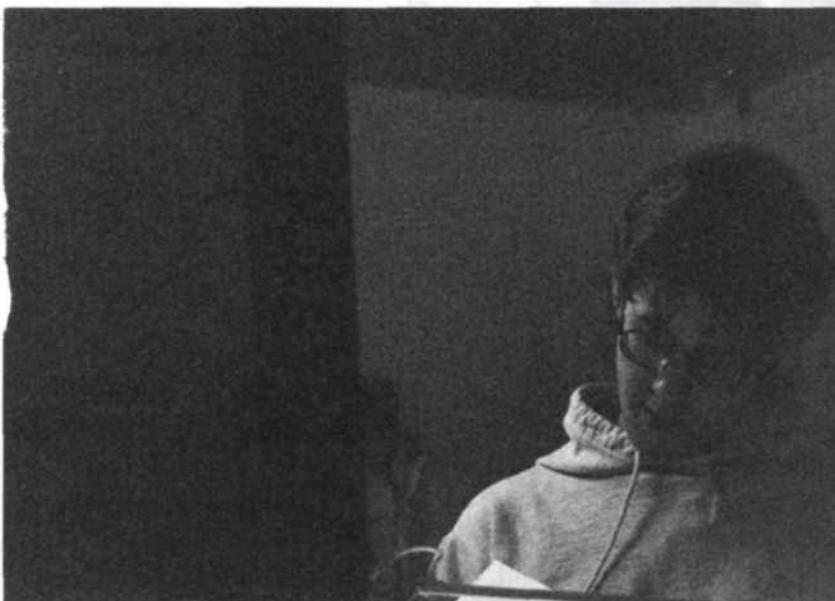


$\frac{1}{25}$  at  $f/8$ , or  $\frac{1}{30}$  at  $f/16$ . But an exposure of one second at  $f/1.4$  probably won't produce the same exposure as 8 seconds at  $f/4$ , and almost certainly won't produce the same exposure as 128 seconds at  $f/16$ , because film loses speed as exposure times increase much beyond one second (where the effect becomes noticeable depends on the specific film in question—each film has its own reciprocity characteristics). And, since color films have three emulsion layers, not all of which lose speed at the same rate, reciprocity failure causes a color shift as well as underexposure when you make extremely long exposures with color films. Film manufacturers provide reciprocity-compensation exposure and filtration data for their films, and Jack and Sue Drafahl's article elsewhere in this issue explains how to compensate after the fact.

You can avoid most reciprocity problems, and even shoot hand-held in pretty dim light, by using faster films (and using color-print films rather

### Our Favorite Low-Light Films

- Fujicolor NPZ 800
- Kodak Supra 800
- Konica Centuria Super 800
- Konica Centuria Super 1600
- Fujicolor Superia 1600
- Fujichrome Provia 400F
- Kodak Ektachrome E200

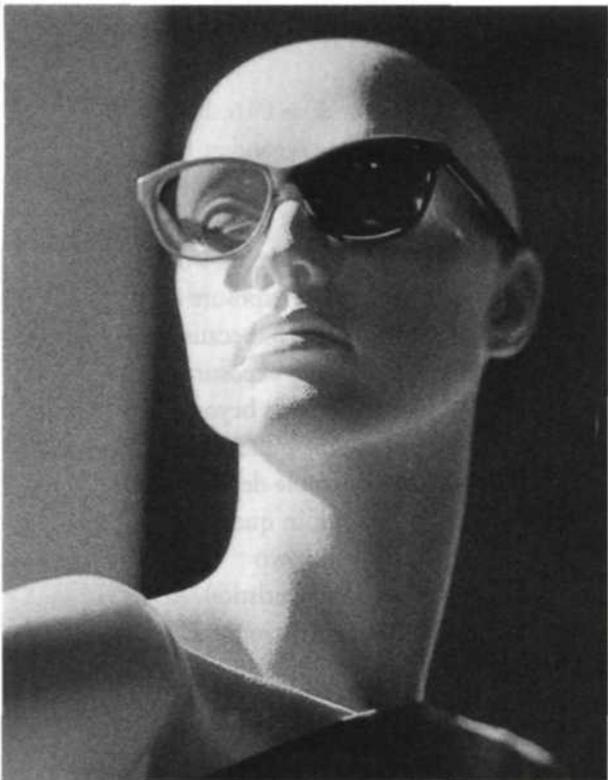


**Above left:** Pushing film speed increases grain and decreases sharpness and shadow detail—but boy, can you shoot in dim light! Here, we rated Kodak T-Max P3200 at EI 25,000, based on an incident-light reading, then photographed our "suspect" from across the street with a tripod-mounted 500mm mirror lens. It's not exactly Zone System, but the subject is readily identifiable.

**Above right:** The opposite technique is pull-processing. When photographing a high-contrast scene in black-and-white, give extra exposure to record detail in the darkest areas, and reduce development to keep the bright areas printable.



than slide films). Of course, faster films are grainier than slower ones, and not as sharp—and with color films, the colors aren't as rich. But today there are quite a few excellent fast films ready to serve the available-light shooter. Here are our favorites:



**Above:** Kodak's T-Max P3200 exposed at EI 3200 and processed accordingly produces a soft, pleasant effect, and the grain isn't too bad for the speed. This cropped shot of a window mannequin was made hand-held.

Fujifilm's trio of ISO 800 color-print films (Fujicolor Portrait NPZ 800 Professional, Fujicolor Press 800 Professional and its consumer counterpart Fujicolor Superia X-TRA 800), Kodak's Professional Supra 800 and Professional Portra 800, Agfacolor Vista 800 and Konica Centuria Super 800 all deliver excellent performance under a wide range of illumination, including mixed and fluorescent lighting, while retaining grain and sharpness not much worse than what most ISO 400 color-print films deliver. All have RMS 5 granularity ratings and similar resolving powers; which is "best" is pretty much a matter of personal taste. You really can't go wrong with any of these. Our staff member who does the most low-light shooting prefers NPZ 800; try that and a few of the others, and see which you like best.

The superfast color films (those above ISO 800), while amazing for their high speeds, produce noticeably worse image quality than the ISO 800 films, so we'd rather push an ISO 800 film to 1600 than use a superfast film if we need that much film speed.

If we have to shoot slide film in dim lighting, we prefer Fujichrome Provia 400F and Kodak Ektachrome E200, pushing both to EI 800 if necessary.

In black-and-white, the fastest films

With the demise of Konica SR-G 3200, the fastest color films today are Fujicolor Superia 1600 and its pro counterpart, Fujicolor Press 1600; and Konica Centuria Super 1600. These are best reserved for occasions that really require that much film speed, as they are noticeably grainier than the ISO 800 color-print films. These images were shot on Fujicolor Superia 1600 (below) and Konica Centuria Super 1600 (bottom).

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are Ilford Delta 3200 Professional and Kodak T-Max P3200. Despite their names, neither has a true ISO speed of 3200, but both can be exposed at EI 3200 with good results. Ilford states that Delta 3200 can be pushed to EI 12,500 when necessary; we've done simulated surveillance work with T-Max P3200 exposed at an incident-metered EI 25,000 and got identifiable images of the "suspect" (we even got one identifiable image at EI 50,000). (Of course, in real surveillance

photography, you couldn't use an incident meter, but our "suspect" was a friend and thus were able to take an incident reading with the meter in front of the suspect. The incident reading ruled out errors due to a reflected in-camera meter reading being thrown off by all the dark area—the incident reading assured that we really were exposing the film at the specified speed.) For pictorial work, EI 3200, or possibly 6400, are about the limits for these two films.

If ISO 400 is sufficient, there are lots of terrific black-and-white films, including Kodak T-Max 400 (excellent image quality, but requires precision in development), Tri-X (ancient and grainy, but lots of latitude and beautiful tonal range), Ilford HP5 Plus (similar to Tri-X but a little finer-grained), and the chromogenics (Ilford XP2 Super 400, Kodak Black & White 400, Professional Portra 400BW and Professional T400 CN, and Konica Monochrome VX400). If we were Zone-Systeming, we'd use Tri-X or HP5 Plus (or maybe T-Max 400), but for most black-and-white these days, we prefer the chromogenics (see sidebar), pushing them as far as EI 3200 if necessary. (Chromogenic films pushed to EI 3200 are sharper and finer grained than Delta 3200 and T-Max P3200 at that speed, but provide less shadow detail.) ■