

MAKING PERFECT SLIDE DUPLICATES

Duping Films and How to Best Use Them

by Jack and Sue Drafahl

Recently we mentioned to a friend of ours that we were putting together an article on slide-duplication films, the difficulty in getting perfect dupes, and how we would explain these problems to PHOTOgraphic's readers. To our surprise, he said that he knew how we could get perfect dupes, ones so accurate that no one could tell them from the original. As we pressed him for more information on a possible new duping process, he said, "It's very simple. First you make two dupes of the original slide, and then you throw the original away!" We laughed at his solution, and commented that most photographers would not appreciate his humor.

This still leaves us with several questions about slide duplication. Why would anyone need to make a slide



ALL PHOTOS BY THE AUTHORS



Kodachrome original.



Kodak 5071 dupe.



Fujichrome CDU dupe.



Kodak 8071 dupe.



Fujicolor IT-N dupe.



Kodak Vericolor dupe.



Ektachrome original.



Kodak 5071 dupe.



Fujichrome CDU dupe.

duplicate, what is the best film, what kind of equipment should you use, and how do you get the maximum quality possible? All these questions and more will be the target of this article.

WHY MAKE A DUPLICATE?

Most photographers have a fair amount of "good" slides, while all of us have some "OK" slides. There are different reasons for duplicating each of these "types" of slides. The idea of making dupes of your best work is so your originals will take less wear and tear from handling and slide projection. For example, if you want to send samples of your work to a possible new client, you might not want to risk sending originals. If and when the client needs the originals for publication, you would then send them.

Slide dupes are very important to slide-show producers. Slide projection tends to accelerate the fading of an original image, so dupes are substituted in their place. In many slide-show productions, special cropping masks are used to get multi-image effects. By using dupes, the slide-show producer can cut and paste them into the slide presentation. Also, multiple exposures, sandwich slides, and special effects can all be accomplished on the slide duplicator by combining original slides on the duper and creating new visuals on dupe film.

Many times stock photographers will be working with book publishers, whereby it may take up to two years to complete all aspects of publication. In this case, dupe slides would be used as place holders until final separations are made. Also, some publishers request only slide duplicates to be sent for the initial screenings because they do not want to incur the liability of handling original slides.

The second group of candidates for slide duplication would be those slides that you would consider OK, but unusable in their present state—underexposed, off-color, poor composition, scratched and fading originals. Exposure correction is the most com-



Kodak 8071 dupe.



Fujicolor IT-N dupe.

mon reason for corrective slide duplication. If your slides are overexposed, there is very little you can do, as the image detail in the washed-out areas in the image is gone and can't be easily retrieved. On the other hand, underexposed slides still have a great deal of image information, and can be corrected by increasing the exposure in the duplicate slide. We have original slides so dark that you could barely see any detail, yet the slide duplicate looked like any other properly exposed slide.

In situations where the color temperature of the light source did not match the film, off-color originals can result. When making the dupe, you can change the overall color balance by changing the color pack in the slide duper. You can also use these color-correction filters to warm up or cool down the color of your originals.

Many times, an original slide will be duped for compositional corrections. For example, you can straighten a crooked horizon line, so that everybody is not sliding off the edge of the earth. A light trap at the edge of the film can be cropped out in a dupe by moving the slide to one side and enlarging it until the offending area is removed from the viewing area. You can even crop small portions out of an image and blow them up to a full-size slide, but the image must be very sharp for this type of correction.

Older original slides may start to fade at an accelerated rate due to the loss of



Kodak Vericolor dupe.

protective coating, or invasion by fungus. By copying these old originals onto new dupe stock, you can rejuvenate the images and make color corrections to counteract the shifting changes in the original slide. Scratches in original slides can be covered by smoothing a light, no-scratch solution on the surface, but this treatment will still be visible to clients. If you treat the original slide and then make the dupe, the scratch can be reduced or eliminated.

You can also use slide-duplication film if you need a duplicate color negative. In this case, you would place the color negative on the slide duper and copy it onto slide-dupe film. The slide-dupe film would copy the color mask and the original dyes in the color negative onto the dupe film. The dupe negative would be a lesser quality than the original color negative, but could be used to make color prints.

If you decide you need a negative of



Dark Kodachrome original.



Lightened Kodak 8071 dupe.

MAKING PERFECT SLIDE DUPLICATES

a slide so that you can make color prints on "C" paper, or have your local one-hour lab make them, then internegative film would be the answer. The internegative film is much like slide-duplication film, except you would dupe your slide directly onto a negative film. This special negative film compensates for

changes that occur when copying slides to negative.

THE PERFECT DUPE

In theory, there is no such thing as a "Perfect Dupe." That would only be possible if the slide duplicator had perfect resolution, and the film had the ability to

capture every bit of data in the original slide. Slide duplicators vary greatly in quality, but the most important variable is the copy lens mounted on the slide duplicator. For best results, we find that high-quality macro lenses do an excellent job. For the perfectionist, there exist special flat-field copy lenses that will reduce image loss to a bare minimum.

The light source is the other critical element in the slide duplicator. Both electronic flash and incandescent lights will work with the various dupe films, but we find the incandescents more controllable. The light source itself must be located behind a diffu-



Off-color Ektachrome original.



Corrected Kodak 5071 dupe.

sion disk to give even lighting across the slide dupe.

DUPING FILMS & HOW TO USE THEM

Duplication films are not what you would call standard films, so you will not find a great selection. We selected the five most common duplicating films used in the industry, then ran exhaustive tests to determine how each performed in the world of duplication. We looked at contrast, sharpness, color saturation, and ease of color balancing. We found no clear-cut winners, just differences to match your specific needs.

KODAK EKTACHROME SLIDE DUPLICATING FILM 5071: This film has been around for years, and has gone through a variety of improvement modifications. It is balanced for tungsten light sources, and will duplicate most any color slide or color negative in existence. The film has an ISO of 25 (± 1 stop, depending on emulsion), and has a contrast range that will compensate for the high contrast accumulated when making slide duplicates. The grain is extremely fine, and color saturation is designed to match that of the original slide.

We found that Kodachrome originals lost more detail with this film than other films copied onto 5071. This is primarily due to the extended contrast range of Kodachrome film. Kodachrome copies should be made on Kodak's 8071 dupe film.

Using a standard Beseler Slide Duplicator, we found that a 1:1 slide duplicate was best exposed for $\frac{1}{8}$ second at f/8. Our standard filter pack with this film was 42 yellow and 20 cyan. We set most of our exposure bracketing at ± 1 stop exposure. 5071 film is an E-6 film and comes in all sizes from 35mm up to sheet film. We normally use this film in 100-foot rolls in a bulk loader.

If your slide-duplication setup requires the use of electronic flash, there is a special-order version of 5071 dupe emulsion called SO-366. The characteristics of the film are the same as 5071, except that its color balance is closer to flash and allows for short exposures. Unless you have excellent control over your flash system in light intensity, color balance, and recycle time, we find duping with electronic flash somewhat unpredictable.

KODAK 8071 TYPE K SLIDE DUPLICATING FILM: This new slide-duplication film from Kodak is specifically designed for the duplication of Kodachrome original slides. Kodak has modified the 5071 emulsion so that it more closely matches the characteristics of Kodachrome films. This change is most noticeable in the contrast reproduction. 5071 dupe film tended to lose

some of the detail in the highlights, while the 8071 held the range better. This is a tungsten-balanced film with an ISO of 25 (± 1 stop, depending on emulsion), and the same grain structure as 5071. Using the same slide duplicator, we found the exposure to be $\frac{1}{8}$ at f/5.6, and the filter pack had changed to 80 yellow and 40 cyan. Kodak 8071 is an E-6 film, and comes in sizes from 35mm to sheet film.

FUJICHROME DUPLICATING FILM CDU: Fuji's solution to the duplication problem is in the form of a new dupe film that combines all the best qualities of their standard slide films into a special Auto Masking Emulsion (AME). This film is balanced for tungsten light sources and has an ISO of 25 (± 1 stop, depending on emulsion). Fuji CDU is designed to make excellent dupes from all E-6 slide films, Kodachrome, and color negatives. We found the grain structure to be very similar to that of the Kodak films, but the contrast and color saturation were slightly higher on the Fuji film.

KODAK VERICOLOR INTERNEGATIVE FILM: When you need to make a negative of a color slide, Kodak suggests using their Vericolor Internegative Film. It uses special contrast controls with emulsion masking and a wider exposure range. Its color saturation, sharpness, and contrast are designed so that the resulting prints look similar to images shot originally on negative films. The film is balanced for tungsten light, and its speed is approximately ISO 1. Our duplication system was balanced for a 2-second exposure at f/8 with a filter pack of 70 yellow and 60 magenta.

We found that we could also use this film as a black-and-white internegative film. Copying a slide onto the color-internegative film, we then printed the negative onto Panalure paper. We liked the results better than making a black-and-white internegative and printing onto Polycontrast paper. Kodak Vericolor Internegative Film uses the C-41 process, and comes in a variety of sizes from 35mm up to sheet film.

FUJICOLOR INTERNEGATIVE FILM IT-N: Fuji's contribution to the internegative field is a new and improved version of their older internegative film. The new emulsion takes advantage of Fuji's Double-Structure Grain technology, as well as the use of Super DIR and Super L couplers. The grain is fine, and the sharpness is excellent. Fuji's Internegative Film IT-N has an ISO of 1, and required a 2-second exposure with a color pack of 0 yellow, 0 cyan, and 0 magenta.

When we first placed a strip of Fuji

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internegatives next to the same subject in Kodak internegatives, we noticed a major difference in color masking. The Fuji color mask was not as predominant as the Kodak mask. The mask on the Fuji internegative did not seem as heavy as the Kodak internegative's, and the resulting prints were somewhat sharper than with the Kodak internegatives. Fuji's IT-N Internegative Film is processed in CN-16 or C-41 chemistry, and comes in sizes from 35mm to sheet film.

STILL CONFUSED?

The best way to determine the best duplication film for your application is to run your own comparison tests on the same original. Try to find E-6 and Kodachrome originals that have extreme contrast ranges and a variety of colors. Be sure to include one original that has a gray scale and color chart, as this will save you hours of testing. Keep accurate notes and carefully analyze each test.

Making high-quality slide duplicates takes time and testing, but the results can be exciting. After putting all these films through extensive testing, we feel that you won't go wrong with any of them. But if you still have any problems in achieving quality dupes, remember what our friend told us: "If you want a perfect dupe...." 