

Retouching Color Prints on KODAK Papers



No matter how carefully you pose a subject, retouch a color negative, or expose and process a color print, you can almost always improve a color print with a few touches of a retouching brush. First, do major retouching—such as filling in deep shadows, correcting large skin blemishes, or reconstructing major areas of an image—on the negative or transparency you will use to make your print. Then you can retouch smaller defects, such as wrinkles in clothing, unwanted reflections, minor skin blemishes, blue shadows, or spots from dust particles and pinholes, on the print.

The techniques described in this pamphlet apply to all Kodak color papers.

RETOUCHING METHODS

If you are making prints from negatives or internegatives, make as many corrections as you can by retouching the negative before making your prints, especially if you plan to make many prints from one negative. For information on retouching negatives, see KODAK Publication No. E-71, *Retouching Color Negatives*. However, if the negative image is small, you can make corrections much more easily by applying dry or liquid dyes to areas of the enlarged print. Some images also require corrections that are impossible to make on a negative, e.g., specular reflections from glasses that cause high-density areas can't be reduced physically or chemically. Retouching transparencies successfully calls for a lot of practice. However, if you can retouch large areas or defects in a transparency, you can save a lot of print-retouching time—especially when you make a large number of prints from one transparency. For information on retouching transparencies, see KODAK Publication No. E-68, *Retouching Transparencies on KODAK EKTACHROME Film*.

Although you'll sometimes want to use black or colored pencils to make corrections on color prints, you'll probably do most of your retouching with dyes. You can alter large and small areas with dry or liquid retouching dyes. You can also use a white opaque material to cover small dark areas and opaque watercolors (gouache) to retouch large areas by airbrushing. Because color prints have separate dye layers, you can't physically reduce density (with an etching knife) or chemically reduce or bleach density as you can with black-and-white materials.

EQUIPMENT AND SUPPLIES

The most important requirement for good retouching is practice; the next is a well-illuminated retouching area. Evaluate and retouch prints under light of the same color temperature and brightness (at least 50 footcandles [538 lux]) that you'll use to display them. The illumination should have a color temperature of 4000 ± 1000 K and a Color Rendering Index (CRI) of 85 to 100. You can approximate this color quality with certain fluorescent lamps, such as cool white deluxe, Philips 5000 K Ultralume, and Macbeth ProofLite lamps. Or you can use a mixture of incandescent and fluorescent light. For each pair of 40-watt cool white deluxe fluorescent lamps, use one 75-watt frosted tungsten bulb. If you are retouching prints intended for photomechanical reproduction, use only a 5000 K light source, such as the General Electric Chroma 50 fluorescent lamp.

Here are the basic retouching supplies you'll need:

- KODAK Liquid Retouching Colors (CAT No. 190 17431, a set of nine liquid colors in small bottles (also available individually)
- KODAK Retouching Colors (CAT No. 189 0888), a set of nine colors and a dye remover, each in cake form in a small jar (also available individually)
- White opaque material (artist white acrylic paint or finely ground white opaque, available from art-supply dealers)
- Retouching lacquer (for pencil retouching)
- Print lacquer (for finish coating)
- Soft colored pencils (such as Prismacolor or Derwent)
- Brushes (such as Winsor & Newton series 7 brushes, No. 0 and No. 2)
- 5-percent clear ammonia-water solution (non-detergent ammonia)
- Anhydrous denatured alcohol
- Absorbent paper (such as newsprint or paper towels)
- Absorbent cotton
- Flat white palette

As you gain experience, you can add other items, such as oil-base colors or equipment for airbrushing and lacquering.

RETOUCHING STEPS

The order of the retouching steps is very important. For maximum control of the techniques, follow the order outlined below.

First do all necessary spotting with transparent liquid dyes. Then use dry dyes to correct large areas. If you need to make any corrections with pencils or white opaque materials, do them last. (See page 3.)

DYE RETOUCHING

Retouching dyes are available in either liquid or dry (cake) form. Liquid dyes are satisfactory for spotting prints, but dry, solid colors are more convenient for correcting large areas. Because the gelatin coating on prints absorbs liquid dyes readily, it is difficult to apply them evenly over a large area and to remove them if you make a mistake.

Retouching Small Areas with Liquid Dyes

You'll have a great deal of control in correcting small areas when you use KODAK Liquid Retouching Colors. To apply the dyes, follow this procedure:

1. If necessary, clean the surface of the print by buffing it with a tuft of cotton before you start retouching. Be careful not to scratch the surface. Protect the print from fingerprints and perspiration by wearing cotton gloves, or by placing a piece of newsprint or paper towel between your hand and the print.
2. Transfer a small amount of the dye (or dyes) you need to a palette.
3. If necessary, add a touch of neutral dye to the puddle of pure colored dye. The neutral dye will reduce the brilliance of the pure colors by adding density. For

good control, keep the dilutions weak by adding a little distilled water. This allows you to build up the dye gradually on the print. It is easier to add dye gradually than to remove it if you apply too much. To retouch prints made on KODAK PROFESSIONAL DURAFLEX Plus Digital Display Material, mix a small amount of 7-percent acetic acid solution with your diluted KODAK Liquid Retouching Colors to help the dye penetrate the surface.

Note: If the liquid dyes on your palette dry out, you can add water to dilute them again.

4. Pick up a small amount of dye with your brush, and stroke the brush on newsprint or a paper towel to blot it *thoroughly*. Too much moisture can cause opalescence, or a cloudy look, on the print. Rotate the tip on the newsprint to form a good point. It's not a good practice to touch the brush to your tongue or lips to form a point.
5. Retouch the print with light strokes of the brush; be sure to keep the dye within the area of the spot. Avoid spilling over into the surrounding area. Any over-lapping will make a dark ring around the spotted area.
6. If you apply too much color, blot it quickly with newsprint or you will have too much density in the spot. If too much dye penetrates the emulsion, you can remove it with a 5-percent clear ammonia-water solution. (You can make a 5-percent solution by mixing 5 parts of 28-percent liquid ammonium hydroxide with 23 parts of water.) Apply the solution with a tuft of cotton, rubbing with a circular motion. Be sure to apply it only to the area where you want to remove the dye. Then swab the area with clean water-dampened cotton. Repeat if necessary with a fresh tuft of cotton. Be sure to remove all of the ammonia. Allow the area to dry thoroughly before you resume retouching. For best results, remove unwanted dye quickly.

Retouching Large Areas with Dry Dyes

You can tint large areas of a color print by applying dry KODAK Retouching Colors. This treatment is good for warming up blue shadows, changing or enhancing the colors of skin and clothing, adding color to neutral objects such as gray buildings, and giving warmer or cooler tone to specific areas. This technique lets you experiment until you achieve the effect you want before you set the dyes, and lets you retouch a glossy color print without losing the glossy surface.

To apply dry retouching colors, follow this procedure:

1. If necessary, first clean the surface of the print with a tuft of clean dry cotton or cotton moistened with alcohol. Be careful not to scratch the surface, because scratches will fill with dye and be accentuated. Allow the print to air-dry completely or carefully dry it with a hair dryer wet on "warm." The print must be *thoroughly dry*; any kind of moisture will tend to set the dyes so that you can't remove them with dye remover or alcohol. If possible, do your retouching in a room with low humidity.
2. Select the color you need and breathe on the cake of dye to soften the top layer. Pick up a generous amount of dye—more than you think you could possibly need—by rubbing a tuft of dry cotton over the cake of dye.
3. Transfer the dye to the print by rubbing the area with a circular motion. (To remove dye that gets onto adjacent areas, see step 4.1 Repeat this procedure if you need more color. Smooth out the dye by buffing the area lightly with a clean tuft of dry cotton. (You can also use this method to mix two dyes over an area.) If necessary, continue buffing the surface to lighten the applied color over the entire area or portions of it.
4. To remove unwanted dye from surrounding areas, use the dye remover. Breathe on the cake of dye remover and pick up a generous amount of remover by rubbing a tuft of cotton over the cake. Use a circular motion to remove the unwanted dye. Smooth out the sharp edges by buffing the area lightly with a clean tuft of cotton. (To clean small areas, use a cotton swab or cotton on the end of an orange stick.)

Note: To remove all of the dye, wipe the area with remover or anhydrous denatured alcohol. *Use the remover only in its dry form.* Then remove the dye remover or alcohol by buffing the area with clean cotton before setting the dyes.

5. Set the dyes by applying steam to the retouched area. (For a source of steam, you can use an inexpensive warm- or hot-mist electric room vaporizer. Do not use cool-mist vaporizers.) Hold the print approximately 10 inches (25 cm) from the source of steam for 3 to 5 seconds. Don't let moisture condense on the surface of the print. Repeat if necessary. When the waxy surface marks caused by the dye application disappear, you have steamed the print enough. Avoid applying too much steam.

If any areas need more dye, alternately apply more dye and steam. *Let the print dry thoroughly before you add more dye.*

Removing Steam-Set Dyes. Once you have steam-set the dye, you can't remove it with dye remover. However, you can remove most of the dye with 5-percent clear ammonia-water solution. Apply the solution with a tuft of cotton, rubbing with a circular motion. Be sure to apply the solution only to the area where you want to remove dye. Then swab the area with water-dampened cotton to remove the ammonia. Repeat if necessary; use a fresh tuft of cotton each time. Be sure to remove all of the ammonia. Allow the area to dry thoroughly before you resume retouching. For best results, remove any unwanted dye as soon as possible.

RETOUCHING WITH PENCILS

Always do major retouching, such as correcting large spots or off-color areas, by applying dry dyes as described above. Then add "tooth" to the emulsion by spraying the print with a *retouching* lacquer. (Retouching lacquers are made specifically for pencil retouching. They contain a matting agent, which prepares the print surface to accept pencil retouching readily. Several brands are available at photo-supply stores. Follow the manufacturer's instructions and safety precautions.)

Because colored pencils are an opaque medium, you can use them to lighten unwanted plus-density areas (e.g., black spots or freckles) on color prints. You can also use colored pencils to add density to small light areas.

When you spray the print with a finishing lacquer after you apply pencil, the lacquer will tend to darken the retouching because of the opaque medium in colored pencils. To minimize this darkening effect, spray several *very light "mist" coats* of lacquer before finishing with a heavier lacquer coat. You can also make your colored-pencil corrections slightly lighter than the surrounding area if you plan to lacquer the print.

RETOUCHING WITH WHITE OPAQUE MATERIALS

After spraying the print with *retouching* lacquer, you can apply white opaque or artists' white acrylic paint to a color print to outline and accentuate objects, add specular highlights, retouch spots, etc. Use an artist's brush such as a Winsor-Newton series 7 brush, No. 2. After the opaque has dried, you can tint it with a colored pencil. Or you can use white opaque that has already been tinted with an opaque watercolor (gouache). After the white acrylic has dried, you can add color with liquid dye. See "Correcting Common Defects" for more information on using white opaque materials to eliminate spots and correct or create catchlights. You can also apply opaque with an airbrush.

AIRBRUSHING

Airbrushing is useful for changing the density or color of large areas of a color print, but it requires a lot of practice. You can use KODAK Retouching Colors (dry dyes) diluted with anhydrous denatured alcohol for a temporary application, and then set the dyes by steaming the print. You can use an airbrush to apply opaque watercolors (gouache) as well. For specific instructions on using an airbrush, consult distributors of retouching materials.

DYE BLEACHING

At this time, we can recommend no dye bleaches for Kodak papers.

CORRECTING COMMON DEFECTS

Spots. Black spots on a print made from a color negative are usually caused by minute pinholes in the negative. Apply black opaque to the pinholes in the negative, which will prevent any light from passing through the holes. You will then have white spots instead of black spots on the print, but you can easily eliminate them by spotting with liquid dyes or pencils.

Black spots on a print made from a transparency are usually caused by dust on the transparency. Good housekeeping in the darkroom will help keep slides and transparencies dust-free. At times, however, you will have to deal with black spots on a print; correct them with colored pencils or use the following technique: Apply a very small amount of white opaque material to the black spots. If the opaque looks too white after it dries, apply liquid dye to match the color of the surrounding area. Or you can treat the black spots with white opaque tinted with an opaque watercolor. Spray the opaqued area with finishing lacquer to protect it and to even out the print surface.

When you apply finishing lacquers over opaque, you must allow for an increase in density. To get an idea of how much increase in density to expect, touch the opaqued area (after it has dried) with anhydrous denatured alcohol. The moment the alcohol touches the opaque, you will have a good idea of how much density increase will take place. Make sure the print is thoroughly dry before applying the lacquer. See "Lacquering" on page 5 for more information.

Highlights. Lighting and subject placement sometimes produce highlights in a print that distort a facial or body line or accentuate a crooked nose, bald spot, or deformity. In these situations, blend the highlights into adjacent areas by using a dye that matches the surroundings. Blend from the edges toward the center of the highlight.

Reflections. To reduce large-area reflections from shiny surfaces in print images, use a *weak* solution of a liquid retouching color. Brush it on with a very wet brush. Blot the area between applications. With this technique, you will dull the reflection without completely removing it. You can also use dry dyes to reduce these reflections.

Catchlights. When a subject's eyes are in shadow, catchlights may be small or nonexistent. 'PJ enlarge or restore them, mix a white opaque material with a small amount of water and apply it with the tip of a brush. If the white opaque makes the catchlights too brilliant, dull them by stippling with an extremely soft pencil or adding liquid dye.

A rule of thumb for correcting catchlights is that they should appear on the side of the pupils that faces the main light source. For example, as you are looking at a print, if the shadow caused by the main light falls on the left side of the nose, the catchlights should be at the one o'clock position in the pupils. If the shadow falls on the right side, the catchlights should be at the eleven o'clock position.

If the subject's eyes have too many catchlights, or if the catchlights are poorly located, apply liquid dyes to remove them and a white opaque material to put them in the proper position.

Skin Blemishes. One way to modify skin blemishes and subdue lines and wrinkles is to build up a dye deposit around the blemish by lightly stippling the area with the tip of a brush. Blend the spot into the surrounding skin area by using a dye color slightly darker than the skin tone but lighter than the blemish. You can also use colored pencils to retouch blemishes, lines, and wrinkles. (See page 3.)

Hairline Defects. If defects such as out-of-place hair occur in an area darker than the hair itself, you can correct them by applying liquid dyes. When the surrounding area is lighter than the hair, you have the choice of airbrushing or applying pencils or heavy oil color. If you use heavy oil color, make sure you apply several coats of retouching lacquer first. Lacquer should help prevent the oil color from attacking the dye image; it will also give the print some "tooth" for better adhesion of the color.

Scratches. You can repair surface scratches that have removed one or more dye layers of the paper emulsion by applying liquid dyes. For best results, make sure that the dilution of the dye is correct. Do not add neutral dye to the colored dye; added density is not necessary. The table below represents a simplified cross section of color negative paper, such as KODAK PROFESSIONAL SUPRA ENDURA Paper.

Cyan Dye
Magenta Dye
Yellow Dye
Resin Coating
Paper Base

A scratch that removes the top (cyan) dye layer appears red; to correct it, add cyan dye of the proper concentration to neutralize the red and match the adjacent area. A scratch that goes through the top two (cyan and magenta) dye layers appears yellow. To correct it, first add magenta dye, and then cyan dye, in the proper concentrations to match the adjacent area.

The second table represents a cross section of color reversal paper, such as KODAK PROFESSIONAL EKTACHROME RADIANCE III Paper.

Yellow Dye
Magenta Dye
Cyan Dye
Resin Coating
Paper Base

A blue scratch is formed when the top (yellow) dye layer has been removed. You can retouch blue scratches by adding yellow dye of the right concentration to match the surrounding area. When a scratch looks cyan, it has penetrated the yellow and magenta dye layers. To repair cyan scratches on EKTACHROME Paper, add magenta dye, and then yellow dye, in the proper concentrations to match the adjacent area.

After you apply the correct concentration of dye, apply finishing lacquer to restore an even surface.

Off-Color Areas. You can correct off-color areas in a print by using dry or liquid dyes. For small areas, use liquid dyes; for large areas, use the dry dyes. To neutralize an off-color area, see the following chart for the correct color to use. Note that orange dye (rather than yellow dye) will neutralize blue, and that a purple mixture (rather than blue) will neutralize yellow.

If area is too	Use dye of this color
Red	Cyan
Green	Magenta
Blue	Orange
Purple*	Yellow
Cyan	Red
Magenta	Green
Orange	Blue
Yellow	Purple*

* A mixture of blue and magenta

LACQUERING

After retouching, you can spray or brush prints with finishing lacquer to give them a glossy or matt surface, or to protect them against damage from handling and abrasions, atmospheric contaminants, humidity, and dirt. Lacquering also helps keep prints clean, because you can easily wipe lacquered prints with a damp cloth. Use a lacquer specially made for *photographic* uses; lacquers are available from photo dealers.



Important

Some lacquers may not be compatible with the emulsions of Kodak papers; use only lacquers designed for photographic prints. Use retouching and finishing lacquers of the same brand. Not all lacquer formulations are compatible with each other. Because formulations of lacquers can change, reevaluate them from time to time.

Make sure that the print is completely dry before applying a spray lacquer, and apply it in thin, even coats. Allow the print to dry thoroughly between coats. By varying the type of lacquer, the dilution, and your method of application, you can achieve a variety of surfaces ranging from glossy to matt, including stipple and brush effects.



Caution

Lacquer prints in a well-ventilated, non-explosive atmosphere. Always wear a protective face mask, and follow the safety precautions provided by the lacquer manufacturer.

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IMAGE STABILITY

Ideally, retouching dyes and image dyes in prints should have the same light-absorption characteristics and light-and-dark-keeping characteristics. Also, retouching dyes should respond to post-processing treatments in the same way as the dyes in the print. Because retouching dyes do not have light-and-dark-keeping properties identical to those of the dyes in the paper, retouched areas may gradually become visible as a print ages.

Kodak retouching dyes are water-soluble organic dyes. They are very stable in the dark and have light-keeping stability comparable to that of the dyes in prints made on Kodak papers. When used according to instructions, Kodak retouching dyes will not adversely affect the image stability of prints made on Kodak papers.

MORE INFORMATION

Kodak has many publications to assist you with information on Kodak products, equipment, and materials.

Additional information is available on the Kodak website and through the U.S.A./Canada faxback system.

The following publications are available on the Kodak website, from dealers who sell Kodak products, or you can contact Kodak in your country for more information.

E-68	<i>Retouching Transparencies on KODAK EKTACHROME Film</i>
E-71	<i>Retouching Color Negatives</i>
O-10	<i>Retouching Black-and-White Negatives and Prints</i>

For the latest version of technical support publications for KODAK PROFESSIONAL Products, visit Kodak on-line at:
<http://www.kodak.com/go/professional>

If you have questions about KODAK PROFESSIONAL Products, call Kodak.

In the U.S.A.:

1-800-242-2424, Ext. 19, Monday–Friday
9 a.m.–7 p.m. (Eastern time)

In Canada:

1-800-465-6325, Monday–Friday
8 a.m.–5 p.m. (Eastern time)

Note: The Kodak materials described in this publication are available from dealers who supply KODAK PROFESSIONAL Products. You can use other materials, but you may not obtain similar results.



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