

KODAK Color Separation Guide and Gray Scale (Small)

Each component of this quality control device is 8 inches long. The identical format is also available in a larger size—14 inches—as Kodak Publication No. Q-14, *KODAK Color Separation Guide and Gray Scale (Large)*.

The KODAK Gray Scale

The gray scale is a quality-control device of stepped, neutral values to help the photographer (1) compare the tone values of reflection originals with the tone values of their reproduced image, (2) compare exposure and processing in a photographic environment so that changing conditions can be identified, measured, and controlled, (3) “balance” negatives and positives in a traditional color reproduction process that requires the use of masks, separation films, and filters, and (4) determine values for plotting tone-reproduction curves.

The gray scale is composed of 20 density steps; step aims are 0.10 density increments and relative density values from a nominal “white” of approximately 0.05 to 1.95. Density increments are tightly controlled and will vary only slightly from the nominal density value. Neutrality and uniformity are also tightly controlled. The background approximates an 18% neutral gray to neutralize flare and adjacency effects.

NOTE: The patches identified with the designations A, M, and B are used in KODAK Three-Aim Point Control methods for reproducing color reflection copy with traditional masking and color separation procedures. A, M, and B patches correspond with reflection densities of 0.0, 0.70, and 1.60, respectively, which represent average highlight, middletone, and shadow values in color or black-and-white reflection copy.

To use the gray scale:

1. With a reflection densitometer calibrated to ANSI specifications, read the density values of each of the patches of the gray scale. Record your readings.
 - If you do not calibrate to a check plaque, then “zero” (null) the densitometer to the “white” A-patch.
2. Place the gray scale alongside the image you are reproducing. Make sure the film size is large enough to include the gray scale. Make your exposures.
3. With the same reflection densitometer, read the density values of each of the patches of the *reproduced* gray scale. Record your readings.
- 4a. By comparing **successive** images of the gray scale, you can tell if changes have occurred in your exposure/processing conditions. With 0.10 density *shift* equaling 1/3 of a stop of *change*:
 - If density **increases** by 0.10 (1 step darker), then exposure/processing conditions have increased 1/3 of a stop. Decrease exposure by 1/3 of a stop to compensate.
 - If density **decreases** by 0.10 (1 step lighter), then exposure/processing conditions have decreased 1/3 of a stop. Increase exposure by 1/3 of a stop to compensate.
- 4b. On a sheet of graph paper, plot the values obtained in Step 1 above on the **horizontal** axis; plot the values obtained in Step 3 on the **vertical** axis. When you connect the plots, the resulting curve is a *tone reproduction curve*.

If you use this gray scale often, we suggest that you replace it with a new one on a regular schedule, say, once a month.

The KODAK Color Control Patches

KODAK Color Control Patches help the photographer compare the color of the subject with known printing colors. They also help the graphic arts camera or scanner operator identify color separation negatives and positives for color reproduction processes. (For the best results, print your own color patches—on your own paper and with your own inks—using the mechanical on the reverse side of this sheet. You could then use your own patches for color correction and color balance as well as for identifying reproduction steps. See “Print Your Own Color Patches,” below.)

To provide a repeatable reference, these patches are printed using accredited SWOP™ (Specification Web Offset Publications) inks on Kimdura stock (not a SWOP specification). Solid ink densities are within SWOP high-low targets. Solid colors include the single colors and two-color overprints of the SWOP chromatic colors, plus a single-color black. Also included is a three-color combination of equal values of cyan, magenta, and yellow to differentiate a three-color black from the single-color black. The lighter colors represent a press result equaling nominal quartertones with an aim of 25%. As with the gray scale, the background approximates an 18% neutral gray to neutralize flare and adjacency effects.

To use the color patches for color-separation work:

1. Place the color patches and gray scale next to your reflection copy, making sure you include them in your film size for reproduction. Make your exposures with recommended red, green, and blue separation filters.
2. Compare the color patches of each of the three color-printing negatives (or positives).
3. Film **negatives** will appear *light* or clear where ink is to be printed, and *dark* where no ink is to be printed. Film **positives** will be just the opposite.

These patches are uncoated and are, therefore, subject to scuffing and abrasion. If you use them often, then we suggest replacing them on a regular basis, say, once a month.

Print Your Own Color Patches

On the reverse side of this sheet, you will find a guide for creating artwork which will allow you to make your own color patches—minus the neutral-gray background. Each color printing image allows the necessary printing color to print where required to produce an identical color guide with your inks. To use these masks:

1. Make a same-sized **line** negative of the artwork on a high-contrast film.
2. Cut the four images apart. Strip each image into flats in register—one flat each for cyan, magenta, yellow, and black.
3. Expose each flat onto separate printing plates.
4. Print the plates using the inks, paper, and laydown sequence that you use for production work. Remember: you are making your own color patches for comparing your own results and determining your own color correction, and so are recreating all of your standard conditions for color separation work.

NOTE: These instructions are for making solid color patches only. To add tint values to your color patches, strip small blocks of uniform tints for cyan, magenta, and yellow into the appropriate “windows” in the resulting negatives. Use of tint **values** that correspond to approximately 25% printing dots will produce satisfactory results. As with any 4-color stripping, be careful to align these tints to your standard 4-color screening angles.