

## Color Reproduction

### Image Register

Do the images fit? Examine the reproduction for register of the halftone dots. Misregister can be mistaken for image softness in the original, either intentional or accidental. Image softness may result from inaccurate lens focusing, subject movement during long exposures, climatic conditions such as fog, snow, rain, high humidity, and/or particulate air pollution, or by lens attachments such as diffusion filters.

Use a hand magnifier to aid in estimating misregister, even though the effects of misregister are clearly visible to the unaided eye. Pay close attention to the edges of the image. Are any of the process colors distinguishable as extending beyond the image limits? Maintaining good register is increasingly difficult as more color reproductions are added to the printing form. Compromises are inevitable when two or more color images are printed simultaneously. The dimensional instability of the substrate can also cause misregister difficulties.

### Image Sharpness

How sharp is the detail in the color reproduction? This issue is related to but not the same as color register. A misregistered image will not have sharp detail, but a perfectly registered image also may not have sharp detail. Image sharpness is influenced by several factors, from the sharpness of the camera lens to the resolving power and contrast of the photographic materials. The color separator can influence the perception of image sharpness with the unsharp masking function on the scanner. Detail in a poorly-focused original can be greatly improved with electronic image enhancement, but too much peaking can become distracting—detail is essentially outlined with dark and light edges.

When evaluating the effectiveness of the detail enhancement in a reproduction, the color proof and original photos can serve as points of reference. The final judgment of “how much is enough?” is a subjective call based largely on the requirements of the individual photograph. When the detail in a reproduction looks unnaturally prominent, there may be too much electronic peaking. Examine the edges surrounding the compositional elements in the image with a hand magnifier to determine the amount of edging that has been added electronically.

### Highlight and Shadow Reproduction

Is the full tonal range used for the color reproduction? Examine highlights, shadows, and fully saturated colors in the picture. Specular highlights should be reproduced as unprinted paper, the lightest possible value on a press sheet. Diffuse highlights should reproduce as minimum printing dots, the first tonal value darker than unprinted paper. The Sheetfed Test Form provides a basis for measuring the minimum printing dots of all colors in the highlight/shadow patches of the GATF Plate Control Target. If the minimum printing dots in a reproduction are too big, the value difference between specular and diffuse highlights becomes unnaturally large and the visual appearance of the reproduction is compromised. Larger dots may create too much highlight density and cause the image to appear less lifelike.

At the shadow end of the tonal scale, the darkest value should equal the maximum printing density of the system. Use the ink coverage target to measure the maximum density. If this point has been reached, and simultaneously low dot gain is achieved, the shadow contrast will be good. The measured attribute of print contrast should be correspondingly high. This will enable the printing system to register a maximum number of tonal levels in the shadows which, in turn, will cause the color reproduction to look more lifelike, since it will better approximate the tonal range of the photograph.

### Tone Reproduction

Is the tone reproduction good? If your examination of the extremes of the tonal scale found good highlight and shadow rendition then the reproduction has good contrast, but may still lack good tonal separation in the midtones. Does the proportion of light and dark tones look realistic? Is the transition between tones smooth and even? Are the tonal differences and sense of lighting from the original captured in the reproduction?

Evaluate tone reproduction under standard viewing conditions. If the photograph contains people, pay particular attention to their skin tones. Harsh lighting of people in the original may be exaggerated in the reproduction which causes high contrast and strong shadows. If proper tone reproduction is lacking, it may be necessary to decrease midtone density values to attain good skin tones.