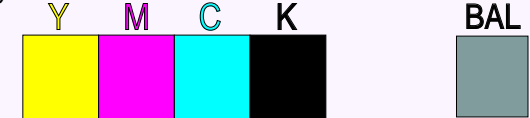


INTRODUCTION

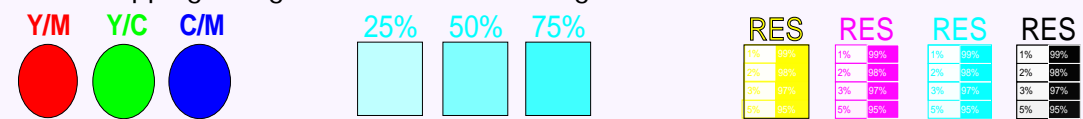
The BETA EYE SCAN CUSTOM GRAY BALANCE COLOR BAR SYSTEM is designed for faster make ready, precise press monitoring and quicker turn around using a densitometer for objective measurements and optical tools for subjective evaluation. This SEE IT and MEASURE IT system is a precise, cost effective control system guaranteed to produce the highest quality printing. The heart of the system is a customized color bar designed to match the size of your press and numbered ink keys in exact alignment to the ink keys thereby making faster and more accurate corrections.



Densitometer targets of solid yellow, magenta, cyan, black, and gray balance appear in every ink zone for ultimate control across the full width of the sheet.



Trapping, dot gain, and resolution targets are centered for smaller sheets.

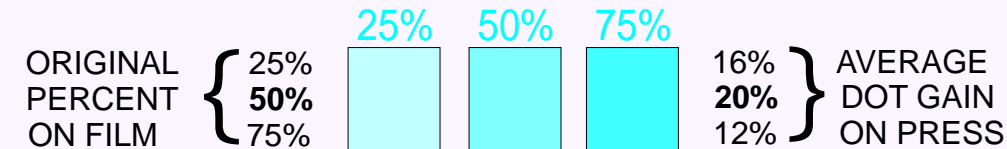


Solid process colors of yellow, magenta, cyan, and black are measured with a calibrated densitometer to determine density. These measurements are made on a logarithmic scale in density units ranging from 0.00D for absolute white to 2.50D for maximum ink coverage.

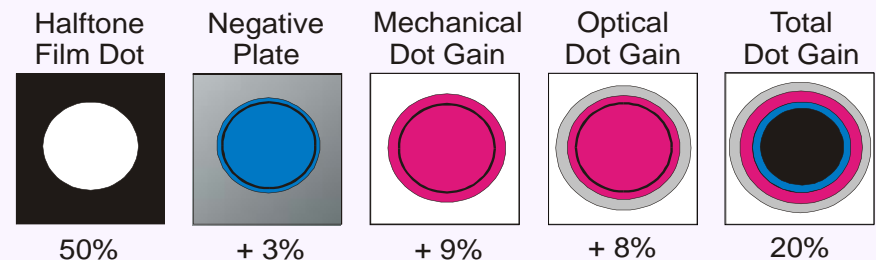
Each 1.00D equals a 10X factor, showing that the ink has reflected 1/10 of the light illuminating it. A measurement of 0.30 Density indicates that the ink and paper has reflected 50% of the light. The top section of this sheet focuses on densitometry and the bottom section on visual evaluation.

BETA GRAY BALANCE EYE SCAN COLOR BAR SYSTEM

MEASURING DOT GAIN HALFTONE TINTS



Dot gain is inherent in the printing process. It is composed of two components: MECHANICAL DOT GAIN is the actual physical growth of the dot on the substrate. OPTICAL DOT GAIN is the scattering of light within the substrate which results in a higher than expected dot gain when measured with a densitometer using the Murray/Davies equation.



AVERAGE DOT GAIN ON PRESS AT 50%

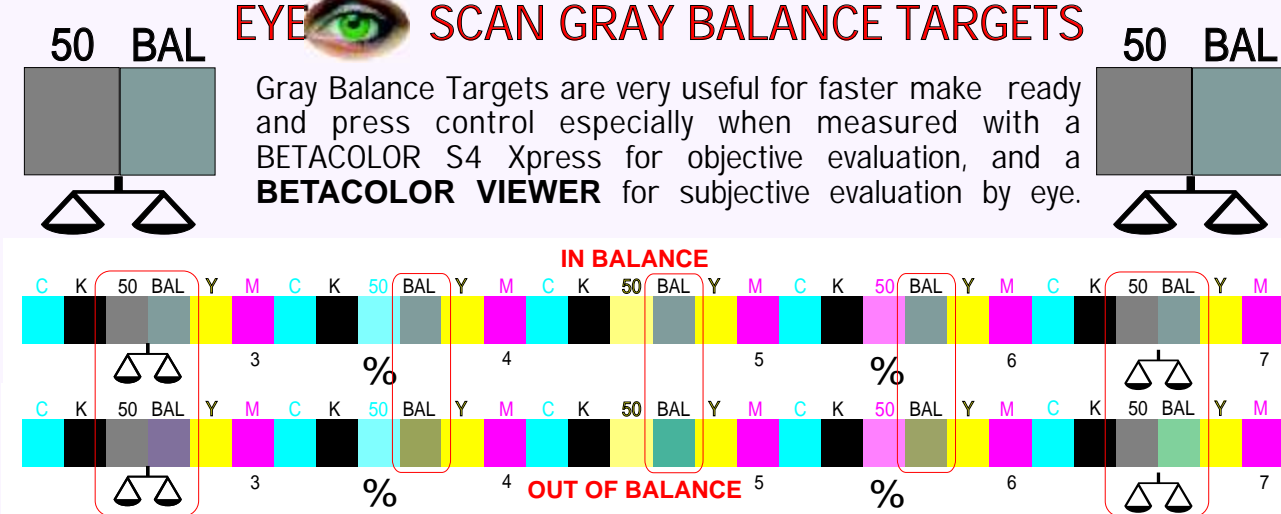
Negative to plate to press 20% / Positive to plate to press 12% / Computer to plate to press 16%
Note: Computer to plate dots will have a smaller dot area on paper compared to film to plate if the plate dot value is a true 50% and not 53% as shown above.

MEASURE IT



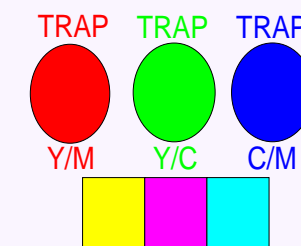
Automatically measure Density, Dot Gain, Gray Balance, Trap, Pearl Factor

EYE SCAN GRAY BALANCE TARGETS



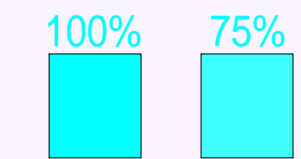
Gray Balance Targets are composed of yellow, magenta, and cyan tints located in every ink key zone. They produce a neutral gray when the press is in control. Every fourth gray balance target is located next to a 50% black tint for visual comparison of deviation from the intended neutral gray. Because gray balance is directly proportional to solid primary ink densities and their respective dot gains, one measurement is all that is necessary instead of 6 or 8 measurements required by other color bar systems. The Beta Eye Scan System will enable perfect gray balance regardless of slur, Doubling, trapping, hue error, ink color strength, or other printing problems.

TRAPPING



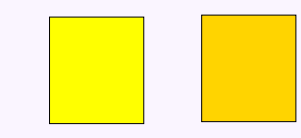
Trapping is the result of solid yellow, magenta, and cyan inks printed in two color combinations to produce red, green, and blue solids. Trapping efficiency is the ability of the second color to be accepted or trapped by the first printed color. Accurate printing is the result of predictable trapping, color sequence, correct density, dot gain, ink/water balance, etc. The BETACOLOR S4 Xpress and 2000 Densitometer automatically measure Trapping efficiency, color sequence and Pearl Factor.

PRINT CONTRAST



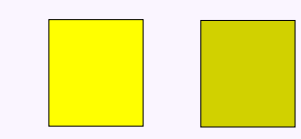
Print Contrast is the ratio of the solid of a specific color and the 75% tint area. The greater the difference, the better the shadow rendition and detail. Overexposed plates, poor vacuum contact, slur, low ink density and ink/water imbalance will lower the print contrast. Ink / water imbalance will adversely affect the 75% tint before the 50% tint. This can be readily detected with a BETACOLOR S4 Xpress or 2000 Densitometer in the dot gain mode.

HUE ERROR



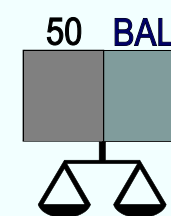
Hue error is a measurement used to compare the hue [color] of the actual process color ink to a theoretically perfect process ink. The hue error value is calculated from all three filters channels of the densitometer and is an excellent method for monitoring the consistency of process ink colors. The calculated value displayed is a relative value, not an absolute value.

GRAYNESS



Defined as a percent, grayness is a relative measure of the black component in the process inks. Because no pigment is perfect, all inks contain some grayness. Compensated color separations take this characteristic into account.

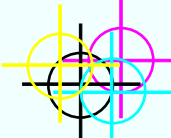
OPTICAL EVALUATION TARGETS



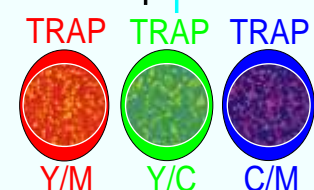
GRAY BALANCE TARGETS are composed of yellow, magenta, and cyan tints balanced to produce a neutral gray when all the pre-press and press conditions are in control. They are present in every ink key zone and can be seen across the full width of the press sheet at a glance. Gray Balance Targets are combined with a 50% black tint at every fourth ink key zone for visual comparison.



RESOLUTION TARGETS WITH MICRO DOTS of 1%, 2%, 3%, and 5% minimum printable dot targets detect press slur and doubling. Maximum printable dot targets of 95%, 97%, 98% and 99% indicate press slur, print contrast problems and/or plate production errors such as overexposure or poor plate frame contact.



REGISTER MARKS facilitate quicker make-ready and help maintain register of all colors during the press run. The BETA COLOR VIEWER makes it possible to see all colors including the nearly invisible yellow with magnifications from 10x to 100x.

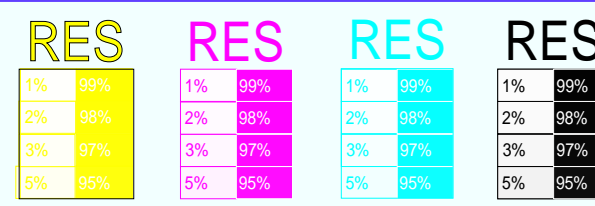


PEARL FACTOR exists in two color combinations as found in Trapping when the ink voids and Picking of the first transparent ink are overprinted with the ink of the second color. Laminate layer proofs similar to Matchprint or Cromalin will show no Pearl Factor, while ink jet and laser proofs will show varying degrees of Pearl Factor. Subjective inspection with a BETACOLOR VIEWER 50X and objective measurements with a BETACOLOR S4 Xpress or BETACOLOR 2000 will compare Pearl Factors so that a closer agreement can be achieved between press sheets and proofs.

The simulation below is at 50X magnification

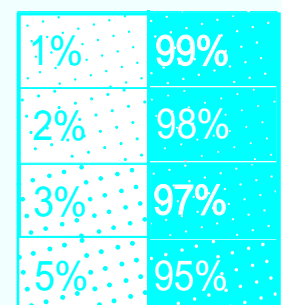


Excess water low density, Normal press artifacts, Picking caused by paper or ink problems

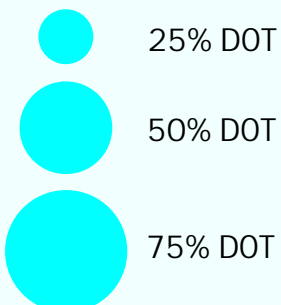


Resolution targets to detect slur, doubling, and fountain solution problems

Low density can be caused by insufficient ink film thickness or excessive fountain solution. Insufficient dot gain can be caused by improper pH fountain solutions resulting in calcium compounds gradually coating the plates, blankets and rollers. First affected are disappearing highlight dots. Densitometer measurements of the 75%, 50% and especially the 25% targets will indicate a lower than expected dot gain. Visual examination of dot targets and especially highlight resolution targets with a BETA COLOR VIEWER will alert the press operator to take corrective measures.



Good print density and resolution



Loss of dot size and ink density

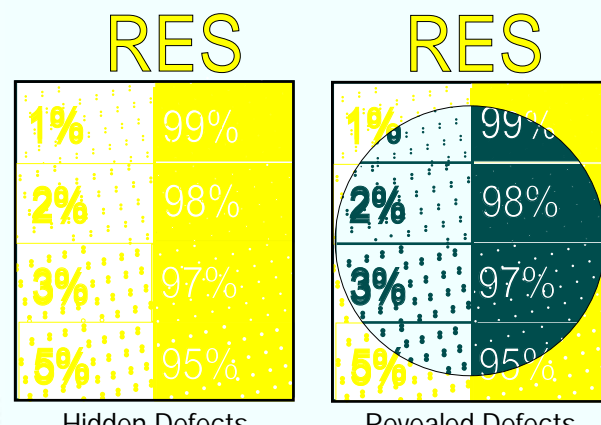
SEE IT



BETA COLOR VIEWER The World Standard For Viewing Color

BETA COLOR VIEWER 10X to 100X MAGNIFICATION

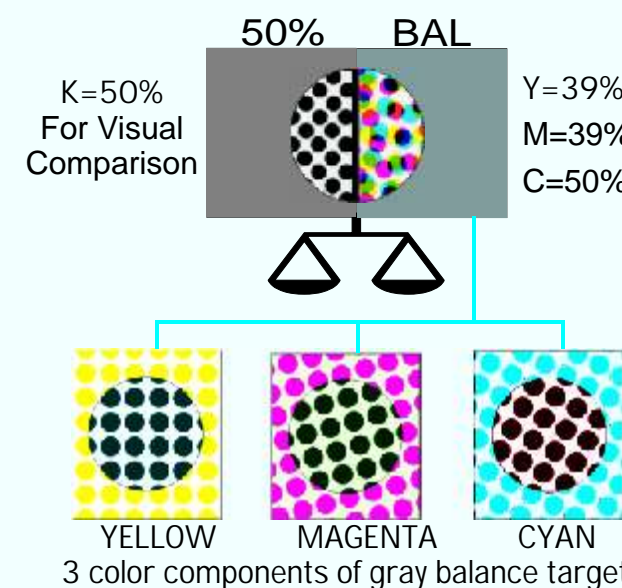
See and correct the problems that a densitometer can't. See slur, doubling, ink/water balance, and other problems in all colors, especially the nearly invisible yellow. The resolution targets are the first to indicate any problems before it becomes obvious in the larger mid-tone dots.



Hidden Defects, Revealed Defects

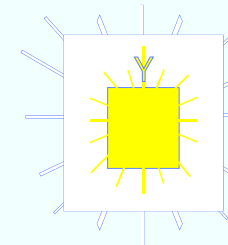
As seen with the BETA COLOR VIEWER and image enhancing LED illumination

See multi color images such as Gray Balance Targets or image area and visually separate each color one layer at a time to examine dot structures for any defects or press problems.



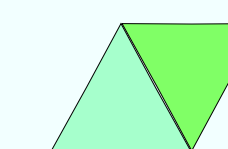
3 color components of gray balance target

FLUORESCENCE



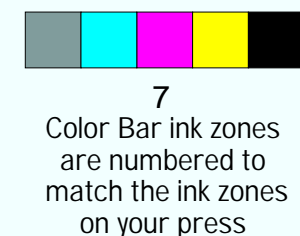
The characteristic of any substrate or ink to absorb shorter light waves such as ultra-violet and emit them as longer light waves with subsequent color shifts. The BETA COLOR VIEWER features an ultra violet light source that will subjectively reveal fluorescent properties of ink and paper for closer color matching. The BETA COLOR VIEWER will visually detect fluorescence in both paper and ink.

METAMERISM



The phenomena where two colors appear to match under one light source, yet do not match under a different light source. Two such colors are a metameric pair. A press sheet may be a good match to a color proof under 5000K but may appear very different when viewed under tungsten or other illumination. Note: Because a large percentage of the population experiences some degree of color blindness, two or more observers may subjectively see different colors when looking at the same object under the same illumination. For critical objective analysis of color, the BETACOLOR 2000 SPECTRO-DENSITOMETER is recommended.

CUSTOMIZED TO YOUR PRESS



Every BETA CUSTOM COLOR BAR is manufactured to exactly match the size and number of ink keys of your press. Each ink key zone is numbered to match your control console or manual ink keys to minimize confusion and errors. Make ready and getting to correct color is faster than ever. Maintaining control for the length of the run has never been easier and more accurate.