

News & tips for designers, production artists and desktop publishers. Please pass this sheet along to those involved in creating your electronic files, camera ready copy or plate-ready films. Additional copies of this sheet or PressLines back issues are available on request!

Software we support at Ripon Community Printers*

Macintosh & Windows '95, '98, XP
 Adobe Illustrator 8.x, 9.x & 10.x
 Adobe InDesign 1.5 & 2.x
 Adobe PageMaker 6.x & 7.x
 Adobe Photoshop 5.x, 6.x & 7.x
 QuarkXPress 3.x, 4.x & 5.x

Macintosh only
 Macromedia FreeHand 8.0 & 9.0

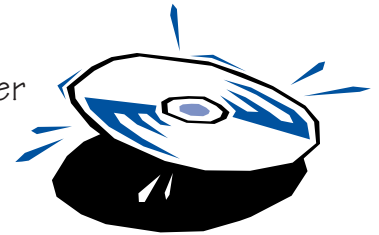
If a program you use is not on this list, please call.

*Current as of December 10, 2002

Just in time for Holiday Giving! We bring you our best!

Prepress Extra Greatest Hits

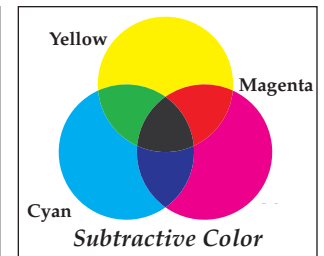
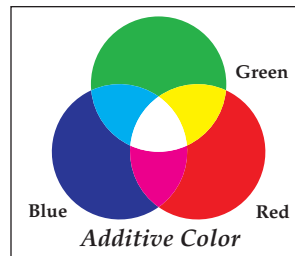
Are you just getting started creating digital files? A new PressLines subscriber who missed some great tips from past Prepress Extras? Our editorial board has filled this issue with information-loaded articles worth a second (or first) look.



RGB... Gamut... CMYK...

Some honest talk about color

We have encountered some frustrated designers who cannot understand why the printed piece does not match the color image they saw on their computer monitor. Here's where things get complex.



Whether a television screen or computer monitor, colors are created using additive primary colors – red, green and blue (**RGB***) – as light sources. When these three colors are combined in equal amounts, they produce the appearance of white.

On the printed page, colors are created using subtractive colors. Starting with a white surface that reflects

light, the pigments in ink subtract portions of white light to create the colors we see. In four color process printing, cyan, magenta and yellow inks in combination with black to add depth (**CMYK***) create the colors.

The calibration and the quality of your monitor affects color perception. Likewise, the color of the paper and its brightness greatly affect how color is perceived.

***** *A glossary of terms you may not be familiar with – noted in bold italic – can be found on page 5.*

Color gamuts*...

The RGB and CMYK models are each

limited by the colors they can create. This is known as a gamut. Neither of these can accurately recreate all the colors that our eyes can see. Likewise, there are colors we can see on a computer monitor that cannot accurately be re-created on the printed page. The chromaticity diagram at right shows the relationships between the colors we can see and the CMYK and RGB gamuts.

Pantone in a CMYK world

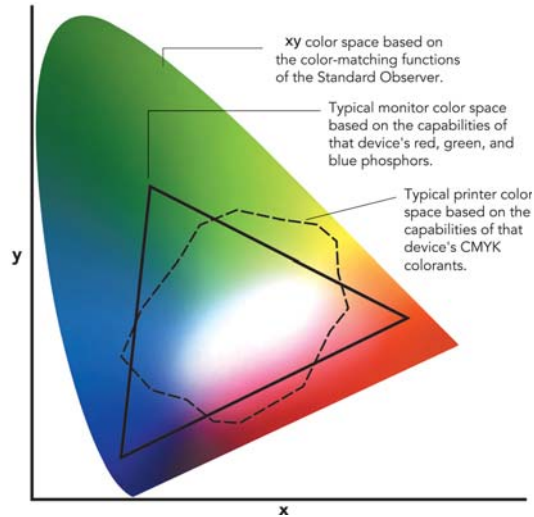
There are many *Pantone** spot colors that cannot accurately be created with CMYK inks.

If a consistent spot color is desired between 4/color and 2/color sections, we strongly recommend you use the Pantone as a fifth color in your 4/color sections. The Pantone Solid to Process Guide (see box on page 6) is a helpful tool for seeing Pantone colors in their 4/color equivalent.

Now on to proofing...

If you are working with a CMYK image or Pantone colors, your computer monitor is creating these elements in RGB. Considering the earlier section on gamuts, you will see colors on your screen that are not achievable in print.

Your color laser proof is a fair representation of color relationships but, again, is not the same as



Chromaticity Diagram

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ink-on-paper.

We rely on Kodak Approval proofs for our press work. It is a dot-based proof that is adjusted to the print characteristics of our sheet and web presses.

Finally...

Without using a sophisticated color management system, these variances between monitor to proof to printed page are unpredictable at best.

Citing the GRACOL (General Requirements for Applications in Commercial Offset Lithography) document (see item at right), "never trust your monitor to give you a true representation of image color or blend. The color gamut of your

monitor is different than what can be produced in process printing."

It is critical that you understand the limitations present here. If you envision your printed piece to be very close to the color laser proof you created, please inform us - or any other printer you use - of that fact. We will do our best to make adjustments to accomplish this.

But please keep in mind that your computer monitor and the printed page exhibit colors created in two different color methods and rarely the twain shall meet. ■

From *Prepress Extra/Spring 2000*

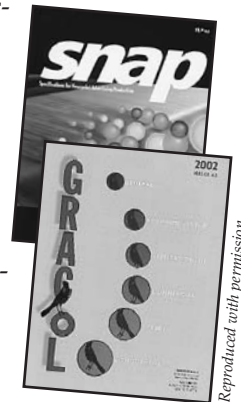
Want to learn more?

There are many important things to consider as you design your page layouts whether for non-heatset, heatset or sheetfed printing.

SNAP (Specifications for Newsprint Advertising Production) was created by a group of non-heatset printers and suppliers dedicated to providing technical information and clarification of newsprint production issues. It was produced by the Newspaper Association of America and the Web Printing Association for Coldset/Non-Heatset Printing.

Another excellent resource is GRACoL 6.0, the newest version of the General Requirements for Applications in Commercial Offset Lithography. This document which includes printing guidelines, planning, design, preflighting, binding/finishing - literally everything you need to know to create a successful project for any print process.

Both of these publications can be ordered through the Graphic Arts Information Network website at www.gain.org/store. Scroll down through the categories for Standards. Then search for the title you are interested in. ■



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A comparison of three kinds of printing

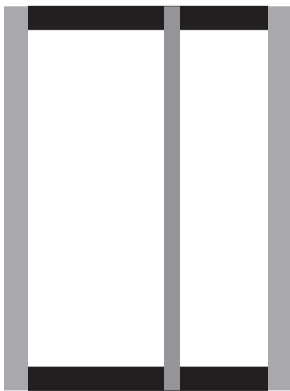
	Coldset/ Non-heatset	Heatset	Sheetfed
<i>Drying process</i>	Absorption & evaporation	VOCs flashed out of inks by heat	Ink pre-dried under IR lights, powder between sheets for evaporation
<i>Stocks</i>	Uncoated	Coated & uncoated	Coated & uncoated
<i>Dot Gain*</i>	30%	18%	15%/coated 20%/uncoated
<i>Line Screens</i>	100 to 120	133 to 175	120 to 200
<i>Maximum ink density*</i>	260/offset 245/groundwood 235/newsprint	310	300 270 if UV coating

GRACoL® is a registered trademark of IDEAlliance (formerly GCA). Copyright© 2001.

Special design considerations when printing non-heatset

CONSIDER YOUR DAILY NEWSPAPER...

That's your daily dose of non-heatset printing. The webs of paper do not go through ovens to "dry" the ink as is done with publications or catalogs on coated papers. You don't have to twist and turn the pages to eliminate any glare as you read the sports or check out how your stocks are doing. And have you noticed that your fingers don't get as black from your newspaper or magazines as they used to? Advancements in inks have reduced the amount of colorant that rubs off of your hands.



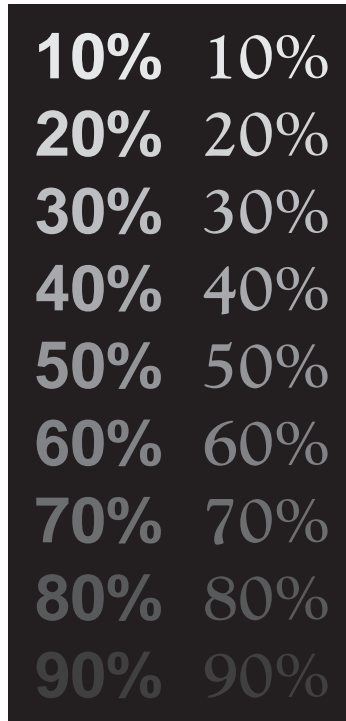
THE PHENOMENON OF GHOSTING

If you design your pages with a black outside border, the left and right edges take all the ink a press inking system can deliver while the top and bottom edges only require a small amount. The top and bottom edges will appear darker.

Day in and day out, we print text pages – and even this piece – on non-heatset presses. Wonder how we print catalogs, phone books and magazines without the ink smearing all over the place?

First, we start with heatset presses running in a non-heatset environment. All rollers and other contact points within the press are protected with grater wraps so inks do not smear. Then we use inks formulated to "dry" by absorption and evaporation.

But the most important part is working with our customers to familiarize them with the reproduction of common design elements in this environment. These live examples serve to aid you in making design choices that make the best use of the non-heatset environment. ■



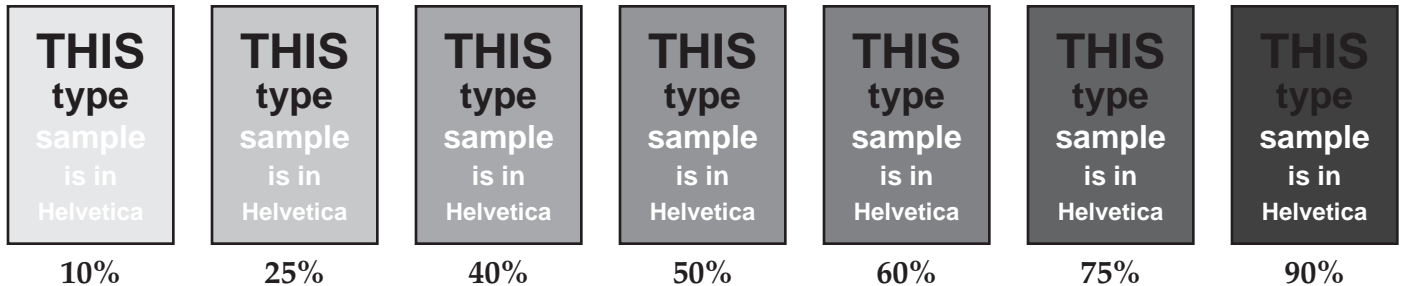
OBTAINING DISTINCTION – SCREENS TO SOLIDS

Screened type in black and Pantone Reflex Blue solids, screen percentage same as example. Helvetica bold at left, Goudy bold at right. Yes, both examples have a 90% sample.

REVERSING TYPE OUT OF A 4/COLOR BACKGROUND



Type reversed out of an enriched black - 100% black, 60% cyan, 50% magenta & 50% yellow. Point size noted at far left. Helvetica bold at left, Goudy bold at right. Type smaller than 12pt should not be reversed out of multi-color elements.



DOT GAIN* AT WORK

These screen tints are live examples of dot gain at work. In printing this *Prepress Extra*, ink settings were done to our target density, disregarding what might happen to the screens or the copy within them. If you have a printer's loupe, inspect the printed dot sizes and, if possible, compare to samples you may have of these specific percentages. Also note at what point the screen overpowers the black type.

As you prepare to jump on the digital camera bandwagon...

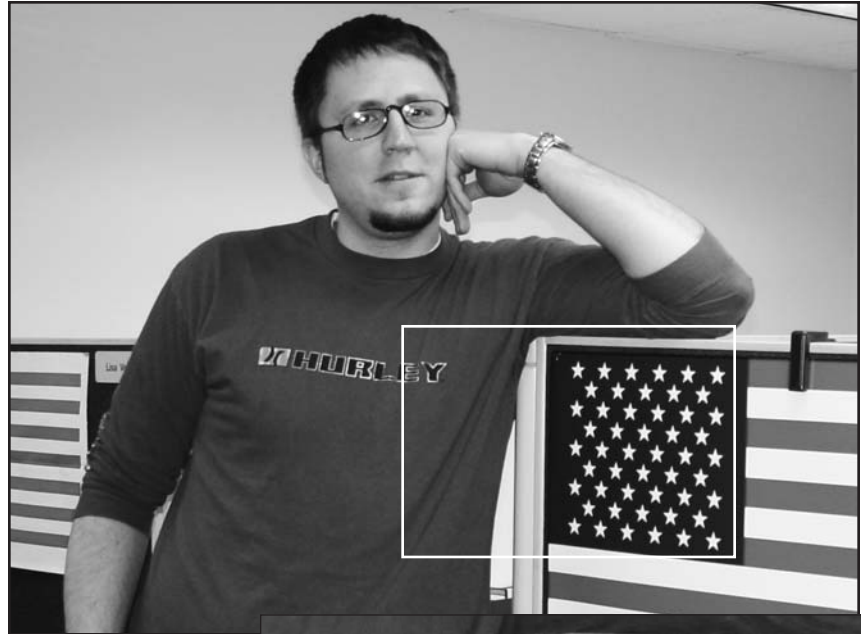
Some customers are submitting images from digital cameras – and are disappointed with the printed results. Then there are others calling, asking for hardware recommendations before they venture into digital photography. We would like to provide you with some suggestions.

For practical purposes, there are currently two markets for digital cameras – the consumer market [read: inexpensive and lower quality] and the “prosumer” market [read: expensive and higher quality] to consider. There is also a third market, consisting of ultra-high end cameras and add-ons for professional portrait-type cameras. Pricing on these devices usually begins around \$10,000 and therefore would be beyond the scope of this article.

The main concern is that the vast majority, if not all, digital cameras on the market today are not designed with reproduction on a printing press – whether 4/color or grayscale – in mind.

The majority of digital cameras on the market today capture images in *RGB** color, not *CMYK** color. In order to print these images on a 4/color press, they need to be converted to *CMYK* which can cause color shifts.

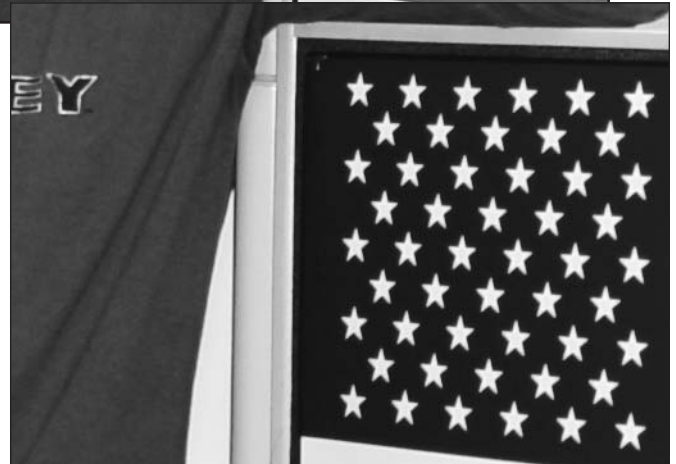
Most cameras write the files in *JPEG** format, while a few do have the capability to save images as *TIFF** files. Depending on the settings on each individual camera, the level of *JPEG* compression applied to the image can cause the quality to vary. Higher levels of *JPEG* compression throw more data away, resulting in a smaller file size but with reduced quality. This trade-off sacrifices quality while allowing more images to be stored onto the portable storage media inside the camera. Also, in many pre-press digital workflows, *JPEG* files



Thanks to our model – preflight and file prep technician Mitch Beuthin.

EXAMPLE OF A 2560 x 1920 PIXEL IMAGE

- Original 72dpi image is 25.5" x 26.6"
- When printed at 300 dpi, the image reduces in size to 8.53" x 6.4"
- To show capture detail, the inset image at right is enlarged at 200%



are not a supported file format. The image would need to be converted into a *TIFF* file which generally has no affect on the quality of the image.

Another important factor to consider when evaluating a digital camera is its resolution, or ability to capture detail. Resolution on a digital camera is determined by the number of pixels its *CCD* (charge-coupled device) is able to capture.

The *CCD* is the “digital film” that, when exposed to light, translates the intensity and color of light

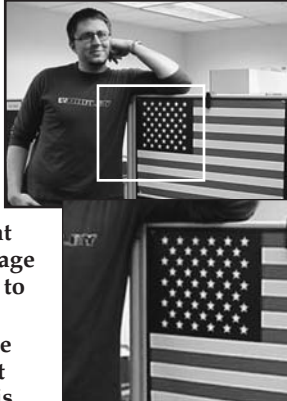
hitting each pixel into a digital value. The greater the number of pixels on the camera’s *CCD*, the more detail that can be represented in the digital image.

Digital camera manufacturers use a common language to identify each camera’s resolution in terms of mega-pixels. This is derived from simply multiplying the number of horizontal pixels in the *CCD* by the number of vertical pixels. Thus a camera that captures images of 640 x 480 pixels is generally said to be a 0.3 mega-pixel (or sub-mega-pixel) camera, since it captures 307,200



EXAMPLE OF A 640 X 480 PIXEL IMAGE

- Original 72dpi image, shown above, is 8.9" x 6.6"
- When printed at 300 dpi, the image reduces in size to 2.13" x 1.6"
- To show capture detail, the inset image at right is enlarged at 200%



pixels. A camera that captures images of 2560 x 1920 pixels is generally said to be a 5.0 mega-pixel camera, since it captures 4,915,200 pixels per image.

Once these images are captured, they need to be transferred to a computer to be incorporated into your publications. While viewing these images in an image editing application, such as Photoshop, the image size and resolution *can be determined*. It is interesting – and sometimes confusing – to note that the resolution, by default, will be listed as 72

dots per inch (dpi). As a point of comparison, print shops scan photos at about 300 dpi.

Consider our 640 x 480 pixel image, shown above left. At 72 dpi on screen, this image will be about 8.9" x 6.6" – seemingly quite large. If you print at 300 dpi, this image would reduce to 2.1" x 1.6" and yield respectable quality.

We have struggled with customers trying to achieve good results with images taken on sub 2 mega-pixel cameras which generally sell for \$200 to \$300. These devices simply do not capture enough photographic

information to produce high quality output for printing unless the image is being reproduced at a very small size and does not need to show much detail. These models are best suited for viewing images on a computer screen, in e-mails or on web pages where resolution is not critical.

The higher-end "prosumer" cameras, usually the 3 to 5 mega-pixel models, do capture enough photographic information to produce quite stunning results on press, giving the customer the flexibility to reproduce images at increased size and detail. They can be more cost prohibitive for the average consumer as they usually run from \$400 to \$1000 and up.

Budget is obviously an important factor when evaluating and selecting a digital camera, but it is also important to consider what the end use is going to be. Spending the extra money on a higher-end model may be worthwhile in the long run. ■

From Prepress Extra/Spring 2002

G·L·O·S·S·A·R·Y

Color Gamut: The range of colors that can be formed by all combinations of a given set of light sources or colorants of a color reproduction system. The normal human eye can perceive a wide gamut of colors - colors within the full range of the visible spectrum, including detail in very bright light and deep shadows. Transparencies and monitors, which display color using transmitted light, can hold some of that color range (or gamut). Due to such limitations as reflected light, ink impurities and paper absorption, a conventionally printed image is limited to a much smaller range of colors.

Dot Gain: A phenomenon in offset lithography where the dots that make up halftones, 4/color separations and screen tints increase in size. It is composed of two elements. Mechanical (physical) gains occur during film generations and platemaking, and on the press due to the nature of ink, paper and the printing process. Optical (visual) gains are due to interaction between light and ink on paper. As refracted light enters the paper around and into the dots, the light that reflects back to the eye artificially increases the diameter of the dot.

CMYK: Represents the ink colors used to print 4/color images – Cyan, Magenta, Yellow and black. These letters also represent *subtractive* color – where reflected light and colorants (such as pigments or dyes) create the colors that we see in nature and on the printed sheet.

Maximum Ink Density: This number represents the sum of the screen percentages found in the darkest area of a 4/color image. Also known as Total Area Coverage (TAC). If the sum exceeds this number, this thicker layer of ink can cause the image to transfer to a facing page.

JPEG (Joint Photographic Experts Group): JPEG compression is a *lossy* compression. Compression of images is done by removing data.

Pantone: The Pantone Matching System® is used to communicate ink colors between designer and printer. Using standardized premixed inks in exacting formulas, a variety of spot colors can be created.

Raster Image Processor (RIP): The computerized process that results in an electronic bit map which indicates every spot position on a page in preparation for an actual printout. **Rasterization:** converting the document on screen into data that can be used by a high-end imagesetter is the raster (image) process – placing miniscule dots in position on the page.

RGB: Represents the additive primary colors – Red, Green and Blue. Lights of these colors create the images on monitors. These screen colors are not for printing. Images submitted in RGB must be converted to CMYK.

TIFF (Tagged Image File Format): Most common format for the exchange of bitmapped files.

To assist you in preparing PDFs for Print Production, we have Technical Information Sheets for Adobe Acrobat 4.0 and 5.0.

Contact your account service representative or our customer education specialist.

Some tips and tidbits to help you survive the digital revolution!

Ever felt like you were the engineer of a train, speeding toward the station and you find the accelerator won't disengage? Or how about strapped atop a rocket at Cape Canaveral?

The digital revolution occurring at printing firms is a lot like this. With terms and methods changing everyday, here are a few tips and topics of current interest.

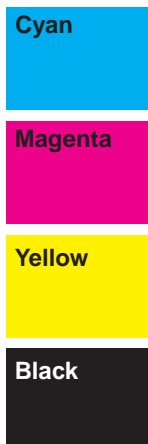
Will there still be a place for camera ready copy?

At this time customers who supply camera ready copy can continue in this fashion. We will continue to process these jobs with our Opti-Copy Imposer System to create 4-, 8- or 16-up films.

Color lasers often do not match press reproduction

One reason could be the color of the inks in your laser printer. The pigmentation in laser printer inks may not be close in shade to printing inks.

Below are solid patches of our web press 4/color ink set. Create an identical set of patches and print to your color laser. If the shade of your



inks differ greatly from our web press inks, we will not be able to match your proof on press.

A second reason – in offset printing, the inks are wet when they lay on top of each other – a situation that does not happen in a laser printer. Color reproduction is altered as these wet inks intermingle with each other.

To see the reproduction of this issue's *Pantone** solid colors in their 4/color blends, go to page 7.

Can I keep my Approval color proof?

No. This proof is used by our press personnel to ensure color match.

Designating color in your graphics and page layout files

It is very important that all elements in one Pantone color have the same name. If your document contains some elements in Pantone 185 CV and other elements in Pantone 185 CVU, this will result in two spot color plates. If you apply color to elements in Photoshop or Illustrator, use the color names these graphics add to your color palette for other items in your page layout or change their color names to exactly match what is already used in your page layout application.

Remember life before Post-It Notes?

Although so very convenient, please do not put Post-It Notes directly on SpinJet proofs or on your color lasers. When moved, the adhesive of the note can pull copy off the proofs and make facing pages stick to each other.

How reliable are methods for transferring electronic information?

We begin this answer with a question - how often does your computer crash? Unfortunately, we have all experienced "situations" where electronics are not very friendly. Electronic data retention is, more often than not, 99.9% reliable - but its that .1% that could be critical! This makes it even more important that you review proofs more for ob-

vious missing items than pure proofreading – check that no copy is lost at the end of text boxes, that images fill boxes and the like. You know your document far better than we do!

When sending your files to our FTP site, you are strongly encouraged to either fax or send laser proofs so the transmitted files can be checked for content. **RCP**

The Pantone® spot color you really want may not be what you get

When converting Pantone® colors to 4/color blends, *CMYK** inks do not always faithfully recreate Pantone® colors. For example, dark blues are notorious for shifting toward purple – check out the Reflex Blue swatch on page 7.







These swatches to the left are the Pantone® spot colors used in this issue. They are shown with their *CMYK* blends as taken from the Process Color Imaging Guide 1000

The Pantone® Solid To Process Guide

Prior to May 2001, the **Process Color Imaging Guide 1000** was Pantone's hands-on tool for predictable *CMYK* blends of Pantone spot colors.

When introduced, the **Solid to Process** guide included quite a number of updated blends to improve color accuracy, as well as additional colors, on brighter, whiter paper stock using 175-line screens. It was produced computer-to-plate with less dot gain than in conventional printing. This guide has proven more accurate to our printing process than the old Imaging Guide 1000.

For more information, or to order, visit the Pantone website at www.pantone.com and click on "Our Products."

PANTONE INK	OLD CMYK BLENDS IMAGING GUIDE 1000	NEW CMYK BLENDS SOLID TO PROCESS
 Pantone 201	 100% Magenta 65% Yellow 34% Black	 100% Magenta 63% Yellow 29% Black
 Pantone Reflex Blue	 100% Cyan 72% Magenta 6% Black	 100% Cyan 73% Magenta 2% Black

and the new Solid to Process Guide.

Besides creating the printed guide, the updated blends (in digital *lookup tables*) were released to software developers – but not all current software releases include these blends. Although the changes in some colors are very subtle, others are quite dramatic. The Imaging Guide 1000 has the “old” blends and it is interesting to compare the CMYK blends in this guide side-by-side with the Solid to Process guide.

Currently, QuarkXPress 5.x, Adobe InDesign 2.x, Adobe Illustrator 10.x and Adobe Photoshop 7.x include the updated blends.

We hope this will alert you to the limitations of CMYK inks to accurately recreate all Pantone® colors. And also draw attention to possible unanticipated color reproduction depending on which guide or lookup table the CMYK blend is taken from. This is the reason we often recommend using a 5th color if your project is created using a Pantone® color as a solid *and* a blend.

“Registration” as a color

Using the color “Registration” from the color palette will result in the element outputting to **all** the plates a

Did you know...
in QuarkXPress, “white” is considered a spot color when creating a gradient (but not when used to fill a picture box)?

job requires. This is not the proper way to, say, create a duotone - and may not be recognized until far into file preparation. Since “Registration” can not be deleted from the color palette, color-separated lasers are the best way to see if this color was used.

Only use “Registration” for trim marks, register marks or other items that are not intended to appear in the printed piece.

Multi-Ink feature in QuarkXPress

Ability to mix two spot colors and have them work together to create a third spot color. *Also an issue when creating circular, linear or mid-linear blends using two spot colors.*

Problem: Occurs when *RIPing** the file. Multi-ink is not supported by many RIPs, including the one we use at RCP.

Solutions: 1) Convert your project to CMYK and work with the two spot colors as 4/color blends or select a third Pantone color that is close to your desired blend of the two Pantone colors. Multi-ink is not recommended for small type (18pt or less) due to registration issues when printing. 2) Use Illustrator or Photoshop to create two separate spot color elements that overprint each other.

Spot-to-spot blends

Creating a picture box and creating a blend using two Pantone colors.

Problem: Occurs when RIPing the

file. The RIP does not see the gradient - it sees a banded image where each band is a different color. Because of the changing colors, the RIP cannot accurately interpret each color and separates to 4/color process.

Solution: Make use of the step-and-repeat function. After selecting a gradient (blend) in a picture box, create a second box. Use one of the Pantone colors in one box, the second color in the other. Then place the second box *exactly* on top of the original box. Then make a specific trapping adjustment so the top box overprints the box underneath.

Adobe Photoshop works best to generate 4/color output

Problem: When selecting any color in Photoshop - whether a process color or Pantone color, you are actually selecting a 4/color simula-



tion of that color since Photoshop’s operating mode is 4/color.

Solutions: 1) Create spot color channels using the multichannel mode. If you are an advanced Photoshop user, tools exist to create channels to work in Pantone platform. Consult your user’s guide for more information on creating spot channels. *Be alert to the addition of “process black” to the color palette - delete this and replace with black. Naming conventions are case and spelling sensitive so make sure when naming a color, you always use the exact same name.* 2) Create any special treatments in an illustration program that supports Pantone colors. ■

*From PressLines 11.4
& Prepress Extra/Summer 2000*

Printing with a “3/4 web”...

When the “centerspread” is not in the center

If your catalog or annual report will finish at 8-3/8" x 10-7/8", you have the option of working with a total page count divisible by 4.

Signatures of 8, 16, 24, 32, 40 and 48 pages use a combination of full (35") and/or half width (17.5") rolls. Using a roll that is 3/4 wide (26.25"), we can produce signatures of 12, 20, 28, 36 and 44 pages.

For saddlestitch projects, we use a paste system in the folder that affixes two “loose” sheets to facing pages in the signature while printing. For perfect bind projects, the loose sheets will be glued to the spine with all the other pages.

With saddlestitch projects, two funny things happen. First, two sets of facing pages will be adhered to each other with a 1/4" glue stripe next to the gutter. This is critical as you design since art, photos and tint boxes will not extend to or meet at the gutter on these four pages. The best recommendation is to allow a minimum 3/8" gutter margin on all pages. Refer to box at right to see which pages will be pasted together.

PRODUCTION NOTES

QuarkXPress® document processed through a Rampage RIP and output on a Creo platesetter. 120 line screens. Printed on our Goss G18 press using 60# house offset stock, 4/color process plus two spot colors.

Central Ink petroleum-based black ink, soy-based color ink.

Stocks available for 3/4 web configurations

Remember - project **must** be 8-3/8" x 10-7/8" finish size

Newsprints: 27.7# & 30#

Hi-Bright 35# Groundwoods: Ripon 70 & Ripon 80

Offsets: 40#, 50#, 60# & 70#

Opaque Offsets: Ripon 94 and Ripon 94 Recycled in 40#, 50#, 60# & 70#

Second, the two pages that you would normally expect to be at the center (where the staples go) are not there! The pasting process places the four additional pages in the front or back of the piece, depending on flattening orientation. You would think that pages 14 & 15 would be

the place in a 28-page signature where you would find the staples - but the staples will be between either 12 & 13 or 16 & 17.

Our standard flattening practice - positioning the foot of the copy to the closed head of the signature (jogging to the foot for ink-jetting on the back cover) - puts the centerspread of a 28-page signature between pages 12 & 13. Jobs that ink-jet on an inside order form and the outside back cover must be flattened in this fashion. If the outside ink-jetting is on the front cover, the centerspread would fall between pages 16 & 17. Refer to box at right to see where the centerspread will fall in either flattening orientation.

Now that you are totally confused (see, it's not as easy as it looks to be a printer!), let's deal with multiple section saddlestitch jobs. The 3/4 web section will be positioned as needed based on color requirements, placement of a bind-in card or any other concern. Once you know your total page count, inserts or color requirements, your account service representative can have an imposition chart done so the designer can adapt to accommodate the paste lines and position of the centerspread. ■

From Prepress Extra/Winter 2000

6	13	14	5
3	16	15	4
1 - A&B (half-width roll)			
8	9	12	
1	20	17	
1 - C			
	11	10	7
	18	19	2
1 - D			

This imposition chart is done for a 1x20 page single-section job that jogs to the head. The gray blocks represent print areas not available when using a 3/4 web. The blue screen blocks designate the centerspread. The blue stripes show the paste lines.

Gail Rallens illustration

Position of centerspread and pasted pages in single-section with 3/4 web

1x12 Jogging to the foot

Centerspread: 4 & 5

Pasted pages: 6 & 7, 10 & 11

1x12 Jogging to the head

Centerspread: 8 & 9

Pasted pages: 2 & 3, 6 & 7

1x20 Jogging to the foot

Centerspread: 8 & 9

Pasted pages: 10 & 11, 18 & 19

1x20 Jogging to the head

Centerspread: 12 & 13

Pasted pages: 2 & 3, 10 & 11

1x28 Jogging to the foot

Centerspread: 12 & 13

Pasted pages: 16 & 17, 24 & 25

1x28 Jogging to the head

Centerspread: 16 & 17

Pasted pages: 4 & 5, 12 & 13