



ACME CD MANUFACTURING COMPANY ARTWORK TUTORIAL

This guide is written for those of you who will be submitting your own electronic files to ACME CD or for others who are interested in the printing and manufacturing processes.

We have many customers who submit their own files and do their design on a computer using any of the myriad of desktop publishing programs, such as Adobe Illustrator, QuarkXPress, Adobe Photoshop, etc. Some of these people have a great deal of experience with the printing process and others may be doing a layout for the first time. It is our hope that regardless of your expertise you will find at least some parts of this guide useful.

For the scope of this discussion, we will be concerned with the two basic components of most CD and DVD jobs:

- Offset printed material (booklets, folders, tray-cards, jackets, etc.)
- Silkscreen printing (the printing on the disc itself)

SECTION ONE: OFFSET PRINTING

Most booklets, folders, tray-cards, jackets, mailers and Digipaks are offset printed. Offset printing is a printing technique whereby ink is spread on a metal plate with etched images, then transferred to an intermediary surface such as a rubber blanket, and finally applied to paper by pressing the paper against the intermediary surface. Offset printing is used to produce large volumes of high-quality documents.

Although the equipment and set-up costs are relatively high, the actual printing process is relatively inexpensive.

In offset printing, color images are achieved using four basic ink colors:



C = Cyan
M = Magenta
Y = Yellow
K = Black

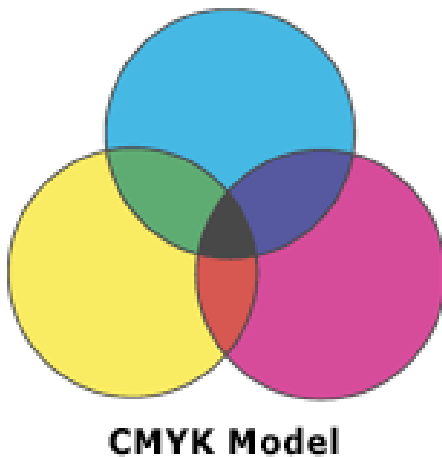
CMYK is an acronym that stands for “Cyan, Magenta, Yellow, Black”. These four inks mix together on a printing press to produce a wide range of colors. For example, cyan and yellow mix together to make green. Magenta and yellow mix together to make red. Actually, if you look closely at a CMYK printed piece,

you'll see that all four of these colors come together as tiny elliptical dots to form a color image. ACME CD utilizes "direct-to-plate" printing for all printed materials other than the silk-screened discs. Film negatives for offset printing are a thing of the past.

A QUICK LESSON IN COLOR THEORY

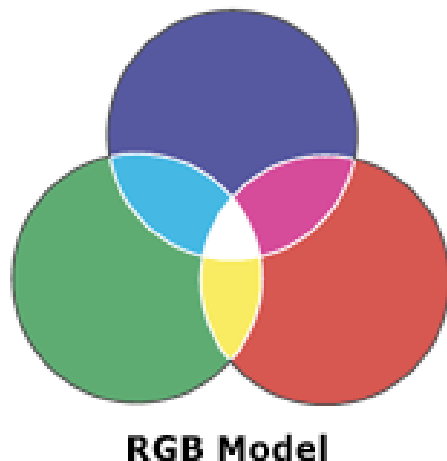
More than likely, you're doing your layout on a computer. Your computer screen represents colors on the screen using light. Specifically, RED, GREEN, and BLUE light (or RGB) blends together to give you the millions of colors that you see on your computer screen. Hence this is called the RGB color process. This is a completely different process than the CMYK processes—the process used in offset printing.

It is not imperative that you completely grasp all of the technical differences between the two, but the bottom line is that in order to print out your art it has to make a translation from RGB to CMYK.



This "translation" is important to understand for two main reasons:

First, the colors you see on your computer screen may not necessarily look the same when you see your colors come off a printing press. Reason being that RGB's color range is much wider than CMYK's range. This color range is what is referred to as the color gamut. The colors you see on your screen will always look more vibrant than the colors you see on paper. When choosing your colors in any given graphics application, you should be mindful of the limitations of the CMYK process. Many people will print out their layouts on an ink-jet printer prior to submitting their files to us. While we strongly believe it's a good idea to mock-up your layouts, you have to be mindful that your ink-jet print outs are not going to be representative in any way of the final printed piece.



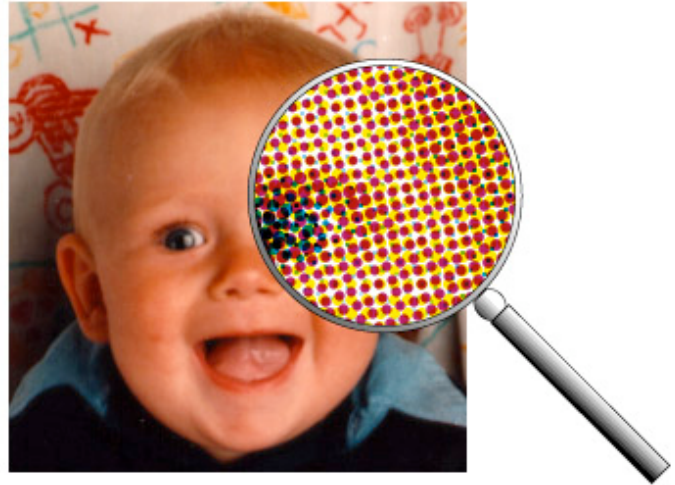
Second, if you are working with RGB files they simply will not print out in an offset, CMYK environment. It's like trying to communicate with someone in a language they don't know. The print press simply doesn't understand what a RGB image is. In fact, it will either refuse to print any RGB images or it will neglect to print them. No one wants a final printed piece with missing images.

EXPERT QUICK TIP: Always work with CMYK images. There will be fewer surprises in the end.

FROM YOUR COMPUTER TO THE PRINTED PAGE

IMAGE RESOLUTION AND FILE TYPES:

There are some other issues to consider when going from the digital world to the printed world. For example, never use GIF's or JPG's, which are compressed to 72 d.p.i. The resolution is far too low for the fine quality line screen of a printing press. Microsoft Publisher, Word processors and some other graphics programs and consumer CD labeling programs DO NOT support post scripting and color separations and should NOT be used to generate your final document.



TEMPLATES AND GRAPHICS APPLICATIONS:

Please remember, you must download the ACME CD templates. They are available on our website. Like many graphic design houses, we are Macintosh-based. We primarily use QuarkXPress, Adobe Photoshop, and Adobe Illustrator. Although we can accept files from most popular formats and operating systems, submitting your files in Macintosh based QuarkXPress, Photoshop, or Illustrator is preferred.



If you submit files from other programs (i.e.: Corel Draw, Adobe Pagemaker, Macromedia Freehand, etc.) we have to assume that you have completed your design to our specifications and that it is ready for film output. In the event that film is run for your job and it turns out that it is not to our specifications, we will be forced to make the necessary corrections and re-image everything again, incurring additional charges. You may want to talk to your ACME representative first before working in any application other than the ones on our "preferred" list. Often we can use files that are exported as EPSs and TIFFs from different applications.

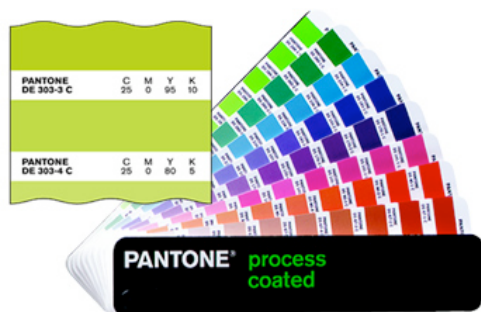
A HELPFUL CHECKLIST:

- All Photoshop files should be either TIFF or EPS (for an EPS, do NOT check the box in the "save" dialog labeled "include half-tone screen")
- Images must be CMYK at 300 d.p.i. or more (TIFF and EPS)
- All image files must be included
- All fonts in Illustrator should be converted to outlines
- All fonts must be included for Quark XPress documents
- All trapping must be done
- 1/8" bleed on all files (this is shown in the templates)
- A full printout of the final item(s) and a folding dummy should be provided.

Remember, ACME CD can work from your photos and rough sketches if you don't have access to the above-mentioned software or don't want to mess with any of this stuff. We'll make sure that your project looks great next to everything else on the shelves. ACME can also accept pre-scanned and adjusted photo files that are not yet imported into a page layout program and complete the procedure for you. We can provide these graphic design services to aid you in any aspect of your artwork production.

EXPERT QUICK TIP: Please make sure you are using ACME's templates for all of your layouts. Every CD plant and printer has slightly different specifications.

SECTION TWO: DISC PRINTING (SILKSCREEN PROCESS)



Unlike offset printing which uses the CMYK process, most disc printing is done in a SPOT COLOR process. These colors are referred to as Pantone Matching System® (PMS) colors and is an entirely different process from the CMKY process described above. Instead of being made up of tiny dots of color, spot colors, employ the use of premixed inks to be a specific shade of red, for example. The Pantone color swatches are included in QuarkXPress and Adobe Illustrator.

Because spot colors are chemically premixed (and not comprised of dots), you can achieve a wide range of colors that are more vibrant or rich than those achieved through 4-color process. Also, when the spot color is used at 100%, you won't see a screen pattern within the color as you do in many CMYK colors.

Since the Pantone Matching System is a universal color numbering system used by printers, you can't rely on a screen representation of PMS colors, as your results may vary. You have to use a PANTONE book (which you'll find at your local service bureau) for an accurate representation. The other thing to keep in mind is that usually the only PMS colors which will be relevant for you are the ones labeled "SOLID COATED."

Of course, it is still possible to print CMYK images on a disc, such as a photo, but the lower line screen of disc printing (100 l.p.i. of silk-screen vs. 175 l.p.i. for offset) can make the image more coarse and grainy than it may appear in an offset version.

EXPERT QUICK TIP: It is always a good idea to take a look at other CDs in your collection to see which graphics elements look to good to you.

FILM OUTPUT FOR DISC PRINTING

As mentioned above, we don't output films for insert, tray cards, etc, but we do need to output FILM POSITIVES for disc printing.

CMYK DISC PRINTING

The computer calculates the percentages of cyan, magenta, yellow, and black required to make EVERY ELEMENT in your layout the color that it is supposed to be. Everything from the photos to colored fonts are made up of a percentage of those four colors. Your film will seem like different layers of the same image. The CMYK DISC PRINTING process requires 5 pieces of film: the four C, M, Y, and K pieces and a WHITE UNDERPRINT film in order to simulate paper and help facilitate a more predictable rendering of color.



SPOT COLOR DISC PRINTING

By contrast, in a spot color process your finished film will be made up of separate elements on each piece - a photo image on one piece of film, a band name on another, and an album title on another, for example. This is because each one of those elements is a completely different SPOT COLOR.

A common way to set up a disc would be to:

- a) create a colored background that is ONE PMS color
- b) add a band name in a PMS color of your choosing
- c) add an album title and song titles in another PMS color.

You will then have a spot color file with 3 colors ready for output to 3 film positives.

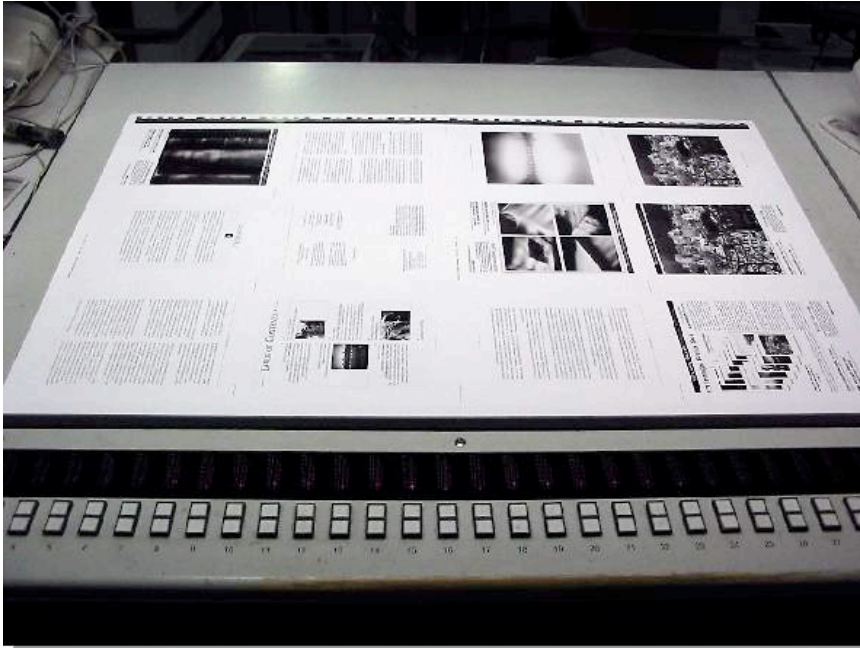
In order to print on to your discs we need films positives which are burned into the silk-screens used to print onto your CDs. In 99% of the jobs that we do, we take care of the film output process, but you can check to make sure that your spot colors are separating correctly by running out laser separations.

EXPERT QUICK TIP: Whatever is white on your computer screen will be the silver background of the CD or DVD. If you need a solid color background, just request it. You will need film for the solid color and it does count as one of the four (4) free colors you get with any ACME CD order.

PROOFING

The reality of printing is that one can never be 100% sure what the final print will look like. It is a goal that everyone in the industry is striving for. Coca-Cola, one of the biggest consumers of printed matter, actually has a manual (which is several hundred pages long) on exactly how to print the "red" in their logo. Although it's true that the more information we have from you the better the result is likely to be, this would obviously be overkill for most folks. There are many steps one can take to greatly improve the accuracy of the proofing process to get us close to what the final print will likely be. At ACME CD, we've taken great care to create a proofing process which is cost-effective, fast, and as accurate as possible.

Generally speaking, there are a few things you can expect when it comes to the proofing stage:



- Colors that appeared bright on your screen may look duller in the proof. Certain colors will differ more than others. Bright reds, oranges, and blues seem to vary the most.

- The ACME proof may look different from a laser or ink-jet proof that you ran out. This is because your laser or ink-jet printer uses a completely different process (namely the ink and the paper are different) than our printing presses.

Having said all of that, we do still encourage you to print out and mock-up your artwork as much as

possible. It will give you a better sense of how your finished product will look (and feel) and doing so will actually give you a better understanding of how these process can differ. Take your files to someplace like Kinko's and have them print out a color laser for you. Then compare that to the output from your ink-jet printer. You'll start to see what we mean.

FILE FORMAT CHECKLIST

QuarkXPress Document - Collect for output, making sure High Res CMYK files are included and that all fonts are included.

Adobe Illustrator EPS - If the art is built in Illustrator, it is imperative that bitmapped (CMYK or B/W only, no RGB and no JPEG compression) images are placed as rasterized and that all fonts are converted to outlines.

Adobe Photoshop EPS - If building your art in Photoshop, be sure to set all type as anti-alias or copy will appear pixelated.

Art created in programs other than those above should be saved or exported as PDF files with all fonts embedded (please be sure all color images are CMYK before converting to pdf.) or EPS files with all fonts outlined.