

PRINTING CLARIFIED

COLOUR

CMYK

CMYK stands for Cyan, Magenta, Yellow and Black. They are called the Process Colours. The idea behind this is that you can duplicate almost all of the colour spectrum. Almost all printing that has colour, especially any that has full colour photographs, is using process colours. The images are made up of several dots, in varying densities, which, when placed so tightly together give the illusion of other colours. If you were to take any magazine and look at it through a magnifying glass, you would see several coloured dots, of Cyan, Magenta, Yellow and Black.

Spot Colours

Spot colours are the opposite of CMYK. They are solid colours, not a mix of several others. When you look at spot colours on page, there will be no dots. It will be solid. The only exception is when a spot colour is laid down with a screen, which means trying to make it appear lighter by using dots to spread the ink coverage. The dots will however, still be only one colour.

RGB

RGB stands for Red, Green and Blue. They are another colour system used to match the entire colour spectrum as well. They are used most on electronic displays. The images you see on your monitor use RGB. That is how monitors, TVs, Phones, etc. interpret colour. It converts it to RGB. When RGB colours are used in printing, they are converted to CMYK for the presses. While this sounds useful and simple, there is often something lost in the translation between these two colour schemes. To get the most accurate colour, it is almost always recommended that images are converted to CMYK or RGB (if designing for electronics).

At Hignell, we do have an exception to this. Our iGen3 press has special software that converts RGB properly, so if your design is in RGB and is going to be printed on the iGen press, leave it that way. Our Client Service Reps will advise you on this when it comes time to submit your files.

IMAGES IN PRINT

Raster and Vector Images

There are two main types of Images; Raster and Vector. Vector images are made of solid lines and areas, all based on math, so they can grow or shrink as much as you want and still keep smooth edges and retain its quality. Raster images are made up of several dots or pixels. Depending on the resolution of the picture/screen the image can have more or less dots. The more dots, the better the image quality. As you increase the size however, the dots don't replicate to retain quality, they stretch. When they stretch you lose image quality. This does not mean Vector is better than Raster. They just both have

their uses. Digital artwork, logos and type are best suited to vector where full colour images and scanned images should be raster.

An example Vector and Raster in practice are like using Photoshop and Illustrator. Photoshop is a raster based program and will create raster images. Type done in Photoshop is never as clear as type done in Illustrator or inDesign. In contrast, Illustrator and inDesign are vector based and will create vector images and artwork.

Line Art

Line art is simple black and white images (or any 2 colours), created from solid strokes. Most people seem to think the term "Line" means straight lines. Line art is really just an image not made up of dots. They are simple and usually print well.

Halftone images

Halftone images are pretty much all images made up of dots. By placing dots of varying shades and colours in certain patterns and different densities you create the illusion of an image. The farther away you look at the dots or the more there are, the more solid a picture looks.

METHODS OF PRINTING

Letterpress

The first ever press was a Letterpress. It basically uses stamps to grab ink and place it on the paper (or other material). Think of a typewriter, but doing whole pages in one press. Of course, this took long to do as each page was setup before by hand and manually placing these letter stamps in place. As time went on, full page stamps were created instead to make the process easier (though still inefficient compared to other methods). Today however, the Letterpress is not used much as it is not an efficient and far too expensive method of printing.

Offset Lithography

This method of printing is the most common used today. It is also one of the oldest. It works on the principle that water and oil (ink) don't mix. Using metal or polyester sheets (called plates), image and non-image areas are burned onto the plate using light to expose the image areas. this plate is attached onto a cylinder that as it goes around on the press, picks up water onto the non image areas. since water and oil don't mix, when the plate comes into contact with the ink, it only sticks to where the water isn't, our image area. The plate then comes into contact with a rubber sheet (called a blanket) and it transfers the image. The blanket then rotates around and presses to image into the paper. This is where the offset term comes from. While other methods can be done with offset theories, the Offset Lithography is so common that when someone refers to offset printing, this is what they mean.

Flexography

This is traditionally used to print labels. If you look at a bottle of pop, the plastic or cellophane label on it was likely done by flexography. It is the packaging industry who primarily uses flexography. The idea behind flexography is similar to a Letterpress where it uses a stamp, but this one is created with rubber etched with tiny grooves that pick up ink. The rubber stamp (plate) wrapped around a cylinder which

rotates and picks up ink from a reservoir then presses it into the printing material. This is often done on plastics, tissues, labels, stickers and cardboard.

Gravure

This is a method usually used in printing long runs of magazines. Much like flexography, gravure printing has a cylinder that picks up ink in tiny etched grooves and places it on the paper. The difference is, gravure doesn't use a plate. Its grooves are actually etched into the cylinder. This allows it to last much longer and can be used for more impressions (contacts with the paper/material) before it wears out.

Screen Printing

This is still a common method of printing. It is often used on all the odd materials. Solid letters on plastics, T-shirts and clothing materials, a lot of signs and others use screen printing. The idea behind screen prints is basically a screened material such as silk or nylon is stretched across a frame and fastened into place. A stencil, cut my hand or made electronically, is placed over that screen to block out non printing areas. Ink (often rubber based) is placed inside the frame and scrapped across the stencil with a rubber squeegee. The ink goes through the screen and onto the material.

Digital Printing

There are several way to do digital printing. Many methods try to reproduce the effects of the previously described styles. There are inkjet, laser and toner, and magnetic digital printers. In inkjet, the ink cartridge holds liquid ink that is released in tiny sprays onto the paper . It makes several dots, that when viewed without a magnifying glass creates the illusion of your image. Laser and toner method uses a laser to charge the paper in certain areas which will attract toner of cymk colours to it. It then goes through a fuser which melts the toner into the paper. Magnetic works in much the same way but instead of electrical charges, it uses magnetic ones. It also passes through a fuser to melt the toner on.

This is all just touching the tip of the iceberg for each of these methods. This is just a rough summary of what these printing methods are all about. If you are interested in learning more, the internet has all the information you could want about this. Printing is considered the greatest invention of the second millennium and is a major reason why we are where we are today.

BINDING STYLES

Perfect Bound

Perfect binding is a binding method that works by fastening the book block to the cover spine. A machine will lay hot glue on the binding edge of the complete book and then the cover is attached to it. It is often used for softcover books and is most familiar to people in the form of paperback books. It is also called adhesive binding, or unsewn binding.

Coil Bound

Spiral binding is a punch-and-bind system that uses a plastic or metal spiral wire that is wound through punched holes on the binding edge. It is the type of binding most often used for school notebooks, cookbooks and steno pads.

Plastic Comb Binding

Also called GBC binding, plastic comb binding is a punch-and-bind system that is used for many office documents. Its main advantage is that it is inexpensive and easily edited. Its disadvantage is its appearance and the security of the final book.

Wire-O

Wire-O is a punch-and-bind system, similar to the plastic comb binding, but uses a wire to bind the pages together.

Wire Stitching

Wire stitching is a form of binding that uses wire staples to bind sheets together. Wire stitching can either be used as side stitching, or saddle stitching. Side stitching is used for thin books that are usually then either covered with a hard cover, or a tape strip. Saddle stitching binds the sheets together through the fold in the center of several pages. This form of binding is commonly used on comic books and magazines.

Sewn

Sewn binding is usually used in conjunction with hard cover binding. The book block, or sections of the book block are sewn together prior to the addition of the cover. This makes for a very sturdy book. The biggest disadvantage to sewn binding is that it requires specialized, expensive equipment, and, when done on a custom basis, is a slow process.

Tape Binding

Tape binding uses a thermoplastic adhesive on a strip to bind books. In technique, it is similar to perfect binding, where the individual pages are glued to the book spine. Tape binding is a good choice for office documents, review books, or other presentations.

Case Bound

Case bound books have a hard cover. These are usually covered with cloth, leather, dust jackets or textured paper. On some books, the spine has a different covering material than the front and back panels. This is called quarter-binding and is very popular in the publishing industry

PAPER

Paper is often a confusing subject when it comes to printing. Most people think paper is paper, but there is a lot more to it than it seems. The type of paper used can have a huge role in how a printed job looks and feels. This short guide will give you a basic understanding of what paper is all about, but always be sure to ask about it when ordering a job.

Finish

There are several different types of finish on paper. Here is a list and description of the most common:



Wove or Smooth - A smooth uncoated surface.

Laid - A paper that is manufactured with textured lines on its surface, often used for business stationery such as letterheads, envelopes and business cards.

Linen - Similar to a laid finish, this paper has textured lines on the surface of the sheet, but they are finer and more regular than those that appear on a laid finish stock. This paper is also used frequently for business stationery.

Laser - A paper that is guaranteed to be compatible with laser printers.

Coated - A paper with a waxy finish (shiny or matte).

Uncoated - A paper with an untreated surface that is dull and unreflective.

Coated One Side (C1S) - A cover stock that has a coating on one side and is dull on the reverse side.

Coated Two Sides (C2S) - A cover stock that has a coating on both sides.

Weight

The weight of a paper refers to its thickness and is measured in pounds (calculated by pounds per 1000 sheets). The higher the number, the more weight (thickness) a paper has. It is important to remember however, that weight is relative to the type of paper being measured. You may see 100lb cover stock and 100lb text stock, and think that they are the same thickness, but they are really quite different. A 100lb stock is thick compared to a lower weighted stock of the same type. 60lb text is thinner than 100lb text, but 100lb text may still be thinner than a 60lb cover stock.

Opacity

A paper's opacity is determined by its weight, ingredients and absorbency. Opacity indicates how much printing will show through on the reverse side of a sheet. Opacity is measured in a percentage.

Complete opacity is 100% and complete transparency is 0%.

Brightness

The brightness of a sheet of paper measures the percentage of a wavelength of blue light it reflects. The brightness of a piece of paper is typically expressed on a scale of 1 to 100 with 100 being the brightest. Most papers reflect 60-90% of light. The brightness of a paper affects readability, the perception of ink color and the contrast between light and dark hues.

Types of Paper

Offset - Also known as book or text paper, offset paper can have a coated or uncoated finish. Offset paper is thinner and lightweight. It is often used for publication interior sheets, brochures & flyers, and letterheads. Common offset weights: 50#, 60#, 70#, 80#, 100#.

Bond - Bond or writing papers are most often used for letterheads. Common bond weights: 20#, 24#, 28#.

Cover - Cover stocks are heavy in weight, rigid and not easily folded. These papers are generally used for publication covers, business cards, greeting cards, folders, and postcards. They can have coated or uncoated finishes. Common weights for cover stocks include: 65#, 80#, 100#, 120#, 10pt. and 12pt.

Tag - Tag paper is a dense grade of paper that is strong, durable, and water resistant. Tag paper is typically used for hanging tags such as store tags on clothing or other products.



Index - Index paper is a stiff, not too thick, inexpensive paper with a smooth finish. It is often used for index cards and folders.

Grain

A paper's grain is the direction in which most of the fibers lie. Grain is determined during the paper making process, when fibers tend to align in one direction or the other. Paper is identified as either grain short (grain is parallel to paper's short side) or grain long (grain is parallel to the paper's long side), depending on how the paper is cut. It is easier to fold, bend, or tear the paper along the same direction of the fibers. Folding against the grain often causes the paper to crack.

Other Substrates

Substrate is the name for any material that you can print on. Paper is the most common, but printing is done on nearly any material, though not through the same printing method. Cloth, plastic, vinyl, metal, etc. are all examples of alternate substrates to paper.