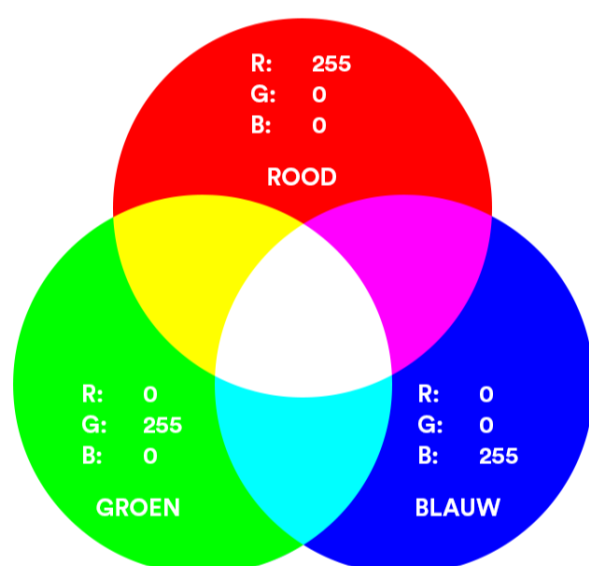


What is RGB?

RGB is an abbreviation that stands for the additive color system red, green and blue. The RGB color system is a model for capturing colors through the use of a code. Black is the basic color, with the colors red, green and blue being the color components. These three primary colors form the basis for creating millions of other colors. The desired color can be created by adding light to the primary colors and overlapping each other. For example, you see the RGB model on a monitor or television. If you zoom in on a screen, you will see all kinds of small dots in the colors: red, green and blue. These colors overlap in the pixels, creating the desired color.



What is CMYK?

The CMYK acronym stands for Cyan, Magenta, Yellow, and Key: those are the colours used in the printing process. A printing press uses dots of ink to make up the image from these four colours.

'Key' actually means black. It's called Key because it's the main colour used to determine the image outcome. Black ink provides depth and shading, whereas the other colours create different colours on the spectrum depending on how they are mixed. For example, cyan and yellow create a green when one is overlaid on the other.



CMYK vs RGB

Ever printed something out on your home or office printer and noticed the colours look a little off? Before you start thinking you're going crazy, don't worry – this can happen if you're using the wrong colours profile.

Your computer screen works in RGB (Red, Green, Blue) and not CMYK. It might seem that this doesn't make a difference to the final product when you're designing something, but it does!

A colour monitor that isn't set up to view CMYK will show you different colours to the ones that may be printed. This is because the RGB spectrum is much, much broader than CMYK, so colours can be created in this palette that won't be available in CMYK.

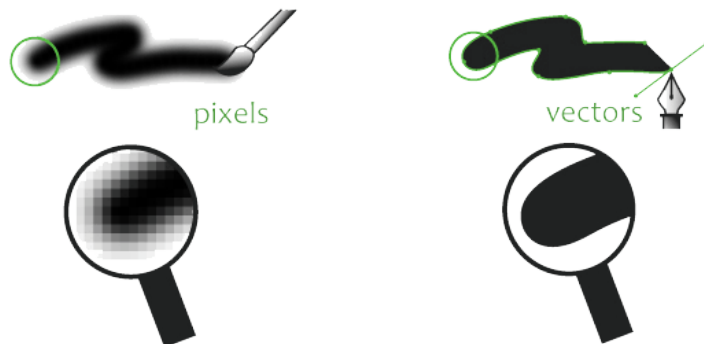
There is a very clear differentiation between RGB and CMYK in the way the colours work. RGB is additive, while CMYK is subtractive. What this means is:

RGB colours are added to a black canvas to build an image

CMYK colours are added to a white canvas to remove other colours from the visual spectrum

Images and illustrations are some of the most powerful and versatile tools a graphic designer has. In the field of computer-generated images, there are two main types: vector images and bitmap images.

Of course, professional designers do not need a reminder of how to use those types of images. But, beginners sometimes get confused.



Vector and bitmap (also called raster) images are two different types of digital images. Vector images are made up of lines and curves that are defined by mathematical algorithms, while bitmap images are made up of a grid of pixels.

Vector graphics are generally better for creating layouts because they can be scaled to any size without losing resolution. This means that you can create a vector graphic at a small size and then scale it up to a larger size without it becoming pixelated or blurry. Raster graphics, on the other hand, can become pixelated or blurry when they are scaled up.

Some of the pros of vector graphics include:

They can be scaled to any size without losing resolution.

They are resolution-independent.

They are typically smaller in file size than raster graphics.

They can be edited easily, with the ability to move, resize, and manipulate individual elements of the image.

Some of the cons of vector graphics include:

They are not as well-suited to displaying complex photographic images as raster graphics are.

They can require more computing power to render, which can make them slower to display on a screen.

Some of the pros of raster graphics include:

They can be used to represent complex photographic images with a high level of detail.

They are generally easier to work with than vector graphics because they do not require the use of mathematical algorithms.

Some of the cons of raster graphics include:

They can become pixelated or blurry when they are scaled up.

They are not resolution-independent, so they may not print as well at high resolutions.

They can be larger in file size than vector graphics.

When to use vector graphics?

Designers should use vector images when they need to create scalable graphics that need to be resized, such as logos, icons, and other graphics that will be used at different sizes. Because vector images are made up of lines and curves defined by mathematical algorithms, they can be scaled to any size without losing quality. This makes them ideal for creating graphics that need to be resized, such as logos or icons.

Vector images are also typically smaller in file size than bitmap images, which makes them easier to share and download. They are also resolution-independent, which means that they can be printed at any resolution without losing quality.

However, vector images are not as well-suited to displaying complex photographic images as bitmap images are. Because they are made up of lines and curves, they cannot capture the same level of detail as a bitmap image can. This makes them less suitable for photographs and other images with subtle shading and color variations.

In summary, designers should use vector images when they need to create scalable graphics that need to be resized. They should use bitmap images for displaying complex photographic images with a high level of detail.

When to use bitmap images?

Designers should use bitmap images, also called raster images, when they need to display complex photographic images with a high level of detail. Because bitmap images are made up of a grid of pixels, they can capture a wide range of colors and gradients, which makes them ideal for photographs and other images with subtle shading and color variations.

Bitmap images are also a good choice for web graphics because they can be easily compressed to reduce file size without losing too much quality. This makes them faster to download and display on the screen.

However, bitmap images are not as well-suited to creating scalable graphics as vector images are. Because they are resolution-dependent, they can become pixelated or blurry when they are scaled up, which makes them less suitable for creating logos or other graphics that need to be resized.

In summary, designers should use bitmap images for displaying complex photographic images with a high level of detail, and for web graphics where file size is a concern. They should use vector images for creating scalable graphics that need to be resized.

What Is DPI and How Is It Used?

DPI, or dots per inch, is a measure of the resolution of a printed document or digital scan. The higher the dot density, the higher the resolution of the print or scan. Typically, DPI is the measure of the number of dots that can be placed in a line across one inch, or 2.54 centimeters.

The higher the DPI, the sharper the image. A higher resolution image provides the printer and printing device more information. You can get more detail and greater resolution from an image with higher DPI.

A lower DPI will produce an image with fewer dots in printing. No matter how powerful your printer is, a low-resolution image doesn't provide enough raw data to produce high-quality images. The ink will spread on the page, making the edges look fuzzy.

Similarly, a monitor will measure the pixels per inch, or PPI, of a video display. Typically, a printer must offer a higher DPI to match the color quality and resolution of a video display PPI. This is due to the limited range of colors in a print job.

DPI Printing and Industry Standards

Let's review a few standards and guidelines for using DPI in printing services. Keep in mind, you'll need a better, and more capable, printer or print service to deliver high-quality and high-resolution printing output.

1. Low-Resolution Images

Low-resolution images are considered 150dpi and less. For print, 150dpi is considered low-quality printing, even though 72dpi is considered the standard for the web (which is why it's not easy printing quality images straight from the web). Low-resolution images will have blurring and pixelation after printing.

For business purposes, low-resolution images are suitable for scanning text documents and storing records digitally. Internal office communication can be reproduced with a low resolution, but anything used outside the office should be higher than 150dpi. After all, the printing quality needs to represent your business.

2. Medium-Resolution Images

Medium-resolution images have between 200dpi-300dpi. The industry standard for quality photographs and image is typically 300dpi.

For businesses, producing an external document like a brochure, a booklet, or a flyer requires 300dpi. You might be able to get away with 250dpi if you are less concerned with the quality and resolution of the printing. Any marketing material or collateral produced should be, at a minimum, 300dpi. Booklets, pamphlets, reports, and sales sheets should all be printed at 250dpi-300dpi or more.

A good rule to follow is when in doubt, select a higher dpi for your material.

3. High-Resolution Images

Most businesses consider 600dpi and higher to be a high-resolution image or print. High-resolution images require more memory to store and can take longer to scan. Storing high-resolution images can quickly fill a hard drive or server. Many desktop printers can't reproduce high-quality and high-resolution images. Professional print services are often the best solution for high-resolution images.

Keep in mind, there are diminishing returns for increasing the resolution of an image. Any print above 1,200dpi will deliver improvements that are practically unnoticeable to the naked eye. You won't be able to see any difference between documents. Only professional photographers or artists with highly detailed work will need resolution that high.

Other Factors That Influence Print Quality

DPI isn't the only factor that determines the resolution and print quality. Often, these other factors can have more impact on quality and resolution.

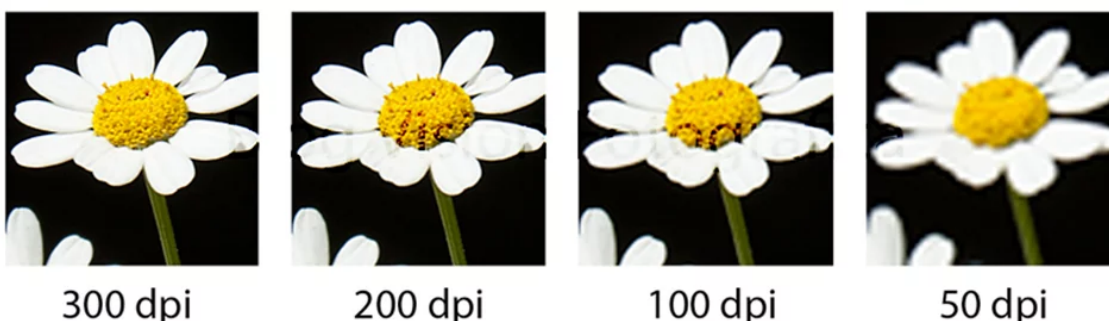
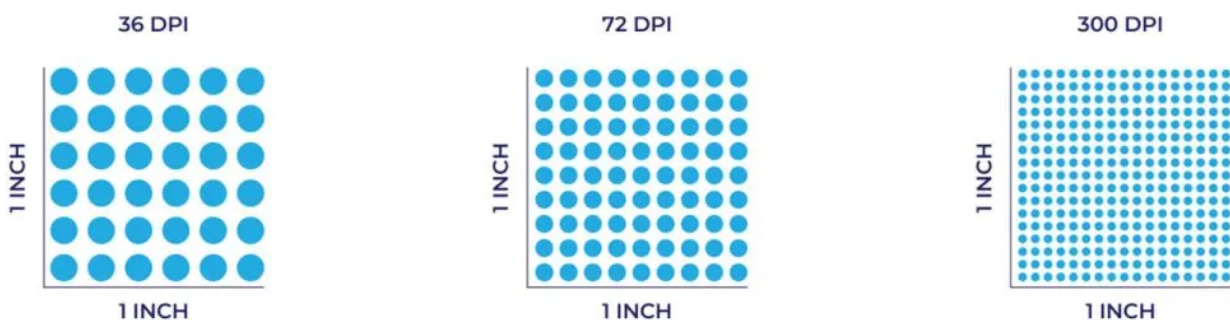
For example, sometimes users will change the resolution of an image in software like Photoshop. This will increase the DPI, but it won't change or increase the quality of the image. The pixels in the image are larger, resulting in a pixelated, almost unprintable, image. This is known as upsampling.

The printer, and ink used in the printer, can also affect print output. Laser jet printers use a toner that doesn't bleed into the paper, producing a crisper image. Inkjet printers will bleed, which can lower the appearance of dots per inch for a printed work.

What Is DPI and What It Means for You

Selecting the right DPI printing services and office technology is important. Dots per inch is one factor that can influence the efficiency and cost of print services. It's important to identify your business requirements and scanning and printing needs before selecting print services.

DPI VISUALISED



Digital Files and Professional Prints

When it comes to digital printing, not everything is as simple as it seems. While it may seem like you can simply send any image to a printer and have it printed exactly as it appears on the screen, most of the time it does not work out that way.

The difference between crisp, professional large format printing and a print job that looks shoddy is in the details—the file type and the file size. It's not hard to have great looking photos if you just pay close attention to these two factors.

It is important that, when you are going to print out your digital photographs, that you print them out in the highest quality possible. You want to do your work justice and appear professional, right? For converting a small photo into a large print, consider the following:

Image Size

Image size is absolutely crucial, and there is actually more that goes into size than just the dimensions (although that is one part of it). For example, you need to pay attention to megapixels. The number of megapixels in the image determines how large you are able to print it. Images with a low amount of megapixels can't print as large as you might want them to. To alter this, you can use programs like Photoshop, or rely on printing professionals to help you out.

One option to be able to control image size in order to facilitate the best digital file format for large prints is to take the pictures in a larger format on your camera. Most digital cameras have the option to take bigger photographs, which takes up more room on the memory card, but saves you the hassle of trying to resize the image properly in the editing process.

File Type

There are different types of file formats for digital files that best facilitate large-format printing. While you might figure that JPG or PNG are the best options for saving photos for large-format printing, you would actually be wrong. Large format advertisements require flexibility and clarity in order to be printed. JPG and PNG formats often have conversion issues in terms of size and color.

The best digital file formats for large prints are actually TIFF and PDF. TIFF files are very heavy, but they are also highly compatible. They can open with almost any software, meaning that you can take them almost anywhere to be printed and they will turn out similarly everywhere you go. The other best option is the PDF format. While it can take a while for you to convert your images to PDF, it is worth the wait. PDF files are compatible, versatile, and often compressible.

Image file formats



Raster images

Pixel-based graphics
Resolution dependent
Photos & web graphics

JPG
Web & Print
photos and
quick previews

GIF
Animation &
transparency in
limited colors

PNG
Transparency
with millions
of colors

TIFF
High quality
print graphics
and scans

PSD
Uncompressed
data from
digital cameras

RAW
Layered Adobe
Photoshop
design files



Vector images

Curve-based graphics
Resolution independent
Logos, icons & type

PDF
Print files and
web-based
documents

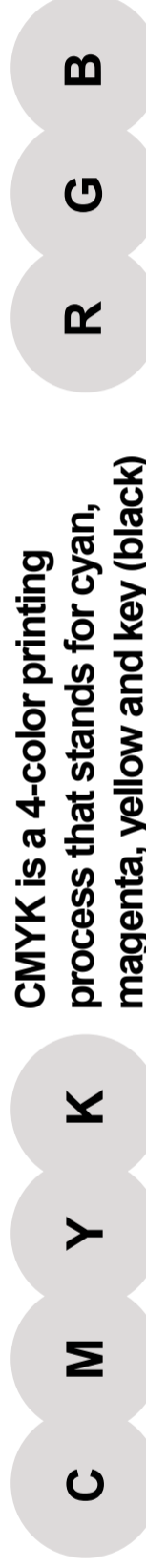
EPS
Individual
vector design
elements

AI
Original Adobe
Illustrator
design files

SVG
Vector files
for web
publishing

Image color formats

CMYK is a 4-color printing process that stands for cyan, magenta, yellow and key (black)



RGB is a light-based color model that stands for red, green and blue





JPG

Web & Print
photos and
quick previews

JPEG files (or JPG files) are a type of raster image file format that uses compression to store data, and has the file extension .jpg. This compression allows for smaller file sizes, which makes them ideal for use on the web. JPEGs are also used for printing, as they can produce high-quality images while still keeping the file size relatively small.

How does JPEG compression work? JPEG image compression works by splitting an image into small squares and then compressing each square individually. This makes JPEG image files very efficient at compressing images with areas of solid colour, like photos.

JPEG compression does not work well on images with sharp edges or large areas of uniform colour, like line drawings or logos. These types of images often appear blocky or fuzzy when they are compressed as a JPEG.ing

the benefits of using JPG

The JPEG file format is typically smaller in file size than other image formats.

This is because JPEGs are compressed, meaning that they remove some of the data from the image that is not essential for displaying it. This makes JPEGs less accurate than other image formats, but it also means that they take up less space on your device or on the internet

JPEGs compression is very effective for most use cases.

For most people, JPEGs offer the best of both worlds — they are smaller in size, while still retaining image quality. This is because JPEGs remove some of the data from the image that is not essential for displaying it, while other image formats do not compress their files as much.

JPEGs are supported by most web browsers.

They can also be displayed on a wide variety of devices. This makes them a good choice for posting images online, as most people will be able to see them no matter what type of device they are using.

JPEGs can be easily converted to other file formats.

This includes PNG or GIF. This is useful if you want to save an image in a different format, or if you need to use a JPEG in a program that does not support them.



TIFF

High quality
print graphics
and scans

A TIFF (tagged image file format) is a graphic file format used for images, identified by its .tif file extension. TIFF is a raster format, meaning that it is comprised of pixels (unlike vector images, which use mathematical formulas).

TIFF files can be lossless, meaning that no image data is lost when the file is compressed, or lossy, meaning that some data is lost. The file format also supports multiple layers and transparency. TIFF files can be edited and resaved without losing quality, making them ideal for graphic designers and photographers.

Though TIFF images are typically high quality, they can also be quite large, which can make them cumbersome to work with. They are also not typically supported by web browsers. For this reason, JPEG is often a better image type for images that will be posted online or used in documents.

the benefits of using TIFF

They can be lossless

TIFFs can be lossless, meaning no data is lost when the file is compressed. However, because no information is discarded during compression, TIFF files tend to be much larger than lossy formats like JPEGs. For many applications, this isn't an issue, but it's something to keep in mind when deciding which format to use.

They support multiple layers and transparency

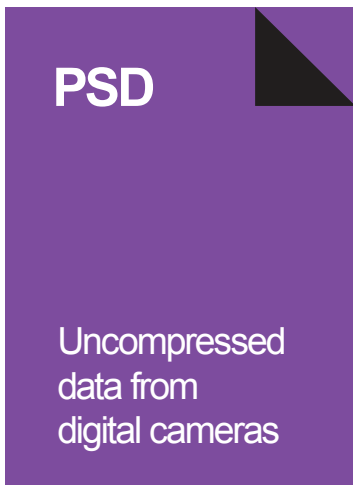
A layer is one of the building blocks of an image, and they allow you to work on one element of an image without affecting the others. For example, you can put a base colour on one layer, and then add shadows and highlights on separate layers.

This allows you to change the order of the layers, or turn them off entirely, without affecting the rest of the image. Layers also make it easy to apply different effects to different parts of an image, such as blurring the background while keeping the foreground sharp.

This makes TIFFs an ideal format for storing complex images, such as those used in graphics and photography.

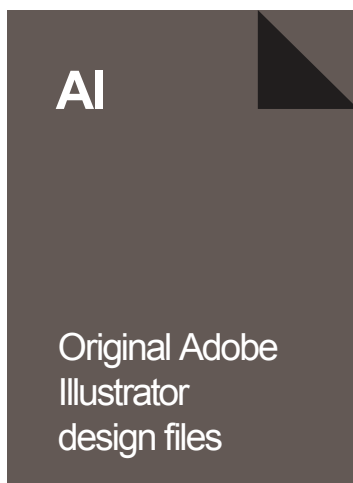
They are widely used in the printing and publishing industry

TIFF files are lossless, meaning that they do not suffer from any data loss when they are compressed. This makes them ideal for high-quality printing, as there is no risk of losing any detail or quality in the image. They can also store images as a grayscale, CMYK, or coloured RGB image, which is critical for printing.



PSD is a file extension for a Photoshop Document file. A PSD file contains an image with layers and masks. Each layer in the file is stacked on top of the other, allowing users to create and edit images using multiple levels of transparency.

PSD and TIFF files are similar file formats.



An AI file format is a file format used for vector images. Vector images are made up of geometric shapes that can be made smaller or bigger without losing any quality. This makes them ideal for logos and illustrations. Some of the most common AI file formats are **EPS** and **SVG**.

What is a SVG/EPS

SVG stands for Scalable Vector Graphics. Unlike JPEG, PNG, and GIF files, which are made up of pixels, SVG files are made up of vector graphics. That means they can be scaled to any size without losing quality. They're also usually smaller in file size than pixel-based images.



PDF

Print files and
web-based
documents

The PDF, or Portable Document Format, is a file type that uses compression and security features to keep documents looking the same regardless of what device they are opened on.

PDF files are commonly used for document sharing and printing because they preserve the original formatting of the document, no matter what device or platform they are viewed on. Most PDFs contained text and images, but they can also contain a range of other objects, including hyperlinks, editable form fields, vector images, raster images, digital signatures, and buttons.

PDF files can be password-protected and encrypted for security. They can also be signed electronically to verify the identity of the sender.

the benefits of using PDF

PDFs can be accessed on any device

PDFs are one of the most universal document formats because they can be read by nearly any computer or device. This is thanks to the PDF format's open standard, which means that anyone can create a PDF document without requiring special software. Additionally, most web browsers have built-in support for PDFs, so they can be easily viewed online.

PDFs preserve the original formatting of the document

PDFs preserve the original formatting of a document, no matter where or how they are viewed — including fonts. This means that PDFs will always look exactly as they are supposed to, whether they are viewed on a laptop, tablet, or smartphone. This makes them great for designers looking to control how a viewer engages with bespoke visual layouts.

PDFs are easy to use and navigate

PDFs are easy to use and navigate, thanks to their user-friendly interface. This means that even novices can easily find the information they need within a PDF document. Additionally, PDFs can be quickly and easily navigated using a variety of devices, including laptops, tablets, and smartphones (though it can be a painful experience on small screens). This makes them preferable to other print file formats, such as EPS files.

PDFs can be made relatively secure and confidential

PDFs are encrypted, meaning that only authorized users can access the contents of the document. In addition, PDFs can be password protected, ensuring that only those with the correct password can view or print the document. .

SI & Gra printshop

SI & Gra printshop / Large Format Printing

BC building, 5th floor, room 5.26
T: 020-5711675
E: graprintshop@rietveldacademie.nl

for rietveld:
ferri wouters & anastasia afonina

for sandberg
ivo van stiphout

open:

rietveld students:

mon and tuesdays: 10 - 17hrs
by announcement also on thursday (see bookingspage)

SI students:

wednesday: 10 - 17hrs
by appointment & bookings on Sandberg bookingspage
E: medialab@sandberg.nl
T: 020-5882411

Please notice:

If you are unable to attend or want to change the appointment, please let SI or Gra Printshop know as soon as possible via the link in the confirmation email, during the december assessments and may/june, there will be xtra opening hours, for information see intranet graprintshop or sent an email.

before booking read this carefully!

- No Double-Sided printing
- files min 72 dpi / max 240 dpi
- files ready to print, printsize is 100%
- Photoshop files in TIFF or PSD
Indesign / Illustrator files in PDF
- files in RGB
- merge PSD & TIFF files to one layer

how to book a workshop



Materials & Prices

Proline 90 gr/matt - B/w - color

A0 10,-
A1 5,-
A2 2,50

Acetate film/ cristal clear transparant

A0 20,-
A1 10,-
A2 5,-

Olmec 230 gr/matt - B/w - color

A0 18,50
A1 9,25
A2 4,60

Polypropylene, for lightboxes B/w - color

A0 20,00
A1 10,00
A2 5,-

Olmec gloss 230 gr - B/w - color

A0 24,-
A1 12,-
A2 6,-

Canvas

A0 25,-
A1 12,50
A2 6,25

Olmec Satin 230 gr - B/w - color

A0 24,-
A1 12,-
A2 6,-

Self adhesive stickervinyl - B/w - color

A0 18,50
A1 9,25
A2 4,60

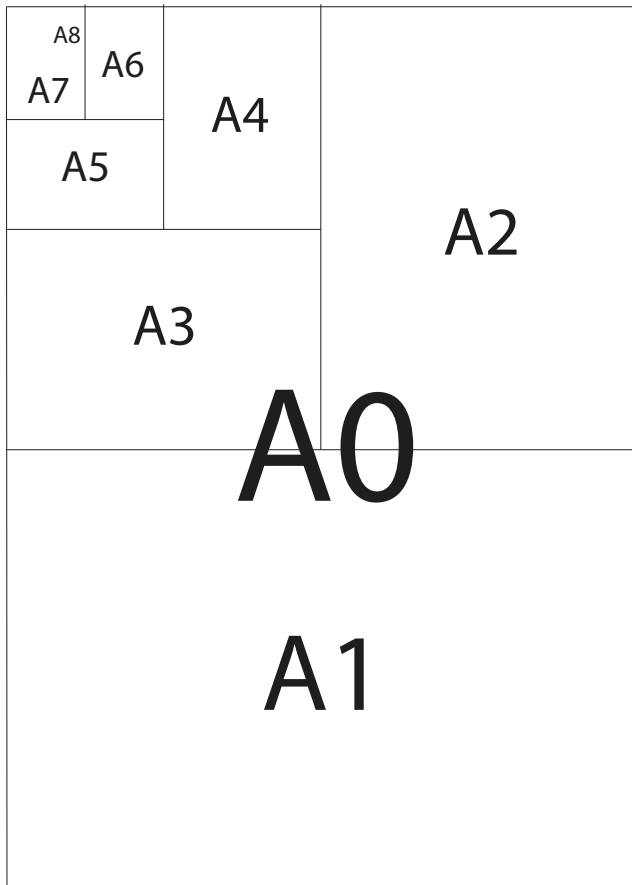
"Pizza" paper 70 gr - B/w - color

A0 5,-

Newsproof/Newspaper B/w - color

A0 12,00
A1 6,00
A2 3,00

There is a sample book available in the workshop



A format:

A0 - 84 X 118,9 cm

A1 - 59,4 X 84 cm

A2 - 42 X 59,4 cm

A3 - 29,7 X 42 cm

A4 - 21 X 29,7 cm

Notes: