

The purpose of this text is to help designers understand problems of flexography in order to achieve better prints and design.

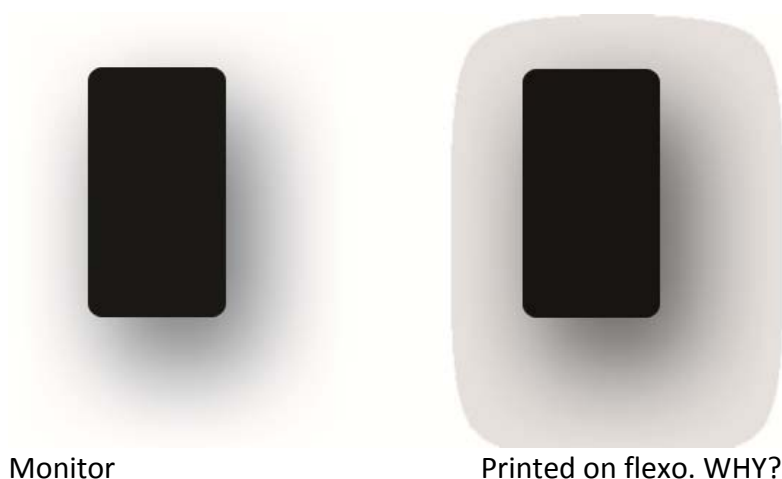
### **Format size:**

Images that are used whether they are in TIFF, PSD, JPEG or some other format require certain minimum resolution. Resolution is calculated by taking a lineature of printing plate (for example 46 lines per centimeter) multiplied by 2, 54 (46 lpc×2, 54 =117 lpi). In flexography the main rule is that the picture has to be at least two times larger than lineature of printing plates. That means that it has to be at least  $112\text{lpi} \times 2 = 224$  dpi on the monitor for raster. Recommended size is a little bigger varies between 254 and 300 dpi. Resolution larger than for example 400 dpi is useless since the details in the image cannot be printed and the oversized images take too much space. It has to be noted that during printing you may lose parts of colored space shown on the monitor if the image is in RGB, not in CMYK format and this part can be important for end customer.

### **Vectors and text format:**

Do not use raster process on vectors and text, unless it is for some intentional effect. If the format is only CMYK (text/logo) do not rasterize because it is possible that the text will have to be extracted and made as a different color (option expand is different than raster process). In that case, during prepress the text has to be extracted by hand, part has to be converted into vector and convert into another color and then trapping can take place. Color on color trapping used is minimum 0,1 mm (depend on the machine). Flexography sometimes does not allow printing a regular image with the text in CMYK format like in offset technique. Do not forget to add the font you used or alternatively convert the text in vector (function expand in Illustrator). Printed minimum text size varies on color (6, 5 or even 4 pt), while for inverted text up to 8 pt bold is recommended (e.g. gold, metallic also), and up to 6 or 5pt for white on black background film. If you are working with vectors you should use Illustrator or Corel and it is not recommended to leave the vectors in Photoshop. It is a good thing to add a JPEG or PDF preview file to see the original idea.

### **Shadow, minimum, maximum :**



In flexography process there can be a dot gain which can result with something like step (tonal jump effect). 1% on the monitor can go as far as 20% in print especially if solid (100 % color) is used with gradient in raster on the same printing plate. That is also the reason why the gradient is separated from same spot color. Tonal jump often occurs with CMYK images in sharp contrast usually on black and cyan color, and with certain techniques the tonal jump can be minimized (e.g., avoiding 0% CMYK colors, soften contrasts, etc.). In addition to problems with minimum, problems regarding filling up may occur e.g. 95% of color accurate better than 100%. That can be avoided by using softer contrast and avoiding using of color above 95% (if you are using highlights).

### **Number of colors:**

The maximum number of colors has to be respected. It is impossible to print with a 8 color machine a design if 14 spot Pantone colors are defined (example from praxis). Bear in mind that if you print on transparent film 1 color is used as a white background color, so just 7 colors left. Same goes for mat varnish or gloss/protection varnish. Solid and raster in the same color will be also separated in most case and they will be used as 2 colors. Solid text and solid illustration are usually also put as special color because of the very low ink level thickness of CMYK colors the text/illustration won't be so noticeable. Logo and vector text must be also defined as Pantone, HKS and not as a CMYK color. Anilox roller for CMYK raster has 3-4 times less ink transfer as a spot color anilox roller. So if you define a text in 100 % black in CMYK and use as a CMYK color the color will be dark grey and if we use same ink with 3-4 time more stronger anilox roller the text will be very very dark black. Also we can compare light used yellow in raster and strong reflecting yellow as spot color.

It has to be taken into account that the more ink and more color number used usually indicates greater production costs.

Several types of pigments can give the same color shade but with different characteristics. For example red Pantone 485 C can be made with mixture of yellow and magenta, or orange and magenta, warm red and yellow...etc. The color shade will be same but effects as bronzing with orange, low lightness with warm red can occur. Metallic inks (gold, silver...) have an aluminium or other pigments with metallic glow which can't be measured. Such colors can't be used like normal colors because they need bigger viscosity and low resolution big ink transfer anilox must be used.

### **Conclusion**

Flexography is determined by: preparation, block (hardness and linijatura), glue for block (hardness), anilox rollers (volume, linijatura), colors (viscosity, density) and printing machine itself (the central cylinder, pressure, automatic viscosity...) with other variables.

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