



**REQUIREMENTS AND RECOMMENDATIONS
FOR PREPARATION OF DIGITAL ORIGINALS**



Requirements

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REQUIREMENTS

A digital original is:

1. a ready-to-print composite PDF with CMYK or CMYK and spot colors according to job, complying with the PDF/X-1a:2001 (ISO 15930) requirements,
2. created using the approved settings (PDFX1a), and has preferably passed a preflight test,
3. with bleed of 3-5mm; the trimmed area of the publication is in the center of PDF page, with trim marks at least 3mm outside the format; the resolution and color separation of images are suitable for the intended print process; the name contains reference to product name and page numbers in particular file; and the file has been created in accordance with other generally accepted prepress rules.

A printout, which has been folded and stapled or otherwise fixated, similar to the intended final result (incl. covers, inserts, etc.), is required for visual checking of digital originals and impositions; in case of booklets and similar publications, the possibility of erroneous folding should be excluded. If the submission of a printout is impossible and the publication contains unnumbered pages, it is mandatory to submit a layout plan or dummy describing the content of pages in order to enable checking the sequence of pages.

Digital color proofs should be provided with a color bar (with solid, midtone and three-quarter tone patch for each color) and information on the ICC profile used.

RECOMMENDATIONS

Bleed

All objects outreaching the format of the publication should continue 3-5mm over the edge in order to prevent white areas from appearing due to shifting during folding, binding, trimming, etc. It is important to consider the need for bleed already when preparing design elements and cropping images, because otherwise something important could be cut. The requirement of bleed also applies for advertising outreaching the edge of the page and it should also be kept in mind that important elements on the page should not be located closer than 3-5mm to the edge. Even the smallest errors made in post-processing are clearly visible when lines parallel to edges are used.

Black and Overprint

In order to avoid visible effects of misregistration in case of black text, lines or smaller objects on a colored background, overprint should be specified to all black (100% K) objects. In case of black objects for which overprint is not recommended (e.g., large surfaces with an image or color underneath), black without overprint should be used:

- regular black (automatic overprint is applied): 100K
- rich black: 100K-50C or 100K-50C-40M
- black without overprint: 100K-1C-1M-1Y



Another common problem with overprint is accidental addition of overprint to white or colored objects, resulting in the disappearance of text or change of color. In order to avoid this problem it is recommended to remove overprint from all non-black objects during preflight.

If trapping or overprint of non-black objects has been used in the project or if there are other special requirements with regard to the application of overprint, you should inform repro about them in each particular case and agree on special workflow.

White text on black background

The designs often use rich black with other process colors added to black, because 100% K black may appear too light when printed on a large area. When a white text is printed on such background (or on a dark picture or colored background), even the slightest registration problem may render the text unreadable.

In case of serif, italic or thin fonts the accepted minimum size is 10pt, and in case of non-serif fonts it is 8pt. When using rich black, it should be composed of 100K50C or 100K50C40M – both options ensure almost maximum darkness (density) achievable in the printing process.

In case of a white text on a rich black background, the problems of registration could be also decreased by an outline of 0.1-0.15 mm located behind the text and using black without overprint (100K-1C-1M-1Y).

Transparency vs clipping

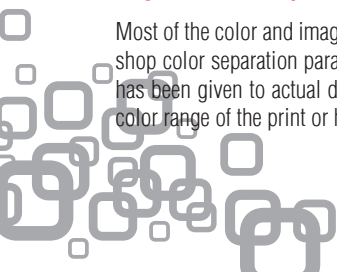
Even though the latest versions of imaging, graphics and layout software offer the option to leave a part of the image transparent, add drop shadows or use other similar special effects, these cannot be implemented in the PDF version 1.3, which is the basis for the PDF/X-1a standard; in case of newer PDF versions, the print results often depend on particular printer or RIP and, consequently, they are unpredictable. The attempts of the programs to implement transparency in printing through other methods result in large and potentially problematic PDFs.

Therefore, it would be reasonable to refrain from using transparency effects. If the design requires that the image should be clipped from the background, this should be done using the Photoshop clipping path, which is recognized in TIFF and EPS files by all common layout and graphics applications. Proceed as follows:

- Using the Pen tool in Photoshop, surround the required object with a line (it works like the respective tool in Illustrator).
- Save the new line in the Paths palette by choosing Clipping path from the additional menu of the palette and selecting the created line. Leave the Flatness box blank.
- Save the result as a TIFF (or EPS) file and use it in your layout.

Bright colors, sharp images

Most of the color and image problems in publications arise from poor image processing and/or Photoshop color separation parameters, which have not been adjusted for the printing process: no attention has been given to actual dot gain, paper type and Euroscale colors; the images only use a part of the color range of the print or have been processed with a significant color shift.



Before starting you should also check your monitor calibration (by selecting *Start ->> Control Panel ->> Adobe Gamma* or applicable calibration system) and ensure that correct ICC-profiles have been selected in Photoshop (see Color separation).

As the printed color range is significantly narrower than the colors in the nature even when using the best possible papers and print, the objective of image processing is to fully utilize available color space:

1. At first, the lightest and darkest points should be determined on each image; this could be done in Photoshop with the Levels tool, which displays the tone distribution using histogram.
2. Most images benefit from a slight increase of contrast; often the image needs to be made slightly lighter or darker; the tool for this job is Curves.
3. Bright colors result from two process colors; the addition of the third decreases the saturation of colors, e.g., salad green is composed of Yellow (up to 100%) and Cyan (about 60%), while the addition of Magenta results in fir-green; the best tool for removing redundant colors is Selective Color.
4. Digital sharpening is required even with high-quality original images, because the print screen tends to reduce the sharpness of the image; the respective tool in Photoshop is Unsharp Mask.

Color separation and profiles

Color separation can be defined as the transformation of the RGB color system used by a scanner, digital camera or other input device into a color system suitable for the printing equipment, usually CMYK for four-color printing. Color separation is often mistakenly understood as the creation of printing films or plates: in reality, the transformation of the image from RGB to CMYK, i.e., color separation, takes place during image processing in Adobe Photoshop or printout from the layout or graphics application. The software creating the color separation takes into account the known parameters of the printing process (Photoshop settings or ICC profile) and attempts to achieve a result that would be as similar to the original as possible on particular output device.

Consequently, it would be good to remember that color separation made for one system may not produce the same result when printed on another system, for example printing a separation made for coated paper on newsprint may cause significant technical problems. Suggested approach is to make most of image processing in RGB and as the last step separate the picture for each intended printing process using specific ICC-profile in Adobe Photoshop. Alternative option with newer layout software (Adobe InDesign CS) is to use RGB-images also in layout while ensuring, that RGB and CMYK profiles have been correctly specified and the output is composite PDF with CMYK or CMYK and spot colors.

But in addition to differences there are also a lot of similarities, making it possible to use common profile for a combination of printing process and paper type. Primary parameters for European sheet-fed and heatset web offset printing are listed in ISO standard 12647-2:2004, parameters for coldset printing in ISO 12647-3:2004. Based on these several organizations have produced test prints and ICC profiles that correspond to a "typical European printhouse". Latest set of profiles for sheet-fed and heatset printing can be downloaded from European Color Initiative web www.eci.org (ISOcoated, ISOuncoated, ISOwebcoated), for newspaper printing from Ifra web www.ifra.com (ISOnewspaper26v4). Suitable profiles for sheet-fed printing on coated (Euroscale Coated v2) and uncoated paper (Euroscale Uncoated v2) are also included with all Adobe products.

While using these typical profiles it must be understood, that following standards is not mandatory for printers and even following standards can result in visible differences in color. ICC-profiles of specific

printing press and paper type are needed to achieve better color match and can be usually downloaded from the web page of particular printhouse.

Digital proofs

In addition to requirement that digital color proofs should be provided with a color bar (with solid, midtone and three-quarter tone patch for each color) and information on the ICC profile used, it is important to consider the effects of ageing and metamerism. Printouts should be given 1-2h to stabilize and should thereafter be protected from light during storage and transportation. Digital proofs should be observed in natural daylight or under lighting with uniform spectral distribution and white temperature of ca 5000K (for example Philips TLD 950 and Osram 12-950 tubes).

Monitor adjustments

Soft-proofing on monitor takes more than just selecting ICC-profile in software according to printing process: you must pay attention to lighting (see Digital proofs, but also possibility to adjust brightness and using luminaires with double parabol reflectors), neutral gray interior, monitor hood and regular calibration. Monitor brightness and white point should be adjusted according to actual printing paper (ca 5000K with correct lighting) while Simulate Ink Black should be turned on in Adobe Photoshop and Indesign View->>Proof Setup menu.

Spot colors

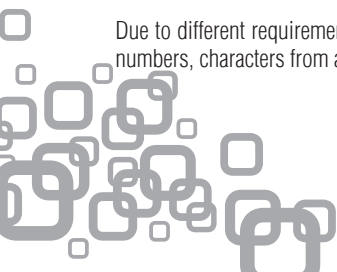
Usually the 'brand colors' have been defined with PANTONE® color codes, which refer to the formulas of the respective color ink mixtures. It is important to remember that one and the same ink mixture could produce significantly varying results when printed on different papers, for example, you could compare the samples of the color 123 on coated and uncoated papers using PANTONE® solid coated and solid uncoated color guides, respectively. In order to gain visually similar results, it would be wise to define brand colors for different paper types and different printing methods: e.g., if you want to match PANTONE® 123C (coated paper) when printing business cards or forms, you might want to choose PANTONE® 115U (uncoated paper). This aspect is often disregarded and as the printer mixes inks based on their code and checks the result by comparing it to the color guide for particular paper, the result may not look quite like it was intended.

It should also be kept in mind that many PANTONE® spot colors cannot be implemented in a four-color process and the equivalents found on the computer or color guide may not produce the desired result; in addition, the older color guides and software are based on printing inks used in the USA.

Naming of files

Depending on the nature and workflow of each particular job, a PDF could contain one or several pages. The file name should refer to the name of the job and page number/numbers; it would be recommendatory also to add the trim size. e.g., reallyfamousmagazine_007-015.pdf or bonkbusinessbooklet_297x210mm.pdf

Due to different requirements of different operating systems and FTP, the file names may contain only numbers, characters from a to z, underline character (), minus sign (-) and a dot (.).



Covers are pages as well

The best way to prepare covers is to make them the same way as the content pages of the publication, i.e., each cover on its own page and separate back – this makes it easier for the printing house to assemble the covers taking into account the thickness of the product.

An alternative method would be to prepare the cover design as a whole, i.e., back cover + spine + front cover side by side on one page, and inside front cover + spine + inside back cover on another page. This method should be used, for example, when the design/image of the front cover is continued on the spine. However the precise thickness of the back should be agreed in this case, because it is virtually impossible to change it in the printing house.

The names of the cover files should follow the general practice, i.e., front cover is no 1, inside front cover is 2, inside back cover is 3 and back cover is 4 (naturally, they could all be included in one file). The design of the spine should be in a separate file due to different format.

NB! The thickness of the spine is affected by the thickness of the paper, not its weight – make sure to find out the suitable thickness of the back for this particular paper type and number of pages.

Change of black plate

Publications printed in several languages often limit changing elements to black color so after the print run for one language only the black plate is changed on the printing press. This enables significant savings with regard to plates, printing press time, etc.

For such jobs originals must include one file with all color elements (design, images, etc.) and additional files with black text for each language.

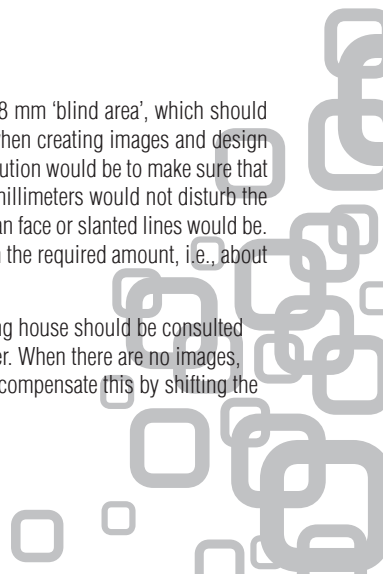
You should use layers in order to implement this in a design and layout application: the lowest layer contains images and language-independent design elements; above this layer is one layer for each language and these layers only contain black objects. During the work it would be helpful to lock the image layer; the language layers could be made visible as required.

When making a printout, the language layers are made invisible and the image layer visible, and the first file is printed, followed by an opposite procedure – the images are made invisible, one of the languages is made visible and a black file for this language is created, etc.

Consider the binding

In case of perfect binding, the gutter of the publication will contain 6-8 mm 'blind area', which should be taken into account during design (inside margins) and especially when creating images and design elements, which should run from one page to another. The simplest solution would be to make sure that the transition area contains only such objects on which cutting a few millimeters would not disturb the image: for example, grass or forest would not be a problem, while human face or slanted lines would be. An often used alternative would be to create for the image an overlap in the required amount, i.e., about 5 mm of the image on the left page will be repeated on the right page.

In case of booklets, the design should take into account and the printing house should be consulted on creep (or shifting of pages): innermost pages are a few mm narrower. When there are no images, which run from one page to another, the printing house will be able to compensate this by shifting the



pages in the center towards the inside; an alternative would be a design which takes into account the disappearance of a few mm from the outer edge of the page.

Die cutting, varnishing etc

The drawings required for die cutting, varnishing, embossing and other post-processing operations should be realized in the PDF on top of the design using a SPOT color with a respective name (e.g., Varnish, Emboss); all objects should have overprint. The thickness of the line should be ca 0.4 mm; the cutting knife should be indicated by a continuous line and the scoring by a dotted line. The boundingbox of the product should be indicated by trim marks.

If the die is made on a program-controlled device, it is mandatory to use a separate file containing only the die drawing and trim marks.

Fineprint

The printing house has the right to refuse from accepting materials which do not comply with the technical specifications. The printing house reserves the right to make necessary modifications in received files for the purposes of ensuring the print quality. The customer shall pay for the expenses incurred due to modification of the submitted materials, which do not comply with the technical specification, or due to the non-compliance of the materials with the technical specifications.

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