File specifications

kern GmbH

Color

- We generally use four-colour printing in the **CMYK colour space** (primary colours: cyan, magenta, yellow and black; called 4-colour or 4C for short).
- Print products that are printed only in **black in one-colour** printing may only use the colour black (called 1-colour or 1C for short).
- Printed products that are printed using **spot colours or special colours** may only contain the defined, product-specific number of colours (e.g. 5C for CMYK + special colour, or 2C for black + special colour).

Colour profile

When converting RGB image files (primary colours = red, green, blue) to CMYK, you may find some variance in colour, as the two colour spaces don't match exactly and there are some hues in the RGB colour space that you cannot reproduce using CMYK (e.g. bright turquoise or pink). Depending on the product, special HKS or Pantone spot colours can be used for luminant colours (see Spot and special colours for surface finishing).

A special colour profile *(output intent)* must be used, which depends on the substrate you wish to print on:

- Uncoated paper:
  PSO Uncoated ISO12647
- Coated paper:
  ISO Coated v2 300 %
- Large-format printing:
  ISO Coated v2

The ICC files including the respective colour profiles are available for downloading free of charge from **www.eci.org**.

- Maximum ink coverage: 300 %
- Minimum ink coverage: 10 %

The maximum ink coverage is the total of all the colour tones printed on top of each other (e.g. 80% cyan, 75% magenta, 95% yellow, and 50% black add up to 300% ink coverage).

If ink coverage is below 10%, colour banding may occur during printing. Ink coverage of more than 300% will cause problems during printing or print processing, depending on the printing procedure chosen.

Black ink

- Set up black texts in 100% black (0% cyan, 0% magenta, 0% yellow, 100% black).
- Ideally, set up tones of grey in pure black only, not mixed with cyan, magenta or yellow.
- For warm tones of grey, you can add 10% magenta, for cold tones of grey 10% cyan (only applicable in four-colour printing).

White ink

- Objects and texts in white ink must not have the setting overprinting or a blending mode such as multiply, as these will otherwise be lost during printing.
- If you wish to print objects in white in large-format printing, for instance on transparent, metallic or coloured substrates, white needs to be set up as a spot colour with the corresponding colour name. For white-ink print jobs, it is important to check the order of layers and the overprinting settings. Please see the product-specific data sheets for the relevant instructions.

Spot and special colours
for surface finishing

- When using special colours for printing, set up each colour as a **spot colour** (HKS or Pantone) and give it a clearly identifiable name.
- Select the predefined spot colours according to the substrate/the output intent (**HKS N** or **Pantone U** for uncoated paper, **HKS K** or **Pantone C** for all other substrates).
- Pure four-colour printing must not contain any special colours.
- In surface finishing (varnishing, embossing, perforation, die-cutting, etc.), set up the respective objects as spot colours with appropriate colour name designations. Data for surface finishing must be provided **in a separate PDF file**. Please see the product-specific data sheets for the relevant instructions.

Colour gradations

To achieve optimum printing results without discrete bands of colour, if possible don't set up the colour gradients directly in the layout program, but rather in an image editor, and insert them as images.

Image

Image resolution

- Optimum image resolution: 300 to 400 dpi
- Large-format prints (A2 or larger): minimum 100 to 150 dpi

If the resolution is too low, the print results may not be sharp or individual pixels may be clearly visible to the naked eye. As large-format prints tend to be viewed from a greater distance, any pixels that are visible close up are not an issue, and lower image resolution is therefore sufficient.

Image resolution

- JPG images: Choose **low image compression** or **high image quality**.
- TIF images: Choose **ZIP compression** for image compression.

If the image compression rate is too high, this may produce streaks or undesired blocks of colour on the printout, referred to as *JPG artifacts*.

Graphics and lines

- Positive lines (dark lines on a light background) should have a thickness of at least 0.25 points or 0.09 mm.
- Negative lines (light lines on a dark background) should have a thickness of at least 0.5 points or 0.18 mm.
- To achieve optimum printing of lines, ink coverage should be at least 90%.
- If you have objects with black areas, or black texts with very large and bold type faces on different coloured backgrounds, if possible blend in between 15% and 20% cyan or magenta to avoid the background colours showing through.

Transparency

In layout programs, avoid transparency wherever possible, for example

- Objects with opacity of less than 100%
- Objects with effect settings such as *shadow or glow*
- Objects with blending modes such as *multiply*
- Masked images in layout files

Use transparency settings and effects directly in the photo editor instead of the layout program. Reduce the image layer to the background layer to avoid undesired effects that may occur when **reducing transparency** later in creating the PDF file (PDF/X-3, PDF/X-1A), or choose the newer PDF/X4 standard as output (*see PDF standard*).

Texts

- The font size should be **at least 6 points** (height of upper case letters no smaller than 1.4 mm).
- Embed all fonts in PDF files or convert them to paths.
- For negative fonts (light-coloured texts on a dark background), generally avoid Light and Thin fonts that are too thin. It is advisable to always choose a bolder font than you would use for a comparable text on a light background

Spelling and punctuation

- Please check your texts for errors. Unless **proofreading/revision** is specifically requested, we will make no content changes to the data you provide for printing.

Pages

- The page format must be set up according to the relevant product specifications.
- Objects that are to be printed right to the edge of the page, such as backgrounds extending to the final trimmed format, must continue beyond the page border **(bleed)** so as to avoid unprinted white areas due to cutting tolerance.
- Unless specified otherwise in the product-specific data sheet, the standard bleed is 3 mm (for large-format prints 5 mm).
- Objects and texts that do not bleed should be positioned with a **safety margin** of at least 3 to 5 mm from the edge (or more for large-format prints).
- Multi-page documents should be set up as **individual pages** (not as a spread).

- The order of the pages in the PDF must indicate the order of pages in the printed product.
- In the case of complex page sequences and collages, please supply a **handmade sample** (dummy) showing the order of the pages.

Please see the product-specific data sheets for any exceptions, such as for sleeves for brochures or advertising materials that are glued or stitched.

File

- The standard printing file format is PDF

Other file formats such as JPG or TIF are possible depending on the product or by arrangement. Please see the product-specific data sheets for the relevant instructions.

PDF export settings

- PDF/X standard (see *PDF standard*)
- Embed all fonts or convert them to paths
- Colour space: CMYK
- Output intent (colour profile): according to substrate (see *Colour profile*)
- Image resolution: at least 300 dpi (see *Image resolution*)
- Bleed: 3 mm (5 mm for large-format prints)

- Printer marks: when exporting, there is an option to include *trim marks*
- Export PDF pages in a file as individual pages, **not** a spread
- PDF files must not be encrypted (no password to open, print or edit the file

Transparency should generally be reduced to the background layer. For products and layouts where it is not possible to reduce transparency, the PDF/X-4 format may be used by arrangement.

Open layout data can be processed only after prior consultation. In this case, only the open data from **Adobe InDesign** (INDD) or **Adobe Illustrator** (AI) will be processed.

Such open data must be submitted using the *Package* function together with the fonts used (except for Adobe Fonts) and any linked files. Otherwise the files cannot be processed and it is not possible to export a printable PDF file.

For more information on file specifications, please consult the product-specific data sheets.

PDF-Standard

PDF files must be exported in the PDF/X standard:

- PDF/X-4
  recommended for print data whose transparency cannot be reduced
- PDF/X-3
- PDF/X-1A
  recommended for large-format prints

Data check

We run a basic data check on the formal criteria of your print file, including items such as **PDF format, image resolution, colour space and colour profile, bleed,** and **embedded font**.

If anything deviates from the standard, we will get back to you and give you an opportunity to put the print data together yourself and resend it. **If requested**, we will make automatic corrections and conversions where technically possible to make your PDF file printable. This may lead to deviations from the desired print result due to technical reasons.

That is why you will receive a processed PDF file from us for you to review and **release for printing**. Please check the PDF file you receive from us. It will not be printed until we have received production approval from you in writing.

Data processing

If there are any problems that cannot be resolved by automatic correction or conversion, we can offer you our **fee-based premium data check** where this is technically feasible. The costs incurred are based on the time spent; you will be informed of the costs in advance. Besides adjusting the formatting, it is possible to correct individual colours and, to a limited extent, also to make changes to the content.

Certain factors cannot be corrected subsequently in the PDF file, in which case the data cannot be processed. The PDF file supplied is then not printable. **Knock-out criteria** include fonts not embedded or a file protected by password. In this case, you need to send us a PDF file for printing that meets the technical requirements.

PROOFS

Offset printing follows the standard practice set out in **ISO 12647** (PSO, Process Standard Offset). For digital print processes, such as inkjet or colour laser printing or digital large-format printing with UV or solvent ink, such standardisation is not possible at present due to the different technologies and substrates.

Proofs offer an additional visual reference to verify the colours in printing. **On request**, we will be happy to produce **proofs** for you **for a charge**. The costs incurred are based on the volume and format and will be laid out for you in a separate offer.

Proofs are printed on a calibrated printer on standard paper. The colours cannot be fully guaranteed, for example because different

kinds of paper can only be simulated and special colours (spot inks) are merely converted to a CMYK equivalent. In four-colour printing it is physically not possible to correctly reproduce certain spot inks. A proof cannot simulate spot colours such as metallic silver, gold or fluorescent inks.

If you wish, you may also provide your own colour proofs for proof-to-print matching. The proofs must contain a **UGRA/FOGRA media wedge** and match the end product's output intent.

SAMPLE PRODUCTION

We are happy to produce **unprinted white samples** or **printed mock-ups** – such as brochures, self-mailers or packaging samples – as individual items or in small print runs. If you would like to use this service, please get in touch with our contact persons and we will be happy to send you an offer based on your requirements.

kern GmbH