ARKA-DRUK

ISO 9001, GMP, FSC

TECHNICAL SPECIFICATION

Preparing materials for printing
and
Quality Standards applicable at
ARKA-DRUK printing house

	First and last name	Position / Function	Date	Signature
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I. DELIVERING MATERIALS TO THE PRINTING HOUSE

1. Digital materials should be delivered via FTP (File Transfer Protocol) (above 10 MB).
2. To do this, you need to set up FTP account, which we create individually for each customer.
3. After placing files on the server, the Customer should inform his/her Customer Service Representative on behalf of the printing house about this fact.
4. Smaller files up to 10 MB, the Customer can send via e-mail to the address of the Customer Service Representative on behalf of the printing house.
5. Materials should be provided in the following file formats:
    a. Closed files: PDF without separation (bitmap compression - zip).
    b. Open files: Illustrator CS6 or lower, InDesign CS6 or lower, EPS files, CorelDraw X3 or lower.
6. The date of delivery of materials for printing shall be considered the date of delivery of completed materials not requiring correction.

II. FILE NAMING

1. The name of a file can not include any Polish characters, spaces or special characters in file names e.g.: # * < > ? &. The only character permitted is the underbar "_"
2. Files delivered to the printing house should be named according to the following schemes:

name_xxx_str_v_wer.ext

Where:

- Name – item title (proper name)
- xxx – file type (packaging, leaflet, folder, catalogue)
- str – pages contained in the file (str_12_do_22)
- v – corrected version (v1, v2 ...)
- wer – file mutation (if a work has several language versions: PL, EN, DE)
- ext – file extension (pdf, ai, eps)

III. PREPARING MATERIALS FOR PRINTING

1. All graphic elements must be prepared in CMYK colour space without embedded additional profiles. We do not accept files in the RGB workspace.
2. Spot colours may be used and will not be converted to CMYK if the customer's order contains information about the spot colours included in the work. If the order does not contain information about the use of spot colours, the files will not be accepted for printing.
3. The resolution of the bitmaps included in the work should be:

Minimum	Maximum
300 dpi	350 dpi

4. Bitmaps embedded in PDF files should be flattened – no layers or compression.
5. The resolution of 1-bit images shall not exceed 2400 dpi.
6. Graphic elements must not include attached profiles (no tagged profiles).
7. Files shall not contain Copy-Dot elements unless agreed with the printing house.
8. The maximum ink coverage (TAC or TIL) should not exceed:
   a. 320% for coated papers complying with ISO 12647-2 standard
   b. 300% for coated papers not complying with ISO 12647-2 standard
   c. 280% for uncoated papers
9. Black uniform backgrounds should not be built up from black only, and the maximum total ink limit for such a uniform background should not be greater than 200 %. In order to obtain an intense black, we suggest using the following components: 40%C, 30%M, 30%Y, 100%K.
10. For multipage publications, subsequent pages should be prepared in the same way:
    a. All pages should have the same format.
    b. All pages should be centred in relation to the centre.
    c. All pages shall be numbered.
    d. All pages should be in a single file, including vacat pages.
    e. All order of pages must correspond to the order of page numbers in the finished work, so files should include vacat pages if they occur in the publication.
11. Graphic elements that are not bleeds should be placed not less than 2 mm from the cutting / creasing line, and 5 mm for catalogues.
12. The submitted files absolutely must have the fonts converted to curves. If fonts are left in the file, files of the fonts used in the project must be attached.
13. The minimum grade of a text printed in one colour is 6pt. The minimum grade of a text printed in more than 1 colour or printed in reverse is 8pt.
14. The smallest permissible line thickness is 0.25 points. Lines made in reverse or in more than one colour should not be less than 0.75 points thick.
15. Prepare the outline of the die-cut as a path, mark it with a Spot Colour, name it "die-cut" and activate the Overprint option.
16. If varnish is used in the work:

a. Hybrid: Cover the part that is to be varnished with hybrid varnish and cut out the areas where it is not there. Mark it with a Spot Colour, give it the name "hybrid" and activate the Overprint option.
b. Gloss/Matt: Cover the part that is to be varnished and cut out the areas where it is not there. Mark it with a Spot Colour, name it "varnish" and activate the Overprint option.
c. Spot: Cover the part that is to be varnished. Mark it with a Spot Colour, name it "spot varnish" and activate the Overprint option.

17. The location where the varnish should be selected (e.g. for the date / series) must be indicated in the project.
18. If Hot Stamping is used in the work, use the appropriate parameters given in the table below:

	Line	Reverse printing
Inscriptions	≥ 0,25 mm	≥ 0,4 mm
Uniform backgrounds	≥0,3 mm	≥0,5 mm
Inscriptions with Hot Stamping	≥ 0,6 mm	≥0,8 mm
Uniform backgrounds with Hot Stamping	≥ 0,7 mm	≥0,9 mm

19. Hot Stamping should be prepared as a fill, marked with a Spot Colour, named "HS" and activate the Overprint option. Also remember to assign the foil colour that was used in the graphic project.
20. If both Hot Stamping and hybrid varnish are used in a project, the varnishes must be offset from the HS elements.

	Gloss varnish	Hybrid varnish
Offset	0.5 mm	0.7 mm

21. If there is an embossed area in the work, prepare it as a fill, mark it with a Spot Colour, name it "embossing" and enable the Overprint option. Smallest acceptable embossing thickness: 0.5 mm for lines. Minimum thickness of embossing in reverse is 0.7 mm.
22. Each time the materials sent to the printing house are checked for correctness, but the printing house does not guarantee that all errors and inconsistencies with the above specification will be noticed. If files are incorrectly prepared, the order will be withheld until they are corrected.

IV. COLOUR SAMPLES

1. A contract proof, as a binding colour pattern, will be carried out by ARKA-DRUK printing house in accordance with the ISO 12647-7:2007 standard and adapted to the printing house's colour profile.
2. The visual assessment of convergence of proofs with the print due to the metamerism phenomenon should be carried out in lighting conditions compliant with the ISO 3664:2000 standard, in particular:
   a. Illumination with a spectral distribution similar to D50 iluminant (5000 oK)
   b. CRI (Colour Rendering Index) should not be less than 95.
   c. The illuminance of the surfaces to be compared should be approximately 2000 lx.
3. Proofs can give a slightly misleading impression because of the raster dot gain on the printing machine, the type of paper used, the screen ruling, etc. This concerns in particular the situation when the proof is made on a different medium than the final copy. The colours and image will be perceived in a completely different way to the actual end result.
4. Pattern based on previous edition - if a sheet from previous edition is to be a colour pattern, it must be made in ARKA-DRUK printing house.
5. If the customer accepts the colours directly at the machine, he is obliged to sign the sheet which becomes the template for printing. The tolerance of the printing parameters in relation to the sheet accepted by the customer is given in the table below:

Physical quantity	Acceptable	Non-acceptable
Optical density	≦± 0,2 mm	>± 0,2 mm
Dot gain	≦± 5,0 %	>± 5,0 %

6. The permissible CIELAB ΔE variations in printing according to Lab parameters for individual colours are shown in the table below:

Proof / colours		C	M	Y	K
Proof vs final copy		5,00	8,00	6,00	4,00
Between the final copies		2,50	4,00	3,00	2,00

7. The Spot Colours are checked for correctness by comparing the prints visually with the corresponding colour in the Pantone colour chart. Since every person perceives colours differently, in order to avoid disputes the additional colours are each time measured with a spectrodensitometer and compared with the digital Pantone library.
8. The permissible CIELAB ΔE variation in printing according to Lab parameters for Spot Colours is shown in the table below:

Acceptable	Non-acceptable
≤3	>3

9. Prints refined with UV varnishes, offset varnish or foiled may change their colour and therefore cannot be considered as a reference material with proofs.
10. ARKA-DRUK printing house will make every effort to ensure that orders are carried out in accordance with technical specifications and are error-free.

V. PRINTING PROCESS

1. The basic standard specifying technical parameters in the offset printing process is ISO 12647-7:2007. Due to the fact that the provisions of the standard are not restrictive and leave considerable tolerances, which in the case of unfavourable application, despite their fulfilment, do not guarantee high quality printing, ARKA-DRUK printing house has developed its own standards of printing process, reducing the tolerances of ISO 12647-7:2007 in the most significant aspects.
2. All printing is done to a contract proof made by ARKA-DRUK. The printing house is not responsible for printouts to other templates.
3. Due to the characteristics of offset printing, the printing house reserves the tolerance between contract proof and final copies as in chapter V, item 6.
4. Each colour is printed from a different printing cylinder - some displacements between such cylinders in the machine are therefore possible. In addition, there is pressure under which a paper passes between the intermediate cylinder and the impression cylinder. This force "irons" the paper, which also has an effect on the change in its dimensions. The more colours there are on a piece of work, the greater the problem with fitting will be. The permissible variations of the fitting of colours printed successively, measured at the centre of the sheet at a raster line count of 175 lpi, are:

Acceptable	Non-acceptable
<=0,2 mm	>0,2 mm

5. The following variations in varnish fitting are permitted according to the table below:

Type of varnish	Acceptable	Non-acceptable
Offset varnish	≤0,3 mm	>0,3 mm
Flexo varnish	≤0,75 mm	>0,75 mm
Varnish for screen printing	≤1 mm	>1 mm

6. Permissible printing and varnishing defects may occur in accordance with the tolerances of the table below. Defects may be caused by: damage to the rubber printing blanket, damage to the printing form, poor cardboard quality, etc. Print defects are considered incorrect if it is not possible to read the content or illustrations correctly.

Coating type	Acceptable	Non-acceptable
Varnish	≤1 mm^2 diameter/part	>1 mm^2 diameter/part
Print	≤1 mm^2 diameter/part	>1 mm^2 diameter/part

VI. BOOKBINDING PROCCESSES

1. The following tables provide information on tolerances in various aspects of bookbinding processes. These tolerances are influenced by the number of processes carried out on a product, the number of parts per printing sheet and its size, etc.
2. Acceptable cutting tolerances up to the net format in relation to the nominal position line in both vertical and horizontal axis:

Feature	Acceptable	Non-acceptable
Format	≤1mm	>1mm
Rectangularity	≤1mm over a distance of 100mm	>1mm over a distance of 100mm

3. The permissible tolerances for variation of a cutting line, perforation, crease, position from the nominal line of location in both vertical and horizontal axis are:

Type of substrate	Acceptable	Non-acceptable
Solid cardboard	≤1mm	>1mm
Solid cardboard + single-sided lamination	≤1.5mm	>1.5mm
Solid cardboard + bilateral lamination	≤1.75mm	>1.75mm

4. In a die-cutting process it is necessary to make so-called locks, which enable the correct guidance of sheet after making cuts with die-cutter. The thicker the substrate and the greater the number of parts on a given sheet, the greater the number and width of locks.
5. Permissible variations for hot stamping are specified in the table below.

Feature	Acceptable	Non-acceptable
No foil on the image	≤5%	>5%
Image fitting from nominal line of vertical and horizontal alignment	≤1mm	>1mm

6. The permissible variation of position of an embossed image from a nominal line of location in both vertical and horizontal axis is shown in the table below:

Acceptable	Non-acceptable
<=1mm	>1mm

7. The permissible variation of the dimension of a single die-cut part from a nominal dimension in accordance with the project is shown in the table below:

Dimension	Acceptable	Non-acceptable
Width	≤+/- 0,5 mm	>+/-0,5 mm
Height	≤+/- 0,5 mm	>+/-0,5 mm

8. The permissible variation of dimension of a single die-cut and glued part from a nominal dimension in accordance with the design is shown in the table below:

Dimension	Acceptable	Non-acceptable
Width	≤+/- 1 mm	>+/-1 mm
Height	≤+/- 0,5 mm	>+/-0,5 mm

9. The permissible variation for solid shape during the gluing process is shown in the table below.

Type of gluing	Acceptable	Non-acceptable
1 point	≤1 mm	>1 mm
2 i 3 points	≤1,5 mm	>1,5 mm
4 points and more	≤2 mm	>2 mm

10. The permissible variation for peel-off of an adhesive bond with a wire side is shown in the table below:

Acceptable	Non-acceptable
≥80%	<80%

11. The permissible variation of the fracture from the nominal line of location during the folding process is shown in the table below:

Acceptable	Non-acceptable
≤1.5mm	>1.5mm

12. Creasing – is a bookbinding process, which makes it easier to bend the material in a certain direction. This effect is achieved by creasing (weakening) a material in a place where we want it to fold in a comfortable and easy way, and this spot is called a crease. Bending a material in a direction opposite to the crease may cause cracks in a coating. ARKA-DRUK printing house is not responsible for incorrect use of products.
13. During the folding and gluing process, abrasion and scratching at the area of the glue flap that closes the package is permissible. This is due to the specifications of gluing and folding process and construction of machines. It is advisable to prepare projects with a selection in a certain place.

VII. CRITERIA FOR ACCEPTANCE OF DELIVERY

1. Delivery shall be deemed to be in conformity with an order if the quantity of products specified by the table below possesses quality parameters within the tolerances permitted by this specification:

Print run	Acceptable number of deviations from the standard
≤ 10.000 pieces	4%
10.001 – 100.0000 pieces	3%
> 100.000 pieces	2%

2. In the event of a shortage in the print run or the detection of defective copies by the Customer in quantities not exceeding those set out in the table, the complaint will not be taken into consideration. The quantity free from defects shall be invoiced.
3. The printing house reserves the possibility of differences of +/-5 copies in packages.
4. In the case of quality acceptance, inspection of finished product is carried out in accordance with the Polish Standard PN-ISO 2859-1: 2003 "Sampling procedures for inspection by attributes. Part 1: Sampling procedures indexed by acceptance quality limit (AQL) for lot-by-lot inspection".

VIII. RECOMMENDED STORAGE CONDITIONS

1. The products should be stored in delivered packages under the following conditions:
   a. in dry and well-ventilated storage rooms with relative air humidity 45-65% and temperature 18-25ºC, optimum temperature 22 ºC,
   b. in places protected from direct sunlight,
   c. on storage stands or shelves away from heating devices and at a distance of not less than 20 cm from a wall, protected from direct contact with moisture.
2. After moving to production rooms with different humidity and air temperature (it is recommended to avoid large differences in these parameters in relation to storage conditions), the packages should be conditioned for about 24 hours.

IX. FINAL PROVISIONS

1. The above standards were developed on the basis of ISO standards binding in Poland and EU and on the basis of technological conditions of ARKA-DRUK printing house. In addition,

physical phenomena affecting raw materials in printing processes (shrinkage, stretching, elasticity) were taken into account.

2. Files not prepared in accordance with the Technical Specification may cause problems in subsequent production processes and may:
   a. considerably reduce the quality of the final product,
   b. delay the process of order realization.

   The printing house is not responsible for any mistakes resulting from materials delivered by the Customer that are not in accordance with the Technical Specification.
3. ARKA-DRUK printing house is not responsible for delays in delivery of products resulting from unpredictable fortuitous events and actions of third parties.
4. ARKA-DRUK printing house grants a 12-month guarantee period for products delivered.
   All reported non-conformities will be considered under the condition that they meet the requirements of point IX.