PRINTING GUIDE

SOLVENT PRINTING | SUBLIMATION PRINTING

RESIN PRINTING | UV PRINTING | DTF PRINTING

MITKO

for events

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DEFINITIONS

COATED FABRIC – a type of fabric subjected to a change in properties by coating its surface with another material. Coating fabrics with, for example, plastic materials, results in water resistance or fire resistance.
DSP (digital surface printing) – the acronym describes the techniques of digital surface printing.

DTF PRINTING (Direct to Film) – a digital printing method where an image is printed onto a special film. Then, the print from the film is transferred onto fabric using a heat press.

FONT (typeface) – a distinctive image of a set of typeface characters with uniform basic graphic features: style, rhythm, proportion, arrangement or shape of serifs, optical properties (legibility), etc. It can have many variations, sometimes even significantly different from the basic typeface, but still consistently retaining the basic graphic principles of the typeface family.

FULL COLOR – the conventional name for multicolor printing using four primary colors - CMYK. Sometimes modern printers use a few additional transition colors to „enrich" the tonal transitions between them.

KNITTED FABRIC – is a textile that results from knitting, the process of inter-looping of yarns or inter-meshing of loops. Unlike woven fabric, it is created from a single thread on crochet machines or from one, or multiple warps on warp-knitting machines.

PANTONE – the international color system used in graphic design and printing. It contains about 2,000 primary colors and some additional ones (pastel, metallic, neon etc.).

PES – polyethersulfone fibers, i.e. popular polyester woven and knitted fabrics.

PVC – polyvinyl chloride - a plastic material with a very wide range of applications. In our industry, it is used to coat fabrics granting them suitable properties, such as water resistance.

SOLVENT PRINTING – the defining characteristic of this printing method is the use of solvents, which have a major impact on the strength of the resulting print. Depending on the concentration of the solvent, we distinguish three types of solvent printing: hard solvent, mild solvent, ecosolvent.

SUBLIMATION PRINTING – a printing technique using the phenomenon of sublimation. The print, made on paper, is transferred under high temperature to a polyester fabric.

UV PRINTING – a type of digital surface printing, cured by UV rays on the surface of the advertising medium.

INTRODUCTION

Printed advertising equipment for events is a functional medium that effectively attracts attention while representing a professional brand image. In the process of ordering the product, after consulting with a sales consultant, the customer decides whether to choose sublimation printing, digital surface printing (DSP), or in some cases screen printing.

MITKO offers as many as 5 printing techniques: screen printing, solvent printing, sublimation printing, resin printing and UV printing.

What characterizes these techniques and which one to choose?

All the printing techniques we use are characterized by high resistance to mechanical damage and UV radiation. UV printing and resin printing bear the highest resistance to sunlight. Fading tests showed that after 90 days of uninterrupted exposure to sunlight, the sublimation-printed fabric changed its color, and this change was noticeable to the naked eye. In contrast, the fabric printed by the resin printing technique retained its initial color after the same period of time - the difference was small and within the range acceptable for the digital printing process. Tested fabrics were printed in a deep black color. The fabric that is printed with the UV printing technique fades the slowest, retaining its color for a long time.

When choosing a specific printing technique, be mindful of the intended purpose of the ordered product - e.g., when exposed to the sun for a long time, it is worth opting for the technique with the highest UV resistance. Other factors influencing the choice of a specific printing technique are price, the surface on which the graphics are to be printed (fabric or PVC), or personal preference (environmental aspects).

Another factor to consider when choosing a printing technique is color saturation - the same graphic will look different depending on the printing technique and the type of surface used. The best color rendering is provided by UV printing and resin printing (rating 5 on a 5–point scale).

Slightly weaker in quality in this regard are sublimation and solvent printing (rating 4/5). Screen printing, on the other hand, is characterized by the least faithful rendering of colors (rating 3/5).

To get a better understanding of the importance of the surface on which the graphic is printed, it is enough to compare prints on polyester fabric and knitted flag fabric. Both textiles printed using the sublimation technique will render the same print differently due to their unique grammage and weave. Colors found on graphics printed on polyester, for example to produce pop-up roofs, are very vivid and the edges of the print are sharp. On knitted flag fabric, the colors of the print are somewhat dimmed and the edges of the graphic are less sharp. This is because the polyester knitted fabric used for flags needs to be lightweight in order to flutter freely in the wind. So, the thickness of this particular printing surface is less than that of polyester used for printing umbrellas, tents or deck chairs.

In addition to the printing surface, the used technique is also of great significance. Polyester fabric printed by the sublimation technique has intense colors. The texture is gently emphasized by the inks embedded directly into the fabric. To achieve the effect of the smoothest graphics, it is worth considering resin printing. However, it should be remembered that the same printing technique used on a different surface gives a different effect, for example, resin printing on eco-leather clearly emphasizes its texture, and the colors are more saturated than in the case of graphics printed with the same method on polyester.

There is no worry that abstract graphics or backgrounds printed with any technique or on any surface will be smudged or blurred. We use the best materials and printing tools. As a result, even abstract shapes without clearly defined edges look very good after printing.

The situation is slightly different in the case of text graphics. It is worth adjusting the typeface and its size to the printing surface and printing technique already at the stage of designing.

Graphics containing text made by UV printing or resin printing applied to eco leather are clear, even when using 10 pt text. This is true both for sans serif font (Arial) and serif font (Times New Roman).

In contrast, the same text printed by sublimation on polyester fabric may not be as clear. If it is necessary to place the text in 10 pt size, we recommend choosing sans-serif fonts such as Arial, which provides much better legibility of printed lettering. If the size of the text is not so significant and printing is done by sublimation, it is better to opt for a larger typeface, at least 14-18 pt.

As can be read, choosing the right printing technique in relation to the design, as well as the surface on which the graphic is to be placed, is very important. There is no better or worse printing technique. Screen printing, solvent printing, sublimation printing, resin printing or UV printing - each of these methods offer different possibilities that we can use in our production of advertising media.

PRINTING TECHNIQUES IN MITKO

	1. Number of colors	2. Color space	3. Color rendering (1–5)	4. Printed area	5. UV durability (1–8)	6. Printing surface	7. Resistance to mechanical damage	8. Eco-friendliness (1–5)	9. Certificates (inks, paints)	10. Smell
		COLOURS						ECO		
SUBLIMATION PRINTING	∞	CMYK	★★★★★	160 × ∞ cm	5–6 ★★★★★★★★	PES	★★★★★	★★★★★	Oeko tex reach (Eco passport)	★★★
DTF PRINTING	∞	CMYK	★★★★★	58 × ∞ cm	7–8 ★★★★★★★★	PES & PVC	★★★★★	★★★★★	Oeko tex reach (Eco passport)	★★★

DIGITAL SURFACE PRINTING (DSP)

	1. Number of colors	2. Color space	3. Color rendering (1–5)	4. Printed area	5. UV durability (1–8)	6. Printing surface	7. Resistance to mechanical damage	8. Eco-friendliness (1–5)	9. Certificates (inks, paints)	10. Smell
SOLVENT PRINTING WITH LAMINATION	∞	CMYK	★★★★★	160 × ∞ cm	6– 7 ★★★★★★★★	PVC	★★★★★	★★★★★	Greenguar d Gold	★★★
RESIN PRINTING	∞	CMYK + LC, LM + OP (up to 6 ink colors plus optimizer)	★★★★★	160 × ∞ cm	7–8 ★★★★★★★★	PES & PVC, Eco–leather	★★★★★	★★★★★	ECOLOGO, Greenguard Gold, HAPSFree , Nordic Swan	★★★
UV PRINTING	∞	CMYK	★★★★★	160 × ∞ cm	7–8 ★★★★★★★★	PES & PVC, Eco–leather	★★★★★	★★★★★	Greenguard Gold, Indoor AgBB, CE EN15102, ASTM F793 typ II, M1, B-s1d0	★★★

SUBLIMATION PRINTING

MITKO's most popular printing technique, where the ink directly penetrates the structure of the fabric. This fact makes sublimation printing the most resistant to mechanical damage. The transfer paper is printed with ink based on ecological water solvents, and then the graphics are transferred to the fabric using a special calender. This method allows printing on polyester fabrics of any length, using any number of colors, and guarantees excellent color saturation and sharp contours. The color saturation is not as durable as in the case of resin printing, but it meets the expectations of customers who do not expose their advertising media to long-lasting UV radiation. In addition, sublimation is a cheaper printing technique than resin printing - cost-effective even for a smaller number of repeated copies. It does not require any additional preparations, which are necessary, for example, in the case of screen printing.

Types of surfaces printed using sublimation printing: PES.

MITKO products printed using sublimation printing: pop-up tents, Jehlan tents, Dome tents, cubes, Poncho banners, advertising wedges, umbrellas, bean bags, seats, flags, advertising barriers, sails, deck chairs, folding chairs, zipperwalls, tablecloths, stands, pyramids..

DTF PRINTING

DTF (Direct to Film) printing technology is an innovative method for printing on materials, including PES and PVC. What makes it so unique?

DTF allows for precise color reproduction, which is crucial for graphics, logos, and photographs. With this technology, we can achieve vibrant and vivid colours on various materials. Additionally, DTF printing is resistant to UV radiation, which means that the prints maintain their quality even in harsh weather conditions.

The DTF printing process uses a DTG printer (Direct to Garment) that precisely applies ink to the film. The printed DTF film is then sprinkled with a special thermosetting adhesive. After drying, the print is ready to be applied to the chosen surface. The length of the printed fabric is unlimited, but the maximum print width is 58 cm.

The types of material we print on using DTF technology: PES, PVC.

MITKO products that can be printed using DTF technology include pop-up tents, Jehlan tents, Dome tents.

DIGITAL SURFACE PRINTING

In the area of digital surface printing (DSP) MITKO offers three techniques:

– solvent printing with lamination,

– resin printing with lamination,

– UV printing.

ECOSOLVENT PRINTING WITH LAMINATION

Designated for printing surfaces (fabrics, banners) coated with PVC of any length, using an unlimited number of colors. After digital printing, the PVC is coated with a special laminate, which increases the resistance of graphics to UV rays and protects the surface from mechanical damage. Due to the fact that the solvent is resistant to external factors, this technique is most often used for printing posters and billboards. Solvent printing produces a characteristic smell - this is the only technique we offer that is not odorless.

Types of surface printed using solvent printing: PVC

MITKO products printed using solvent printing: pop-up tents, Jehlan tents, advertising wedges, umbrellas, advertising barriers, pyramids.

RESIN PRINTING

It is characterised by the highest UV resistance, the best color rendering and the highest degree of eco-friendliness (due to the use of eco-friendly resin inks). It is suitable for printing on a wide range of polyester fabrics and PVC-coated fabrics. Resin printing allows the use of an unlimited number of colors on a surface of any length, combining the durability of printing, its precision and perfect color rendering. Resin printing significantly extends the service life of printed products made with this method.

Types of surface printed using resin printing: PES, PVC, eco leather.

MITKO products printed using resin printing: cubes and bean bags.

UV PRINTING

UV printing is one of the methods of digital surface printing (DSP). Prints made using this method have the highest UV resistance. This technique is the most expensive among the printing methods we offer, but at the same time the most durable - the print does not fade even during prolonged exposure to sunlight. UV printer allows matte or glossy print to be made, or even a combination of both on selected elements. In both versions the colors are perfectly rendered.

The surface printed by UV printing is not laminated.

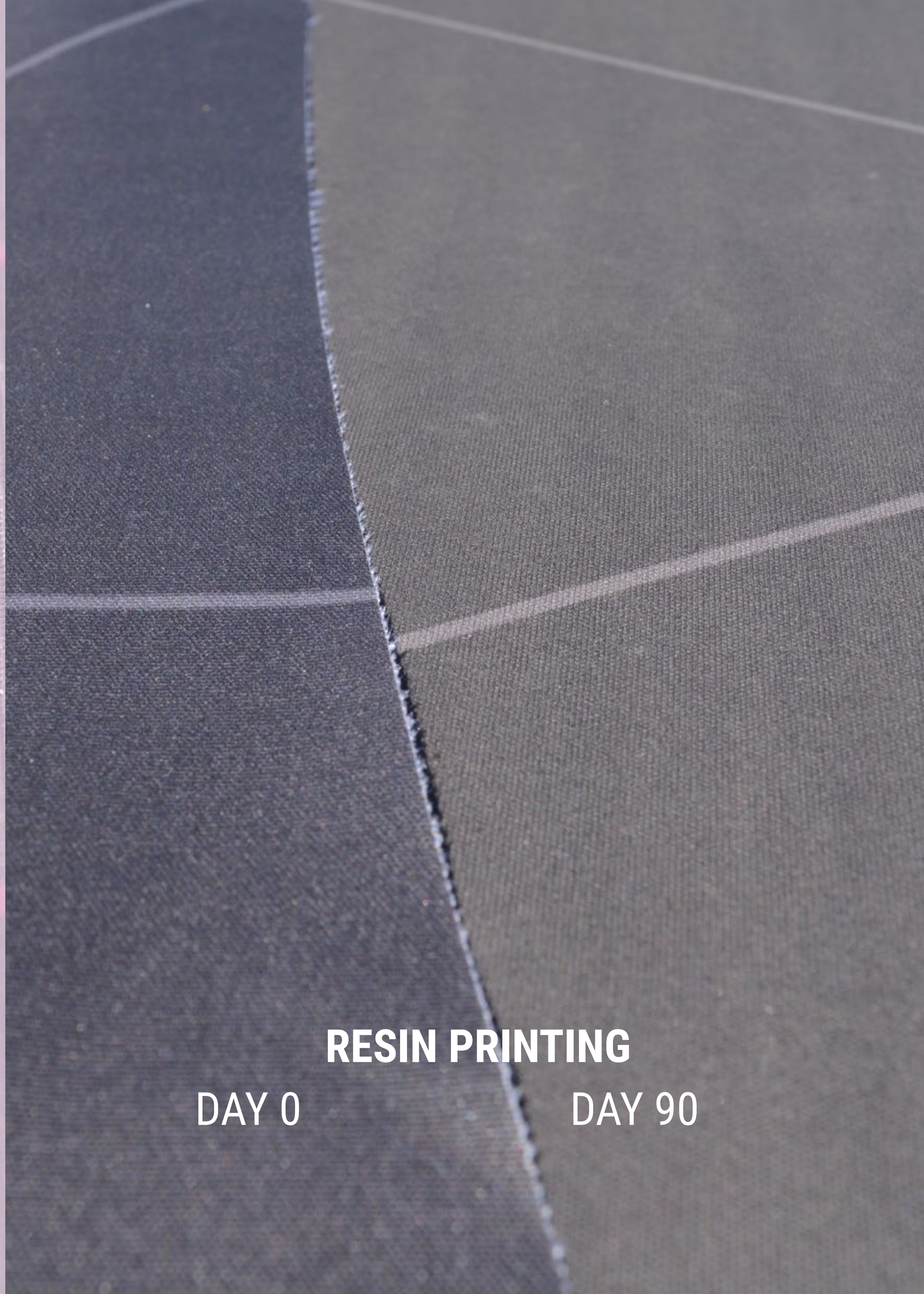
Types of surface printed using UV printing: PES, PVC, eco leather.

MITKO products printed using UV printing: pop-up tents, Jehlan tents, cubes, Poncho banners, advertising wedges, umbrellas, bean bags,roll-ups, advertising barriers, pyramids.

RESISTANCE TO UV RAYS

The graphic shows the results of the solvent and resin print fade test. Photos were taken at the beginning of the test and after 90 days of sun exposure.


SUBLIMATION PRINTING
DAY 0
DAY 90


RESIN PRINTING
DAY 0
DAY 90

COLOR SATURATION

The graphic shows a comparison in color saturation between the knitted flag fabric and the „tent" polyester.


Knitted flag fabric
Polyester fabric

PHOTO RESOLUTION

The graphic shows samples of photo printing. You can see the legibility of details depending on the resolution of the photo used.

As the resolution of the image decreases, the amount of visible detail deteriorates.

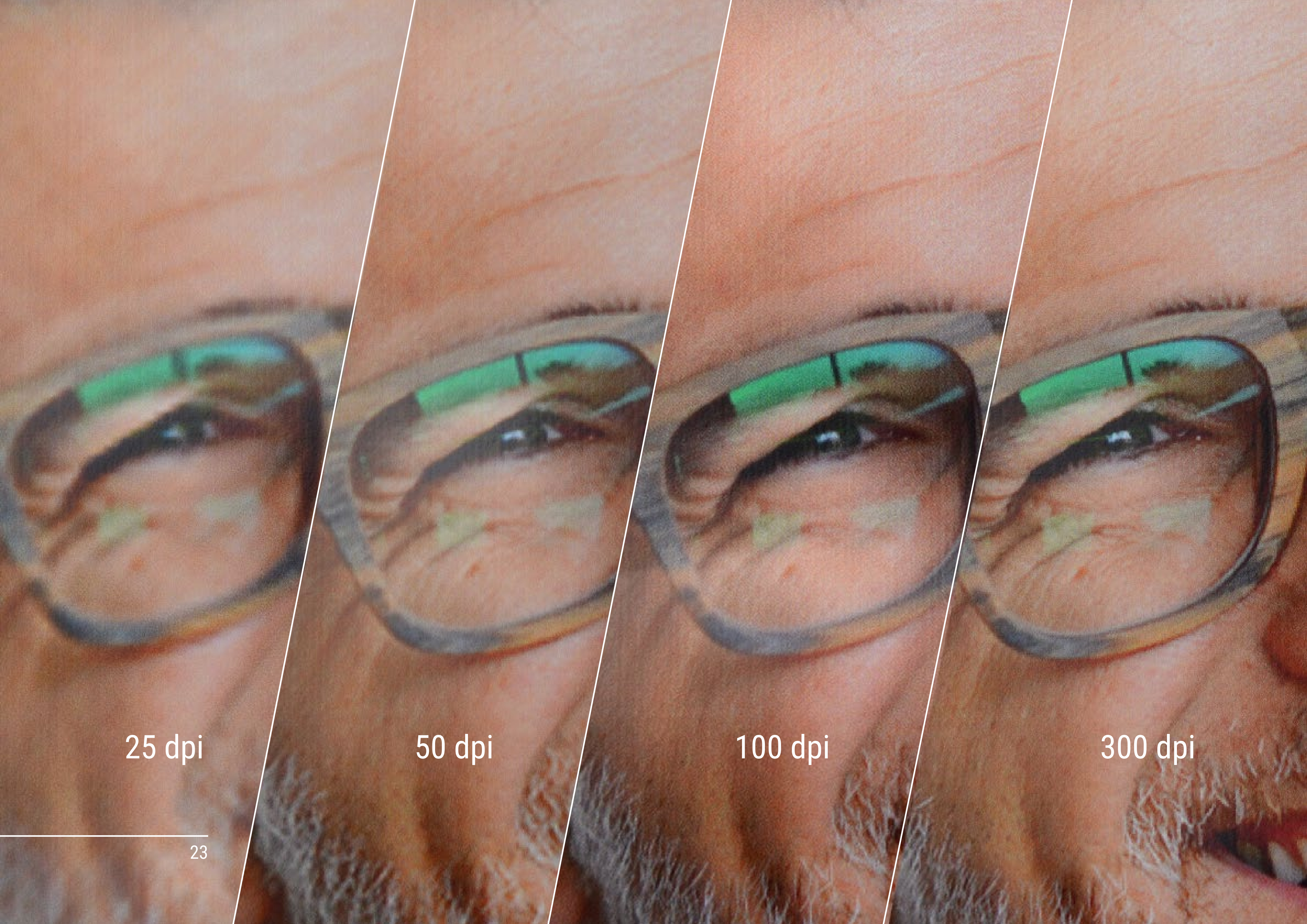
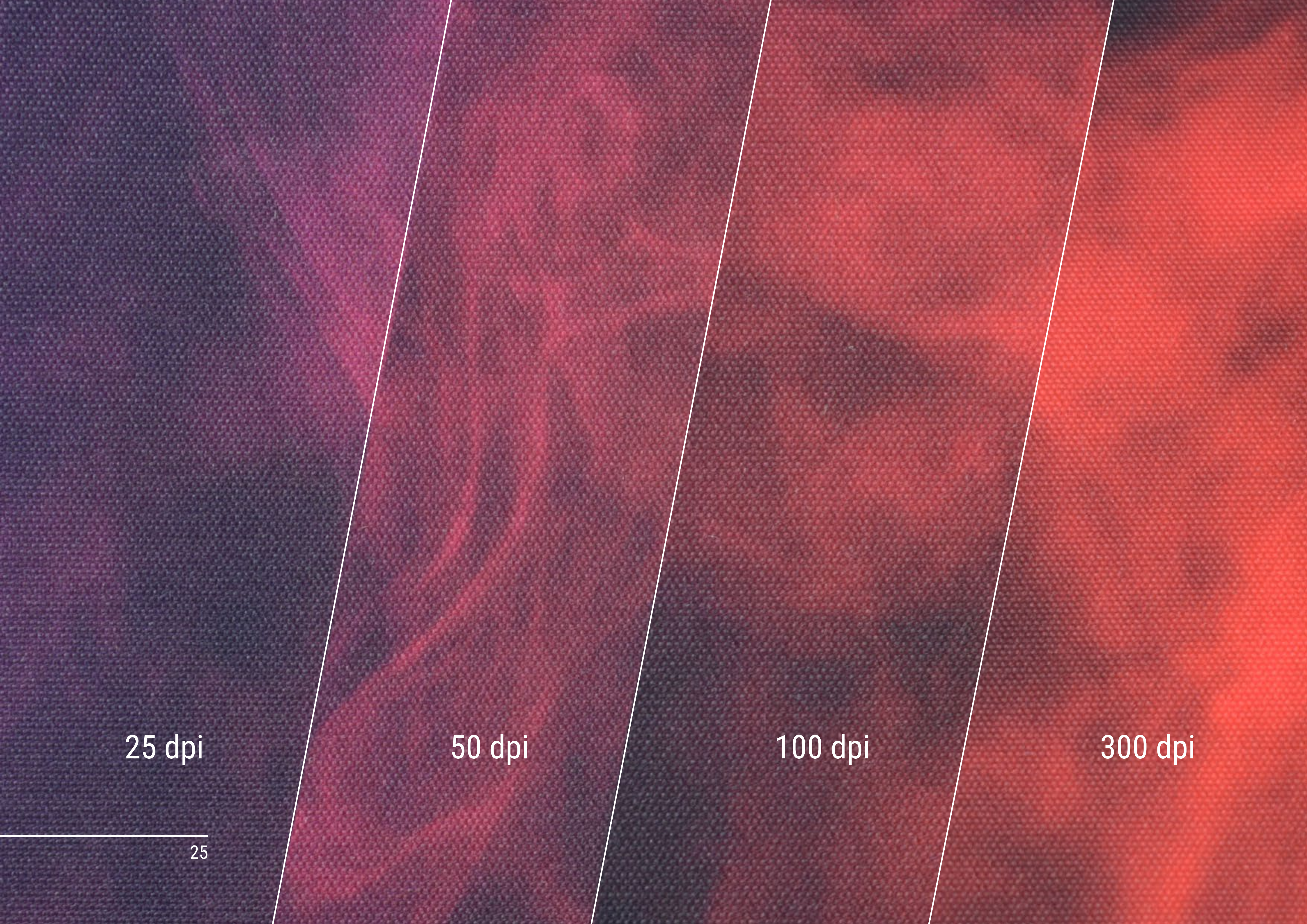

25 dpi
50 dpi
100 dpi
300 dpi

PHOTO RESOLUTION – BACKGROUND

The samples show background printing to demonstrate the preservation of detail depending on the resolution of the photo used.

Despite the decreasing resolution of the image, the deterioration of the graphic quality usually remains unnoticeable.

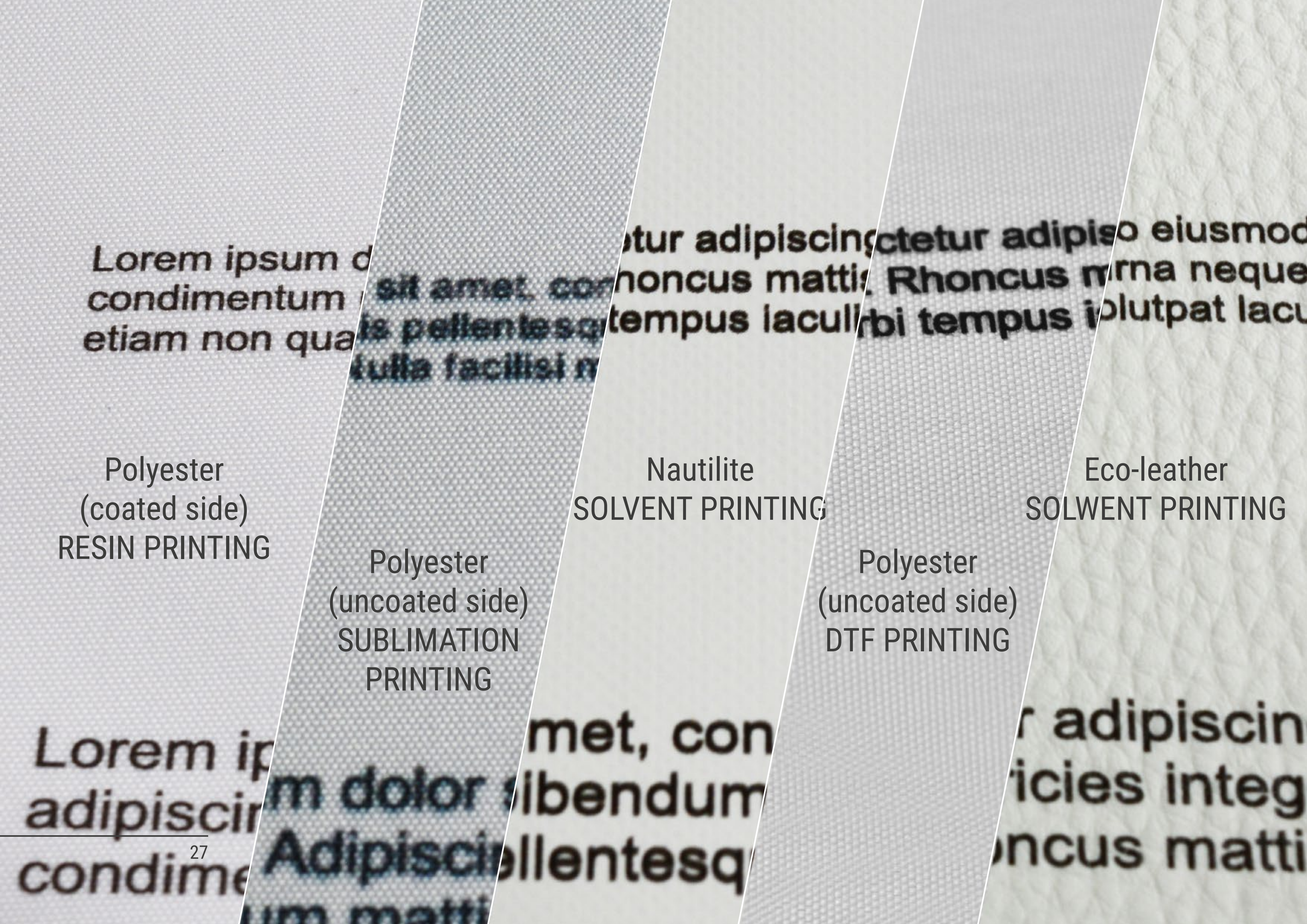

25 dpi
50 dpi
100 dpi
300 dpi

TEXT LEGIBILITY

The samples show the printing of fine text on various materials.

Typeface used: Arial,
Type grade: 10 pt and 12 pt.

As the degree of typeface decreases, the legibility of the text deteriorates. The legibility of the text will vary depending on the surface and the printing techniques used.



Polyester
(coated side)
RESIN PRINTING

Polyester
(uncoated side)
SUBLIMATION
PRINTING

Nautilite
SOLVENT PRINTING

Polyester
(uncoated side)
DTF PRINTING

Eco-leather
SOLWENT PRINTING

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