HP PageWide XL Pro Printer Series – Substrates training Kit

An explanation of how the substrate's characteristics influence the image quality of the printouts.

The HP PageWide XL Pro Printers Series are uniquely positioned to print different types of applications at high speeds, such as retail point-of-sale (POS) posters, short-term outdoor material, and communication boards.

While capabilities increase with HP PageWide XL Pro technology, it's important to understand what applications are ideally suited for this technology and how the best results from your device can be achieved. The objective of this document is to **provide guidance about the factors that determine image quality performance** when using HP PageWide XL Pro printers for short-term poster applications, and the substrate compatibility with this technology.

Substrate compatibility - Liners

There are many types of liners in the market and understanding their performance with HP PageWide XL Pro technology is key to identifying the compatible substrates. These types of liner can be classified as:

Uncoated | Inkjet treated uncoated | Inkjet coated | Offset coated ⚠

The interaction of the ink with the liner determines the drying capacity of the ink, the color saturation and the image quality attributes.

Uncoated liners are very porous surfaces that absorb the ink very fast leaving only a small amount of ink on the surface of the substrate, resulting in a low saturated print.

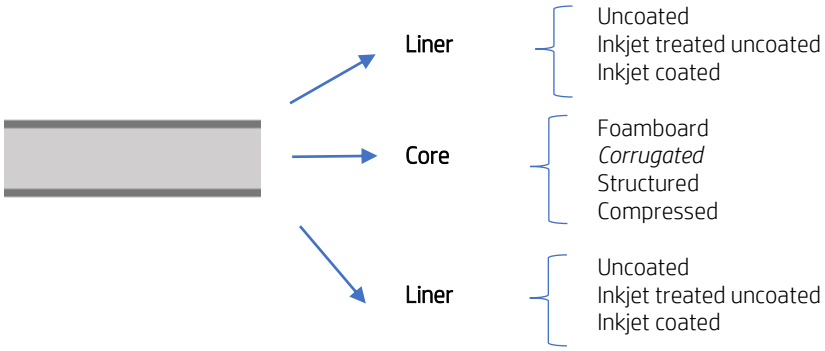
Inkjet treated uncoated liners include a specific chemical component that smooths the surface and fixes the ink on top. This results in a more saturated print. ColorLok and ColorPro technology are examples of inkjet treated substrates.

Inkjet coated liners fix the pigment on their surface and absorb the water from the inkjet ink. Inkjet coated substrates is available in matte, silk, and gloss. Once the coating is applied to the substrate, rollers help to "polish" the substrate in a calendaring process. The more the surface is calendared the glossier and less porous it becomes, meaning it will absorb much less ink, resulting in saturated colors, but also the possibility of ink drying challenges. Although these substrates are specially designed for inkjet printers the printing speed and the area coverage can become critical regarding drying/finishing.

Standard **offset coated** substrates are **NOT** compatible with water based pigment inks like HP PageWide XL Pro technology. These papers, based on coatings with clay or calcium carbonate, are not able to fix the pigment and absorb the water from the inkjet ink.

Substrate compatibility - Boards

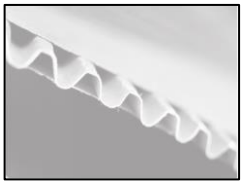
It is important to understand the **composition of the boards** and the impact that each attribute has on the compatibility with the HP PageWide XL Pro printers.



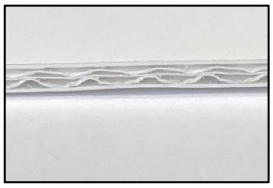
Types of cores:

In the industry, we have several types of cores within which liners are mounted. Each core has advantages and disadvantages for their final application, printer compatibility and the cost of the boards. The cores can be classified as:

Foamboard



Corrugated board



Structured board

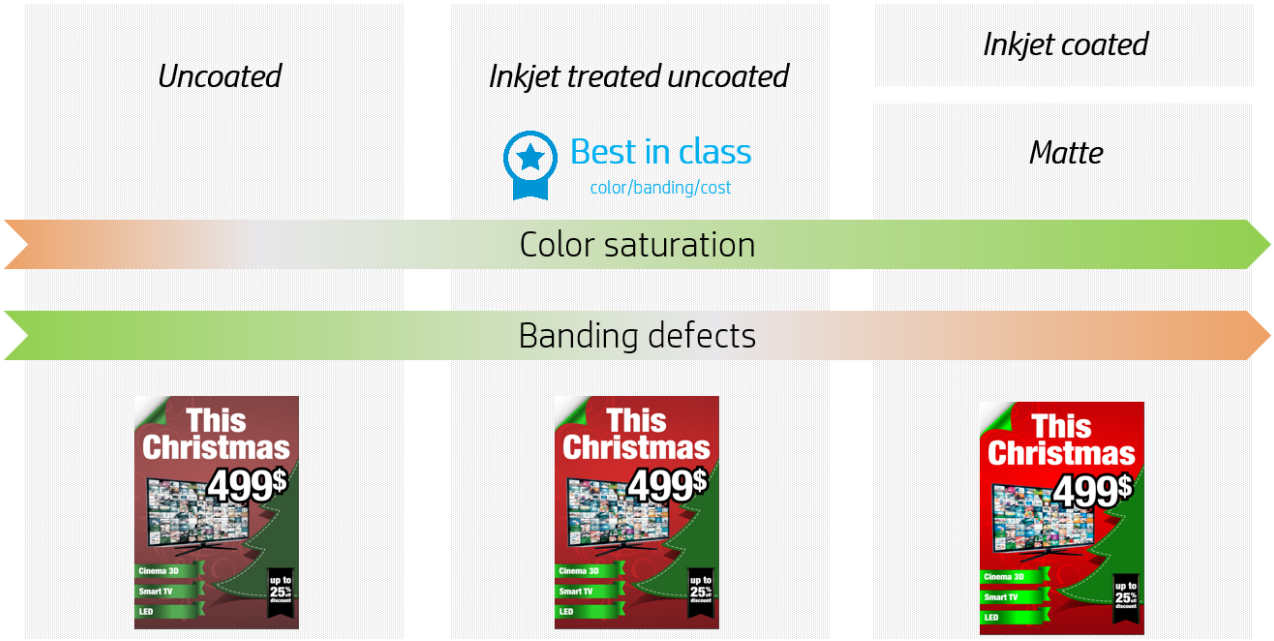
Compressed board

	Foam board	Corrugated board	Structured board	Compressed board
Advantages	Stiffness is stable	Very light and easy to manipulate Cheap material Recyclable when core is paper-based	Stiffness is stable Recyclable when core is paper-based	Stiffness is very good Recyclable
Disadvantages	Different variety of foams with different performance of stiffness	They get damaged quite easily and are very sensitive to humidity Their stiffness is not good They can collect a lot of dust and particles	More sensitive to deformation due to humidity	Limited thickness (less than 3mm)

It is important to pay special attention when printing on corrugated boards because of their stiffness and tendency to collect dust (causing aerosol in the print bar). Additionally, it is important to ensure that the corners of the boards are flat, so they do not damage the printheads. **HP does not recommend printing on corrugated boards HP PageWide XL Pro Printer Series.**

Image quality performance - Boards

As previously explained, some **image quality** attributes, such as color saturation and banding, are dependent on the **liner** of the substrate, as shown in the image below:



There are non-compatible boards in other substrate categories, for example clay coated boards, that show print quality defects such as ink drying issues, ink bleeding defects, or mechanical incompatibility with the printer.

Depending on the **image content**, the differences in color saturation and banding across the substrate categories shown above are going to be either more or less visible. Like in any other technology, we can identify easy elements and challenging elements to print. The easy elements will show a good print quality across substrate types, but the challenging elements will be more sensitive to the substrate type chosen to print.

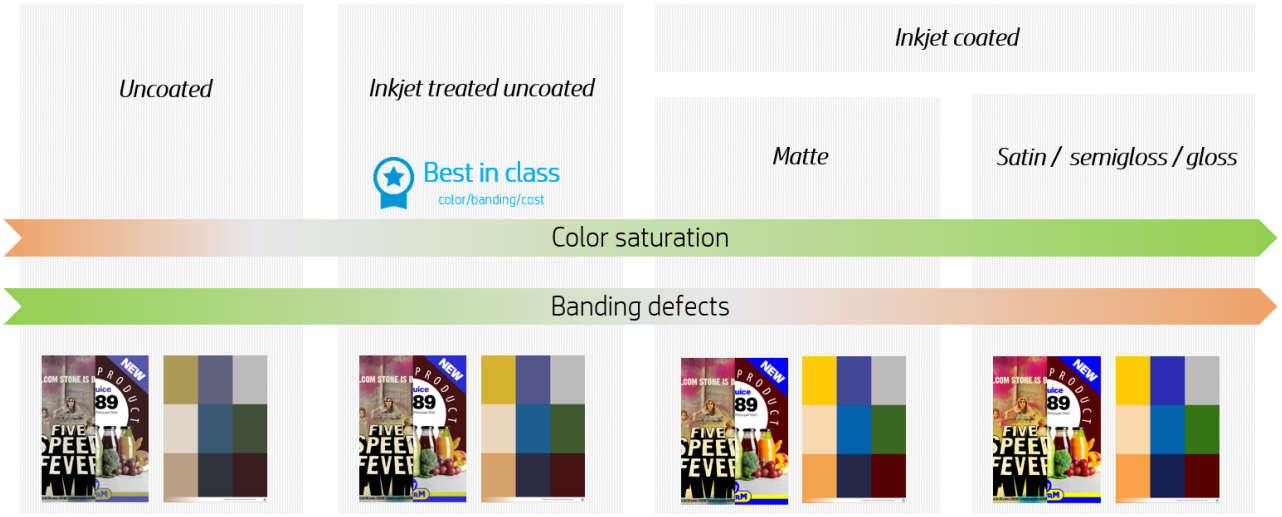
Challenging Elements

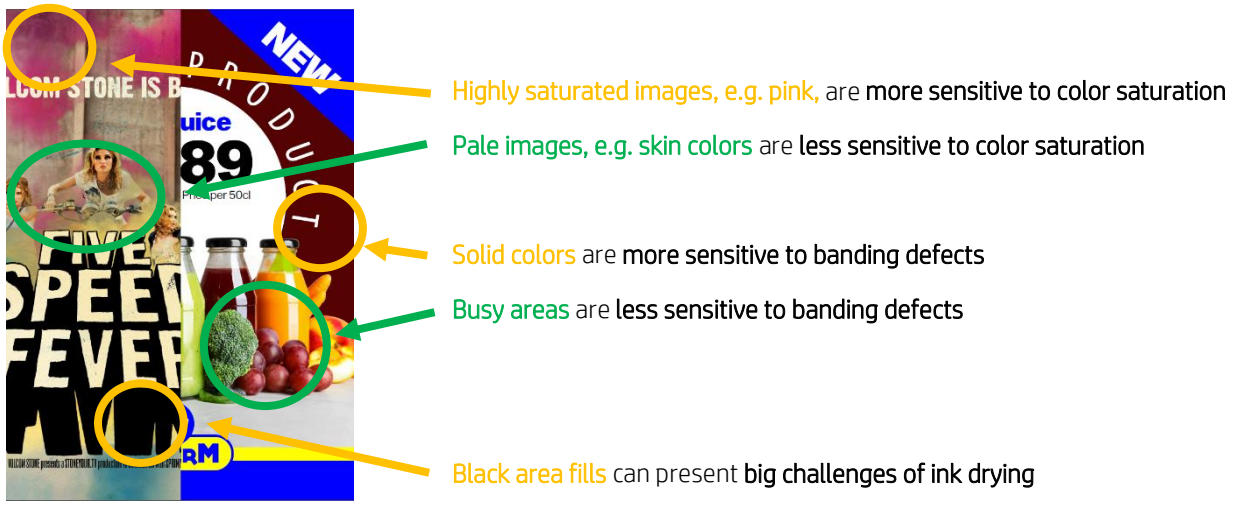
Red and green area fills are **very sensitive to color saturation and banding defects**

Easy Elements

Busy areas, such as the monitor in the image, are **less sensitive to banding defects**

Image quality performance - Flexible





Certain colors are **more sensitive to banding defects** than others. In general, **yellows, skin tones, and pale colors** show less banding than **dark blues, greens, and browns**.

What's next?

To wrap up, the print quality of the jobs printed in HP PageWide XL Pro Printer Series it will mainly depend on the **substrate type used** and on the **image content** that is printed.

We recommend to you to check the **PrintOS Media Locator** website (https://www.printos.com/ml/#/medialocator) to find which substrate brands have been validated by HP and to use the specific presets that are optimized for those substrate brands.