UNDERSTANDING COLOR VARIATIONS IN *Digital Printing*

Color is one of the first things people notice when they open a printed product, and we know how important it is to you. When you approve a proof, you expect your bulk order to look the same. Most of the time it does. But sometimes there can be small differences between a proof printed today and a production run printed a few weeks later.

These variations are a normal part of how digital printing works. This guide explains why they happen, what the printing industry considers standard and acceptable, and what you can expect from us.

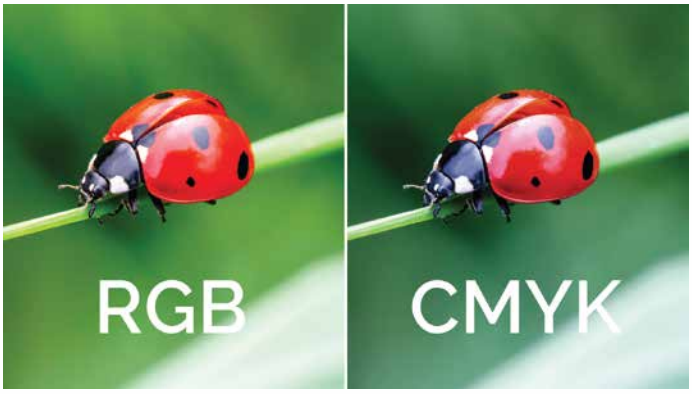
Why Color Can Vary From One Run to the Next

Digital printing is a toner- or ink-based process. Every time we start a job, the press is re-calibrated so it prints accurate, clean color. Even with this calibration, each run has a window of variation. That's because the press is reacting to real-world conditions like:

- Temperature and humidity inside the facility
- New toner or ink installed in the machine
- A fresh batch of paper with slightly different brightness or coating
- Natural shifts that happen as equipment is serviced or updated

All of these factors are normal, and they influence how color appears on the page.

Why Your Screen and Your Printed Proof Don't Always Match



Another key part of understanding color is knowing why the image on your screen may not look exactly like the printed version.

Screens and printers use two completely different color systems. Your screen uses RGB (Red, Green, Blue), and those colors are created with light. Because screens glow, they can display extremely bright, vivid colors that are sometimes brighter than any printer can reproduce.

Printing uses CMYK (Cyan, Magenta, Yellow, Black), and those colors are created with ink or toner on paper. Ink doesn't glow, so printed colors naturally appear softer and slightly less intense.

Some colors simply can't be printed exactly the way they appear onscreen. Bright neon greens, vibrant blues, bold reds, and certain purples fall outside the CMYK range. When printed, these colors shift to the closest printable match.

This is why a screen preview is only a guide. Even a well-calibrated monitor won't show the exact final printed color. A printed proof is always the best indicator of how your product will look.

The Industry Standards Behind These Variations

Every printing company using digital printing follows the same accepted standards for what is considered a normal, expected color shift. Even the most advanced presses cannot produce the exact same color every single time.

The printing world uses a measurement called "delta E" to describe how far apart two colors are, but in practical terms:

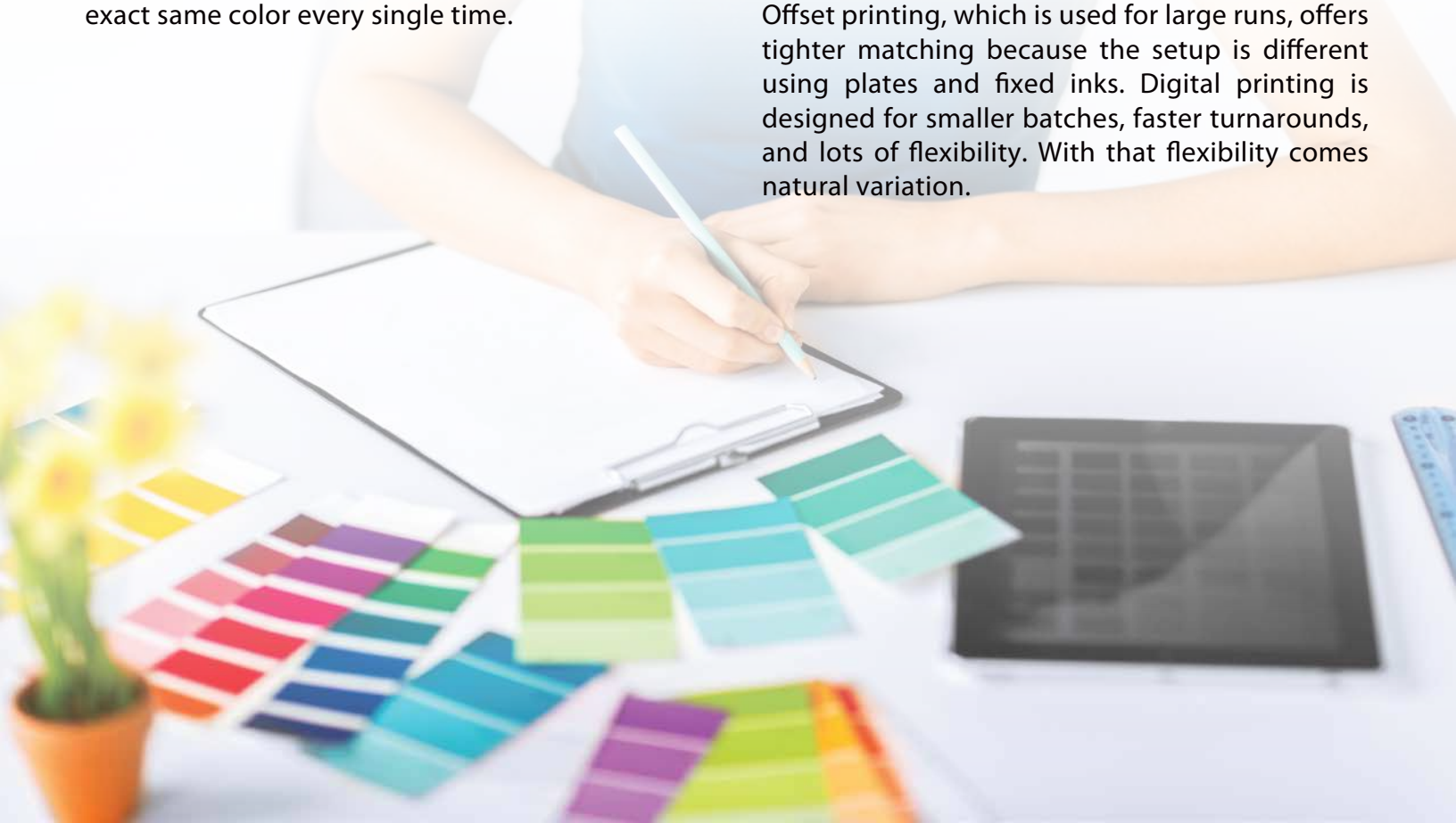
- A tiny shift you can barely see is normal
- A small difference visible only when two prints are side by side is normal
- These shifts fall within the industry's standard, accepted tolerance

This is true everywhere, not just at Vervante. It's simply how digital printing works. The equipment is designed to stay within a consistent, beautiful range, not create a perfect match every time.

Why Digital Printing Has a Range Instead of a Perfect Match

If you think of mixing paint on two different days, you'll get extremely close, but not identical. Digital presses behave the same way. Each print run is its own "mix," influenced by the conditions and materials of that specific day.

Offset printing, which is used for large runs, offers tighter matching because the setup is different using plates and fixed inks. Digital printing is designed for smaller batches, faster turnarounds, and lots of flexibility. With that flexibility comes natural variation.



High-Speed Inkjet Printing: What You Should Know

In addition to toner-based digital printing, we also offer high-speed inkjet printing. This technology has become very popular for book interiors, workbooks, and planners because it is fast, efficient, and produces clean, attractive color.

High-speed inkjet uses liquid ink that is sprayed onto the paper at high speeds. Instead of sitting on top of the sheet like toner, inkjet ink is absorbed into the paper fibers. Because of this, the color and look of the print depend not only on the ink but also on the paper itself.

Inkjet color tends to look slightly softer and more natural, while toner can appear a little sharper or more saturated. These two technologies do not match perfectly, which is expected throughout the industry.

Color variation in inkjet printing can be influenced by:

- The type and coating of the paper
- Humidity and temperature in the environment
- Ink density and drying time
- The speed and optimization settings of the press

Inkjet follows its own set of industry color standards, and like toner, it stays within an accepted range but not an exact match from run to run.

What This Means for Your Product

Your proof and your bulk order should look very close in color and overall appearance. They may not match perfectly if you're holding them side by side. That small variation, whether in toner-based digital printing or high-speed inkjet, is accepted across the printing industry.

Colors remain consistent within a professional, reliable range, and your finished product will still look clean, polished, and ready to share with your customers.

A Final Word

Digital printing or high-speed inkjet is the best choice for planners, journals, card decks, workbooks, and short-run books. These printing methods offer flexibility, affordability, and quick turnaround times. Color variation is a natural part of printing, and we're here to explain it in a way that gives you clear, accurate expectations and confidence from proof to production.