



ARLON

COLOR MATCHING ON A DIGITAL PRINTER: **A SURVIVAL GUIDE**

How To Reproduce The Color You Want

Achieving accurate color matching is an essential skill for any print professional. Understanding how to accurately reproduce these colors on a digital printer is key to delivering consistent, high-quality output.

There are two primary methods for matching color on a digital printer:

1. Using a spectrophotometer, such as an X-Rite i1 Series device.
2. Matching color visually without a spectrophotometer.

In this newsletter, we will focus on the second method: visual color matching - using the Roland Color System Library (RCSL) and Adobe Illustrator.

Step 1: Identify Your Color Target

Begin by defining the color you want to reproduce. Your target may be:

- A color displayed on a monitor
- A customer's printed sample
- A Pantone Color System® reference number
- A physical color standard or sample

Step 2: Prepare the Printing Environment

Before printing, ensure that the production environment is stable and controlled. Check the following:

- Room temperature and humidity
- Static electricity levels
- Dust and airborne contaminants
- Consistent lighting conditions

Step 3: Prepare the Printer and Media

Verify that the printer is operating at its optimal condition by checking:

- Print head nozzle performance
- Media advance calibration
- Bidirectional alignment calibration

Step 4: Use the Correct Media Profile

Download and install the manufacturer-recommended media profile for your specific printer, ink set, and media combination. Using the correct profile is critical for accurate color output.

For Arlon media profiles and profile-request information, visit: <https://arlon.color-base.com/>

Tip: Use the same media profile, print mode, media, and printer settings throughout the entire color-matching process. Changing any of these variables can alter the final printed color and make accurate matching more difficult.

Evaluate Under Consistent Lighting

Once the color samples are printed, evaluate them under consistent lighting conditions. To minimize glare and reflections, hang the



print on a wall rather than viewing it flat on a table. For the most accurate color assessment, use a viewing booth with standardized D65 lighting.

By controlling the printing environment, maintaining consistent printer settings, and evaluating color under proper lighting conditions, you can significantly improve your ability to achieve accurate and repeatable color matches.

Using Roland VersaWorks for Visual Color Matching

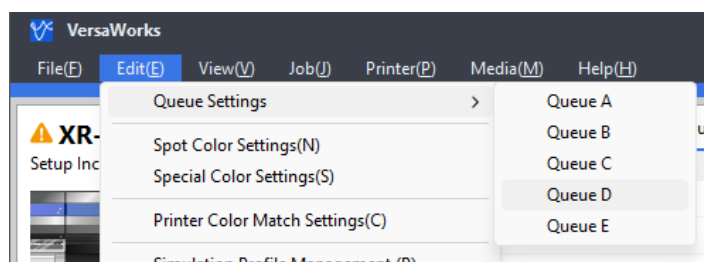
Roland VersaWorks is a powerful yet easy-to-use RIP software solution that includes several built-in color management and color matching tools. One of its most valuable features is the Roland Color System Library (RCSL), a comprehensive color matching system designed to help users achieve more accurate and predictable color reproduction.

Using RCSL, operators can select and compare printed color swatches, making it easier to identify and reproduce the desired color on a wide range of media and printer configurations.

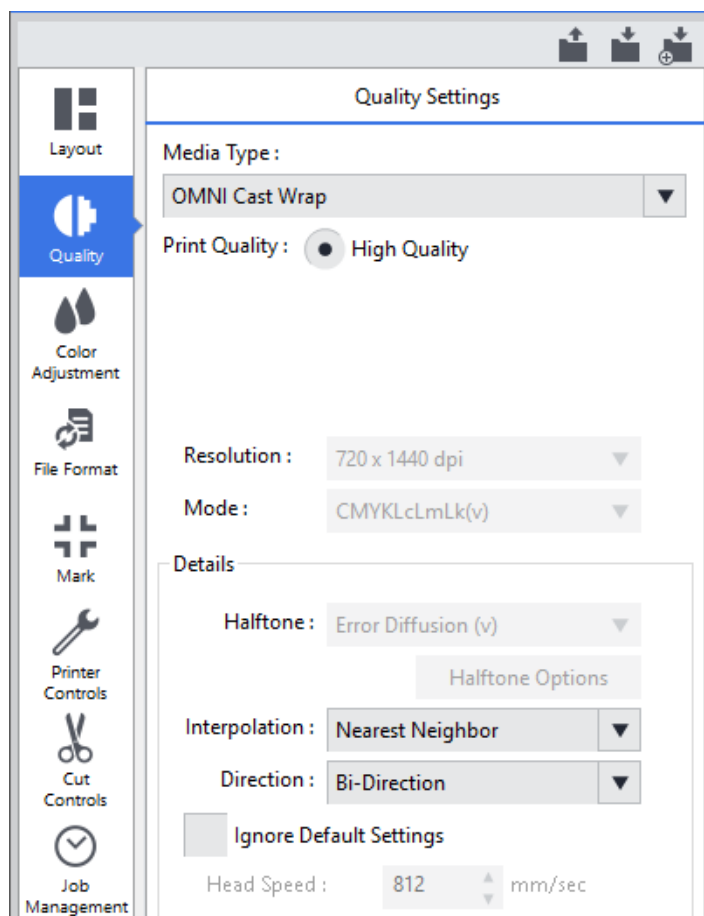
Printing the Roland Color System Library (RCSL) Chart

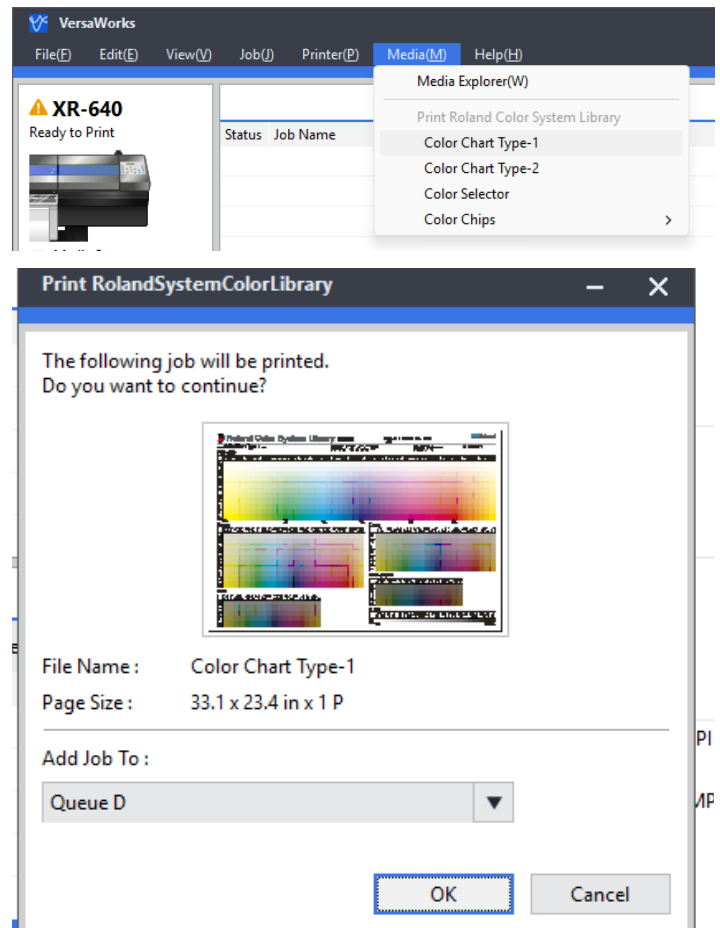
To print the Roland Color System Library (RCSL) chart, start by opening VersaWorks and navigating to Queue Settings. Select the queue you would like to use for printing, RCSL chart can be generated and printed.

Under Quality Settings, select a media type and profile mode. For this demonstration, we use [Arlon Omni Cast Wrap](#).

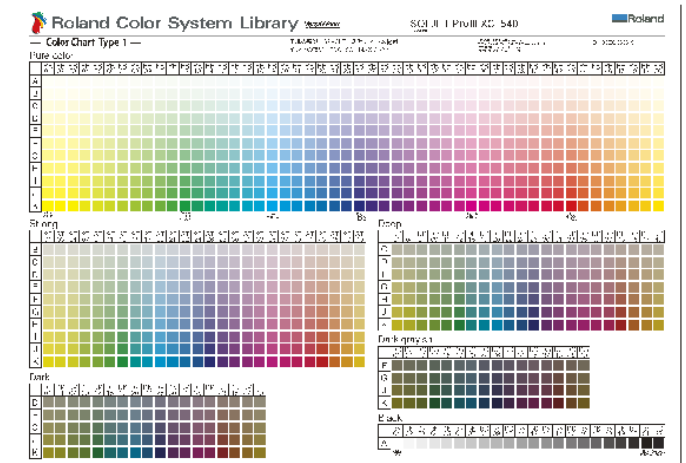


Go to Media, then select Color Chart Type-1.

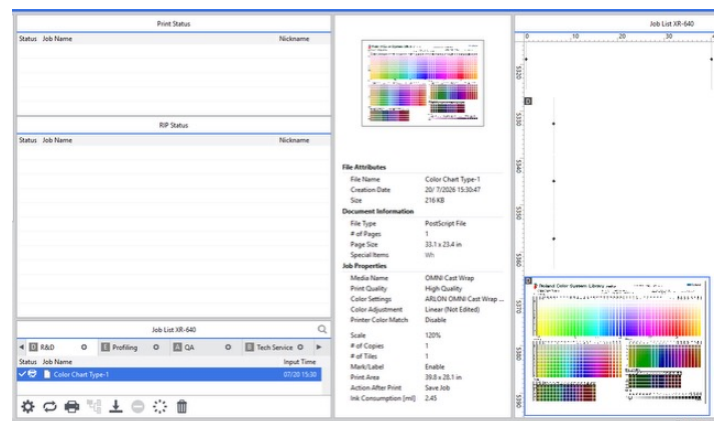




Click **OK**, the RCSL chart will be added to the job list.



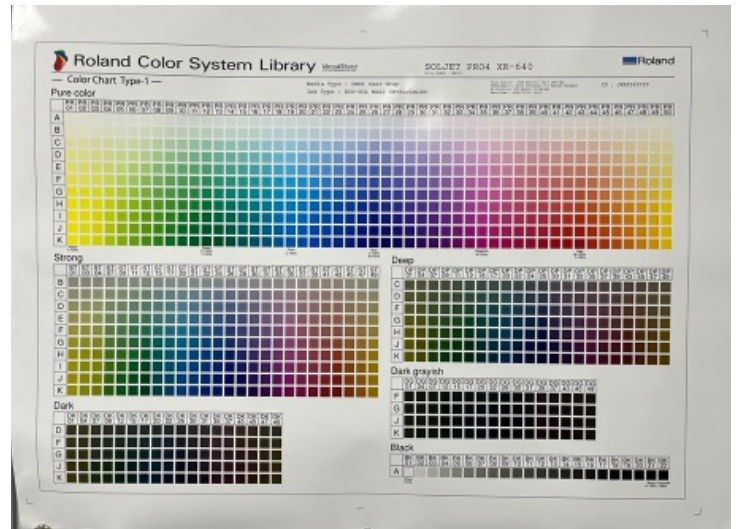
When the Color Chart Type-1 job appears in the job list, click the print icon to print the chart.



Review the print by hanging it on a wall to minimize glare and reflections from overhead lighting. For the most accurate color evaluation, view the print in a viewing booth under D65 lighting conditions.

Tip: Always evaluate color under consistent lighting. Colors can appear differently under various light sources, so use the same lighting conditions when assessing print quality and color accuracy.

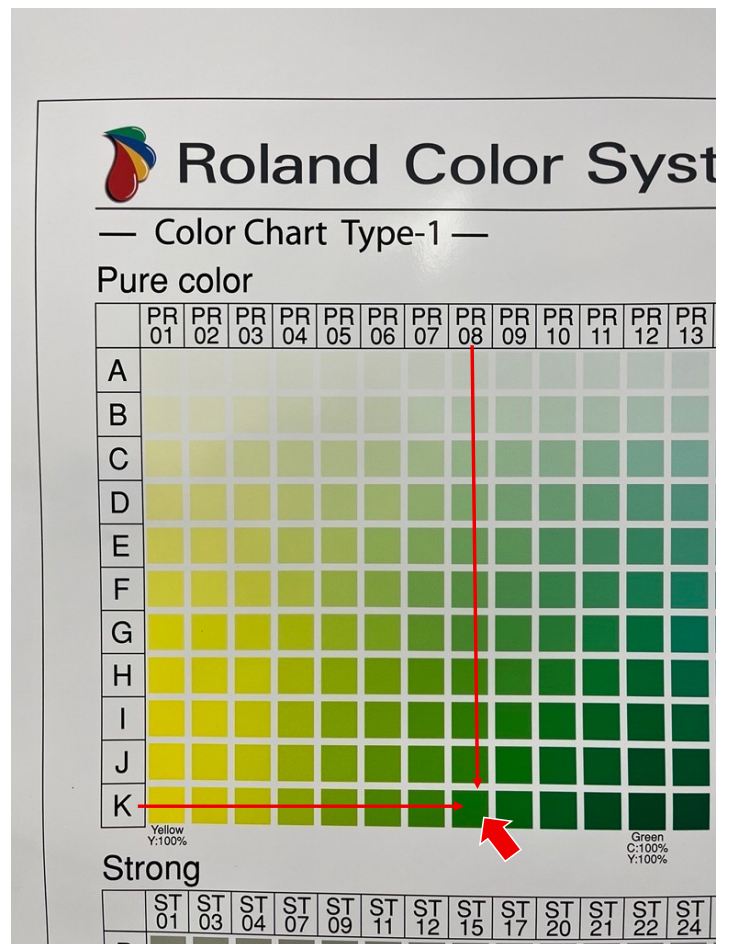
In this demonstration, the color target is Arlon Series 2100 #69 Apple Green.



Place the color target on the printed RCSL chart and compare it to the surrounding swatches. Identify the swatch that most closely matches your target color under consistent lighting conditions. Once the closest match is found, note the corresponding **RCSL color number**.



The closest visual match is **PR08K**.



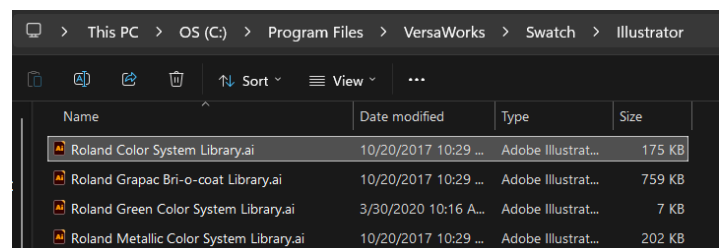
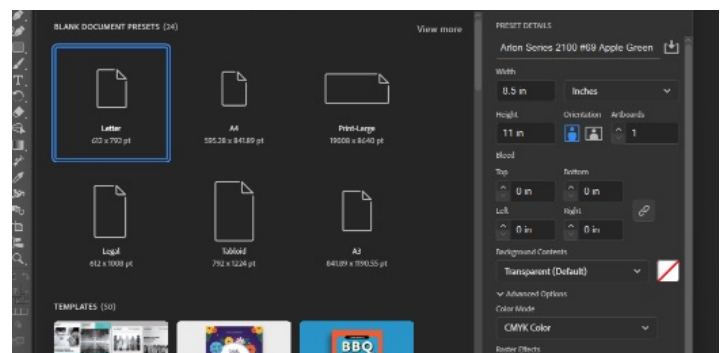
Assigning the Matched Color in the Design File - Adobe Illustrator

Open a new document in Adobe Illustrator and set the color mode to CMYK.

On the computer where VersaWorks is installed, the swatch library files for Adobe Illustrator are located in the default folders listed below:

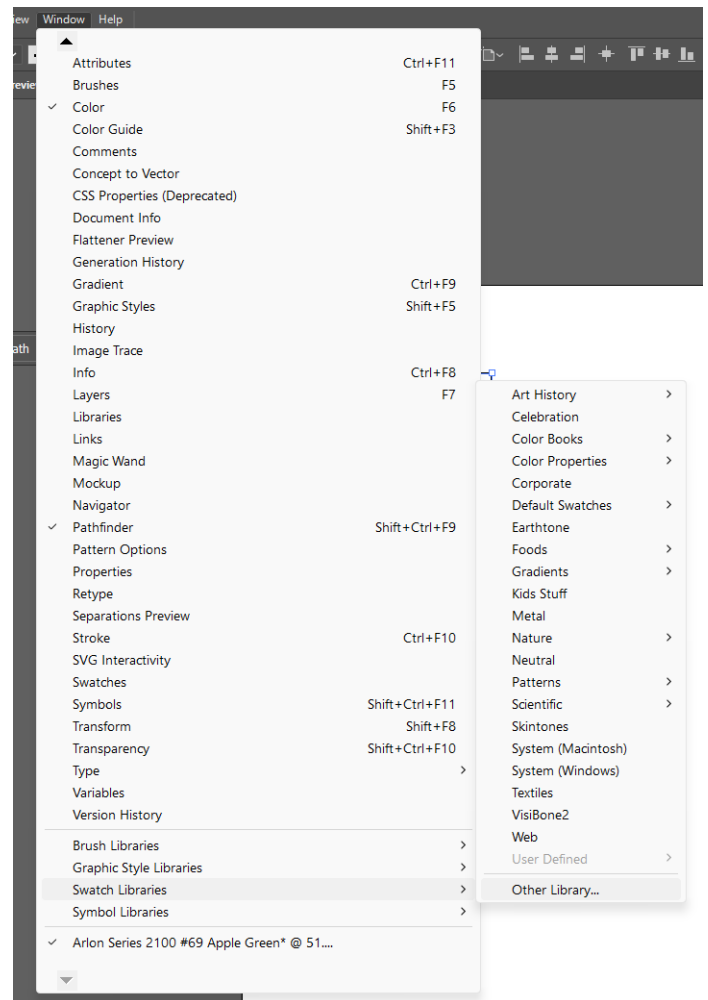
C:\Program Files\VersaWorks\Swatch\Illustrator

Copy the Adobe Illustrator swatch file, Roland Color System Library.ai, and paste it to the desktop of the computer running Adobe Illustrator.

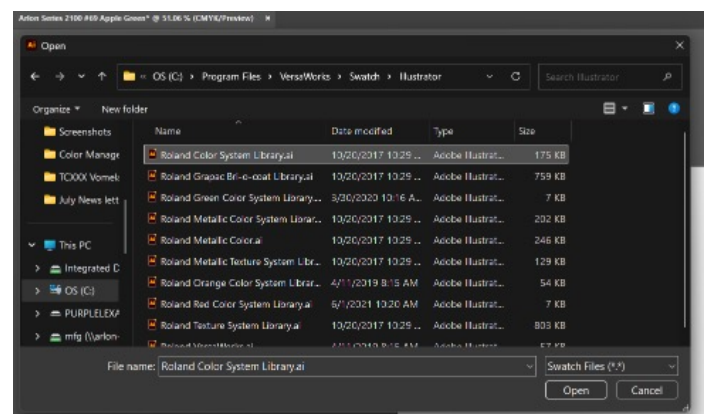
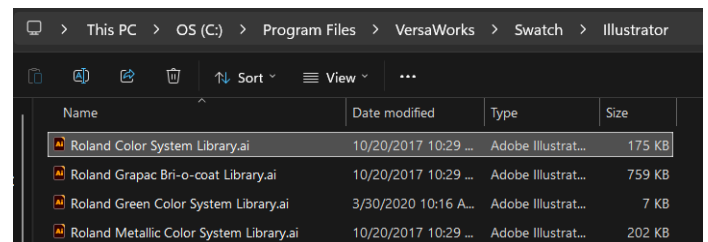


If Adobe Illustrator and VersaWorks are installed on the same computer, you can access the RCSL directly from Illustrator:

On the Adobe Illustrator menu, click **Window - Swatch Libraries - Other Library**.

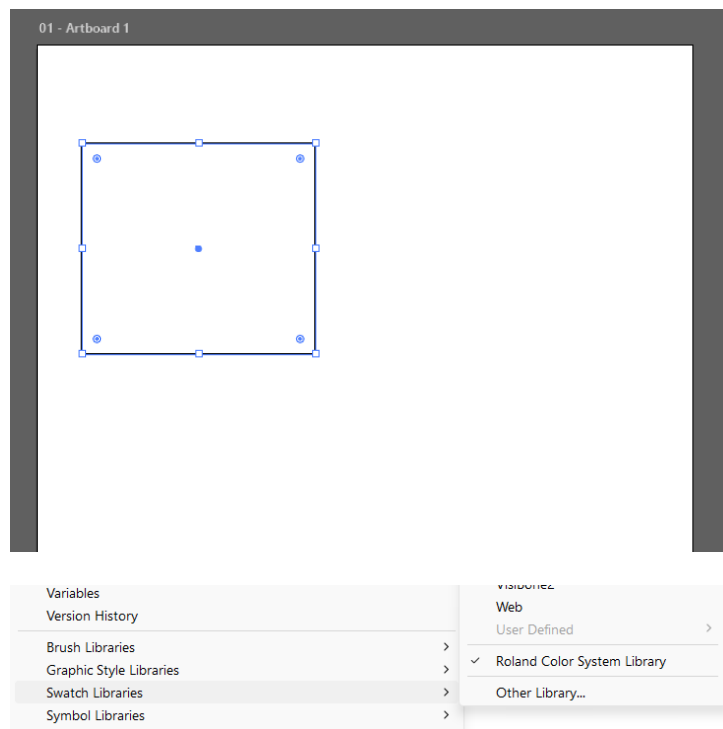


Click **Open** to import the swatches. The **Roland Color System Library** will be added to Adobe Illustrator, and the import window will close automatically.



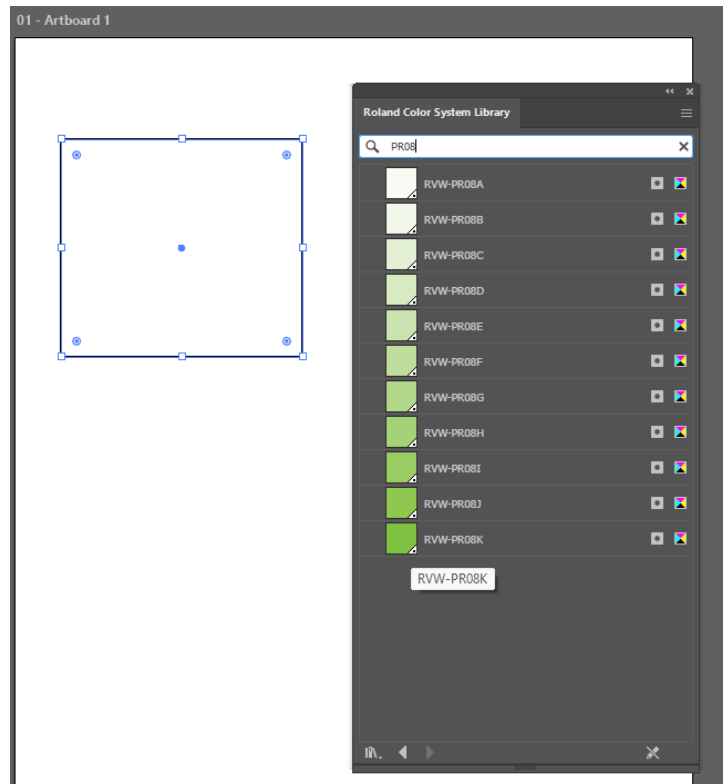
Create a rectangle using the Rectangle Tool (M), and keep the rectangle selected.
In Illustrator, click Window > Swatch Libraries > Roland Color System Library.

The Roland Color System Library panel will appear.



Enter the RCSL code PR08K .

Click the PR08K swatch to apply the color to the selected rectangle.



Label the swatch for reference.

Verifying Color Consistency Between EPS and PDF Files

After assigning the matched RCSL spot color in Adobe Illustrator, save the artwork as both EPS and PDF formats for comparison.

Import both files into VersaWorks and print them using the same media profile, ICC profile, print mode, and printer settings. Once printed, compare the outputs to confirm that the color reproduction is consistent between the two file formats.

Matching results indicate that the spot color information has been processed correctly and that the workflow is producing predictable color output regardless of file format.



Comparing the Final Print to the Target Color

Visually compare the printed output to the original color target under consistent lighting conditions. The printed color is a very close match, that indicates the Roland Color System Library (RCSL) workflow can effectively reproduce the desired color without the use of a spectrophotometer.



Measuring Color Difference for Additional Verification

For an additional point of reference, use a color measurement device, such as the Color Muse, to measure both the target color and the printed output. Compare the color values and the reported Delta E (ΔE) difference to quantify how closely the print matches the target.

Tip: Use color measurement data as a guide, not a replacement for visual evaluation. Always confirm color matches under proper viewing conditions, as a printed output that measures well may still appear different in real-world lighting environments.



Measuring Color Accuracy with Delta E

For a more objective evaluation, measure the Delta E (ΔE) value between the printed output and the physical color target using a color measurement device such as Color Muse. Delta E quantifies the difference between two colors, providing a numerical indication of how closely the print matches the target.

A lower Delta E value indicates a closer match:

- $\Delta E < 1.0$ — Color difference is virtually imperceptible.
- $\Delta E 1-2$ — Only a trained eye may notice the difference.
- $\Delta E 2-3$ — Generally acceptable for most printing applications.
- $\Delta E > 3$ — Color differences become increasingly noticeable.

By combining visual evaluation with Delta E measurements, you can make more informed decisions and verify the accuracy of your color-matching workflow.



Verifying the Color Match

To further validate the results, the **L*a*b*** color difference between the printed output and the physical target **Delta E (ΔE) value was 2.86.**

Since many production environments consider a **Delta E below 3.0** to be an acceptable color match, this result indicates that the printed output closely reproduces the target color. The measurement confirms that an accurate color match was successfully achieved using the **Roland Color System Library (RCSL) visual matching workflow**, without the need for a spectrophotometer-based color management process.





COLOR 1 (LEFT): Arlon Series 2100 #69 Apple Green color vinyl target.
COLOR 2 (RIGHT): Omni Cast Wrap digital print output.



While each RIP and color management software package may have its own interface, the core color-matching principles remain the same. By following the process demonstrated in this guide, you can achieve consistent and accurate color matches with confidence.

Thank you for reading this month's newsletter. We hope you found the information helpful and informative. Stay tuned for next month's edition, where we'll explore another interesting topic and share more practical tips and insights.

Resource links

Printing Colors from the Roland Color System Library – VW6

https://downloadcenter.rolanddg.com/contents/manuals/VW6_English_R5/topic/tPrintingColorsFromRolandColorSystemLibrary.html

Printing Colors from the Roland Color System Library – VW7

https://downloadcenter.rolanddg.com/contents/manuals/VW7_USE_EN/njq1761199408724.html

Arlon Series 2100 Color Card PDF

https://www.arlon.com/assets/flip/na_en/color-card-series-2100/#p=2

Arlon Profile Library

<https://aron.color-base.com/>

Color Muse

<https://variableinc.com/>