SAi Production Manager

Creating an ICC Profile

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WHAT IS AN ICC PROFILE?

An ICC profile instructs the RIP software on how to print colors as closely to what we are viewing on our monitors. Together, they guide the printer on how to reproduce colors, so they look as close as possible to the original on-screen design.

Every type of media reacts to ink differently. Some materials absorb more ink, while others keep ink on the surface. This affects how dark, bright, or accurate the colors look. An ICC profile is created specifically for a certain printer, ink set, and media so the RIP knows how much ink to use for each color.

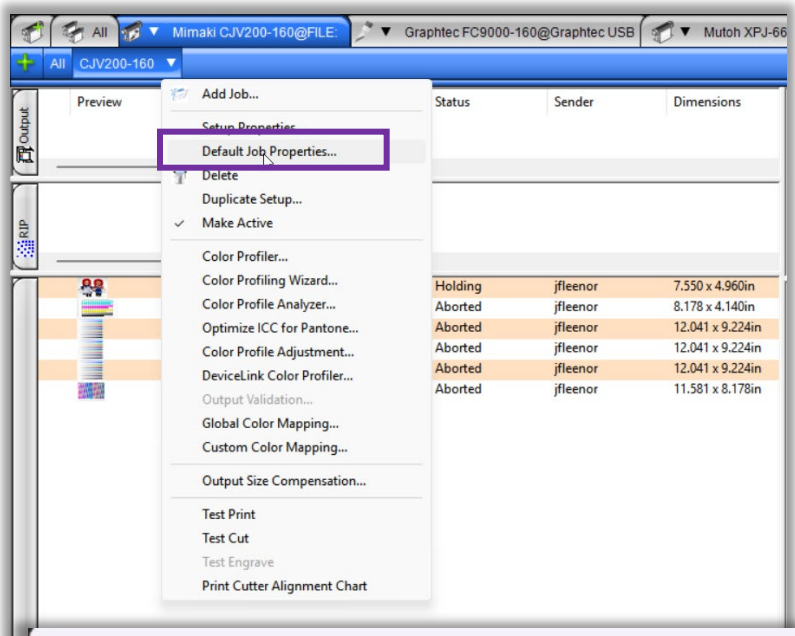
Even environmental conditions play a role. Temperature and humidity can affect how ink dries and how media behaves. Profiles are typically created in stable conditions, so results stay consistent during normal production.

To create an ICC profile, a series of color-swatches are printed on your actual material, using defined ink levels that range from light to heavy coverage. These Swatches show how the inks blend and build color on that specific media, giving the software real examples of how the printer outputs color.

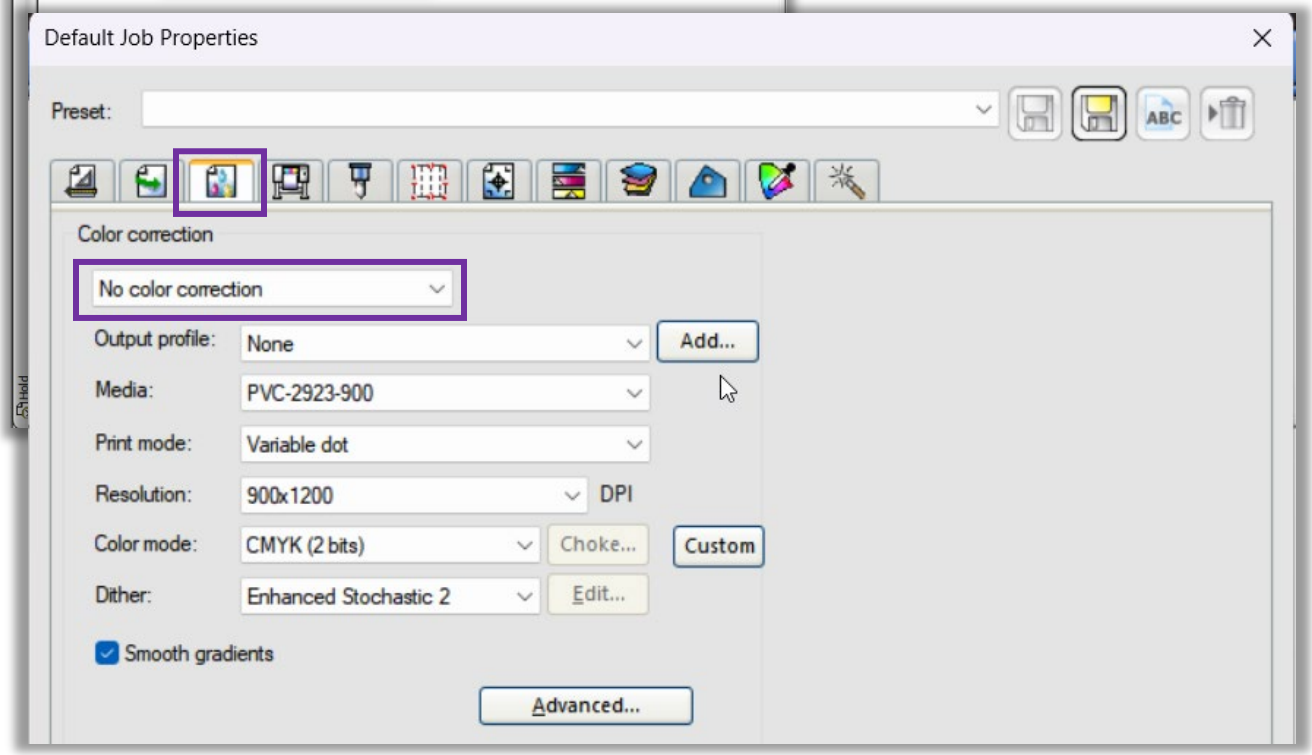
A device called a spectrophotometer is then used to measure the colors on the printed material. This device reads printed color data and sends that information back to the software, which builds a profile based on how the material truly displays color.

In short, an ICC profile ensures that what you design on screen is as close to what you get on the final print by accounting for the printer, ink, media, and real-world conditions.

GETTING STARTED



When creating an ICC profile in Production Manager, you will need to start with a "Blank Slate". To do this, click on your printer in Production Manager, and then select the dropdown from the BLUE bar, and choose "Default Job Properties".



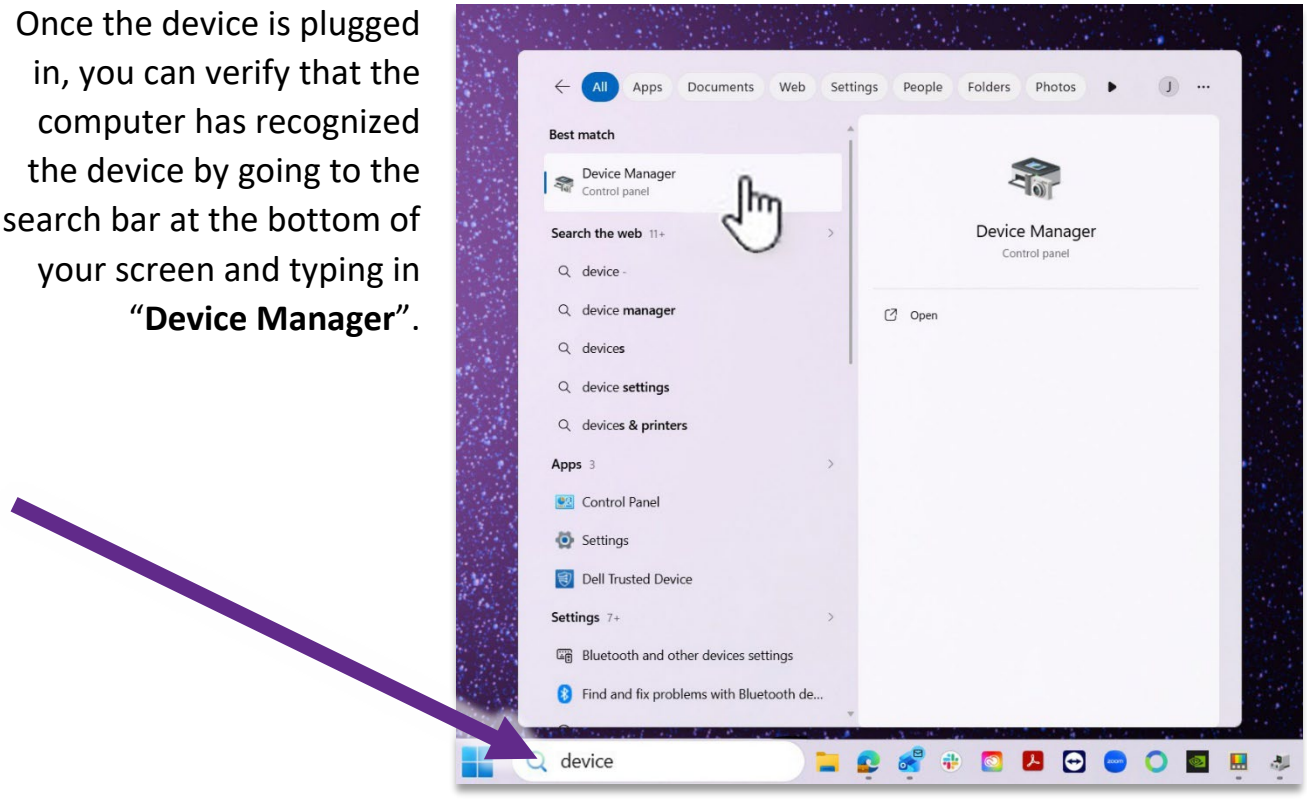
Once there, select the 3rd tab for "Color Correction" and make sure the first dropdown is set to "No color correction", close the Default Job Properties and continue to the next step.

VERIFYING YOUR SPECTROPHOTOMETER IS CONNECTED

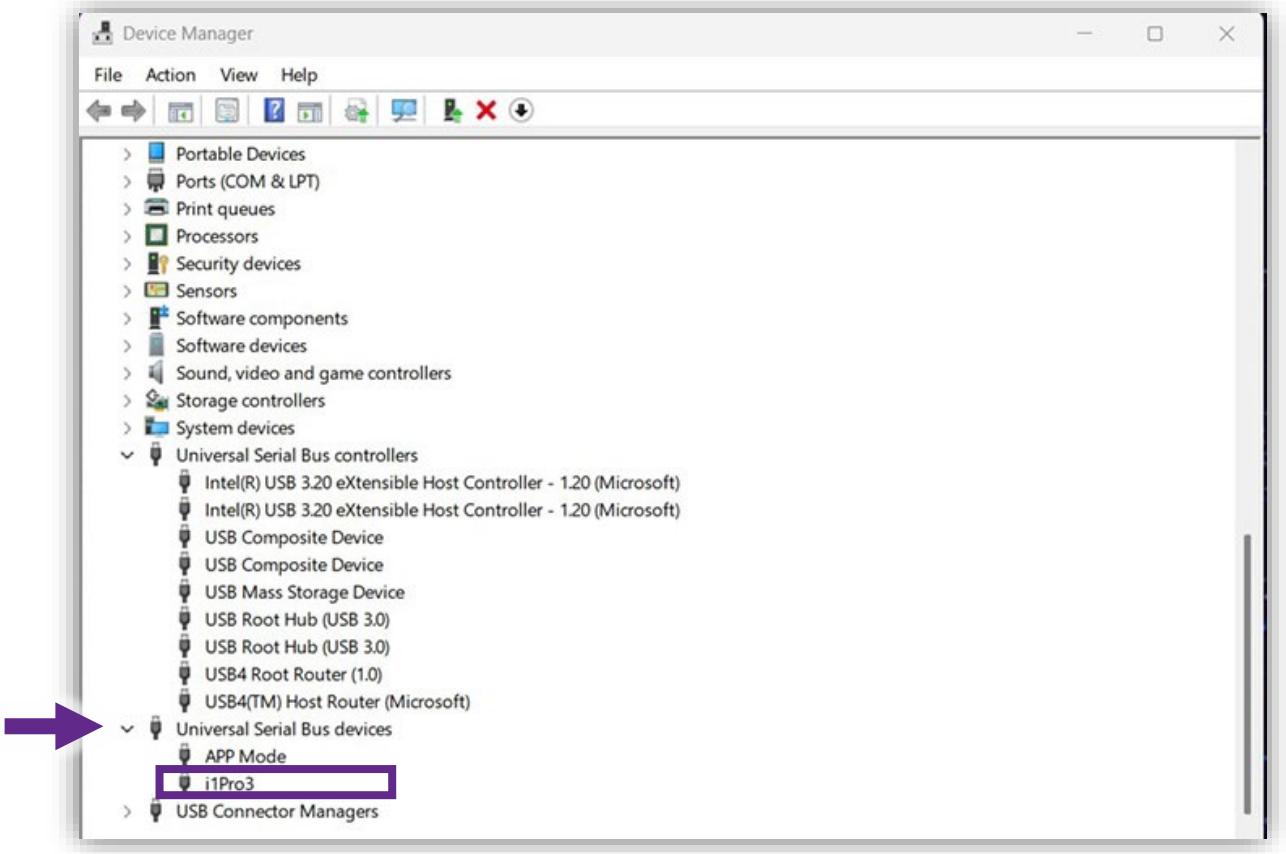
Before you can create color profiles in Production Manager, you need to connect your spectrophotometer to your computer, which is preferably running on the Windows 10 or 11 Operating System.

Most Spectrophotometers, such as the **Xrite i1pro3** we are using in this demonstration, are connected to the computer using a **USB A** cable, as shown in this screenshot.

Once the device is plugged in, you can verify that the computer has recognized the device by going to the search bar at the bottom of your screen and typing in "**Device Manager**".



The Device Manager window will open, scroll down until you see: "**Universal Serial Bus devices"** and click on the cooresponding dropdown.



Ensure that the device is displayed & that there are no symbols next to the device indicating a connection, driver or other communication issue between the computer and the spectrophotometer.

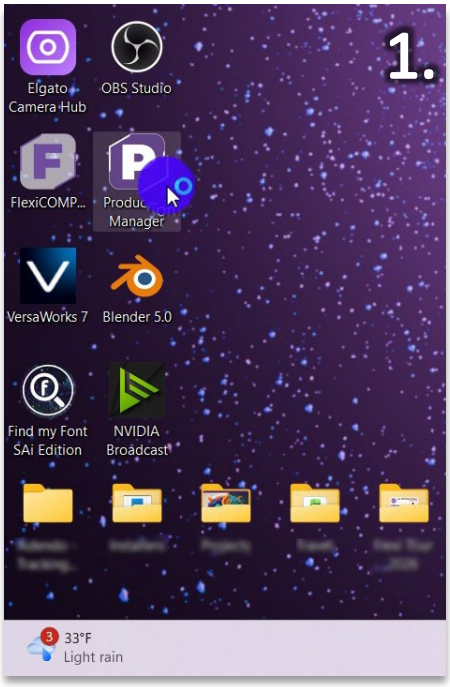
ACCESSING THE COLOR PROFILING WIZARD

The Color Profiling Wizard is not a magical man with a long beard and robe, ready & willing to create your new color profile for you.

Instead, it is a tool developed by SAi that is built right into Production Manager to make color profiling straightforward and approachable.

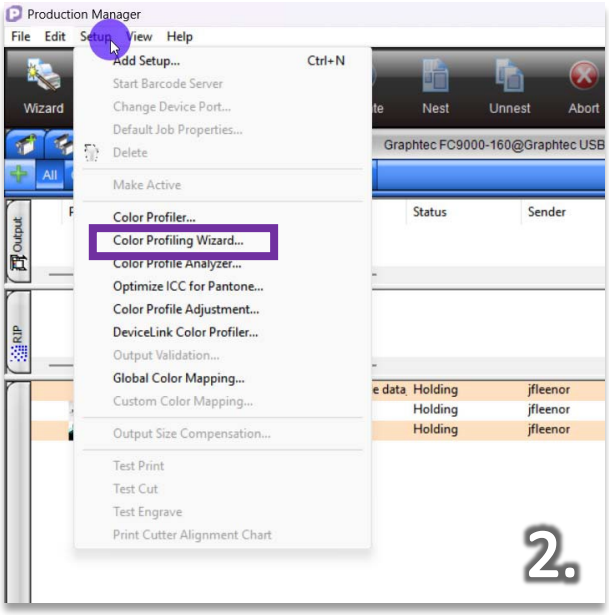
The wizard helps print test charts, measure printed colors, and build a profile based on real world results.

By handling the technical details in the background, the Color Profiling Wizard makes it easier to create accurate, consistent color without needing deep color science knowledge.



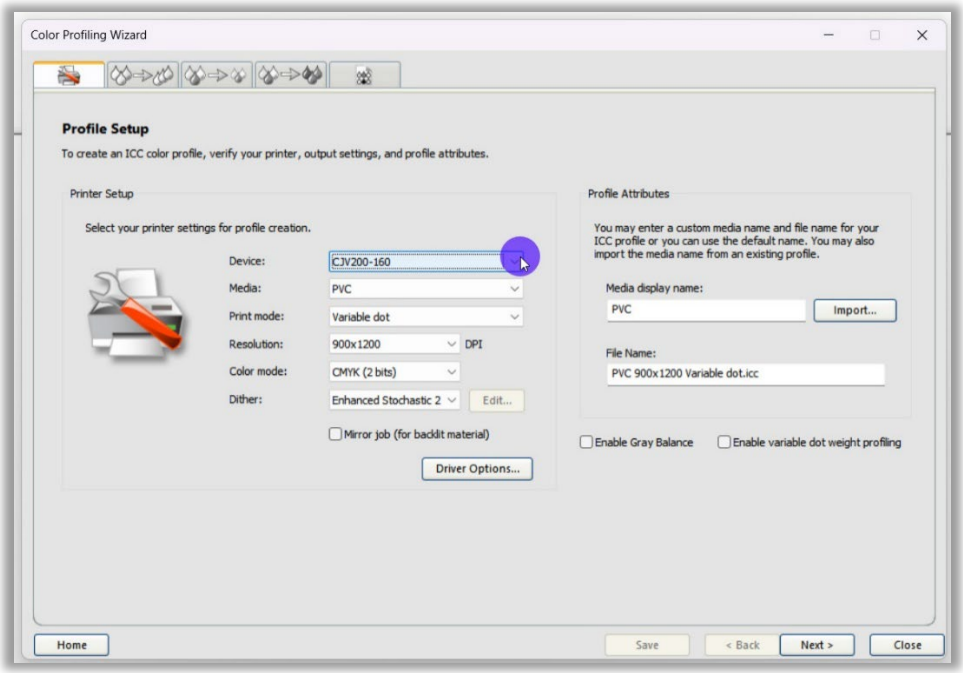
To access the Color Profiling Wizard, you will first launch **Production Manager** by clicking on the icon found on your desktop, taskbar, or any other method you may be using to open the software.

When the window opens click on "**setup**" and then click on "**Color Profiling Wizard**"



SETTING UP YOUR PRINTER PARAMETERS IN THE COLOR PROFILING WIZARD

The first of the 5 tabs in the Color Profiling Wizard is the "Profile Setup" tab.



The dropdown options are:

Device: Select the printer you're profiling.

Media: Select the Type of media you're profiling on.

Print Mode: Choose the size of dots you prefer the printer to use for the profile.

Resolution: Set the resolution of the profile.

Color Mode: Choose the Color more, E.G. CMYK, CMYKOrGrLcLm, etc

Dither: Choose the dither method, if you're unsure, use Enhanced Stochastic 2

Checkboxes & Other Fields:

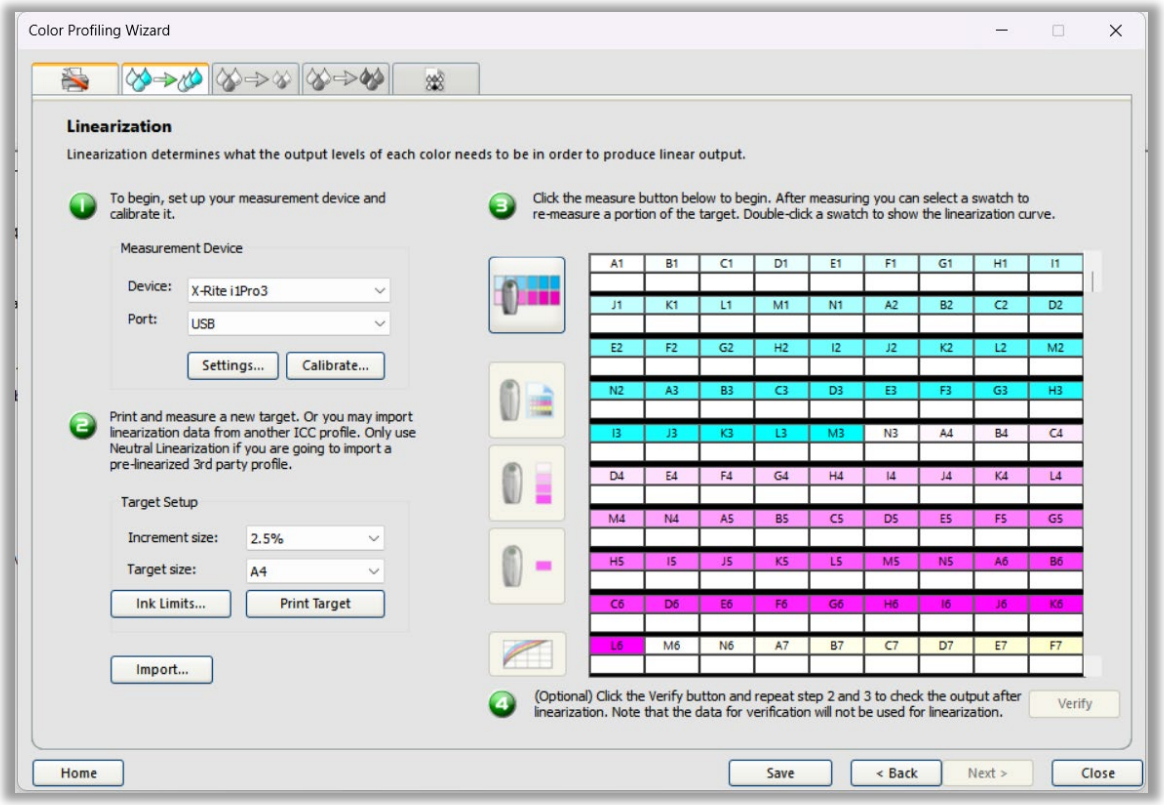
Enable Gray Balance: Click this box for ADVANCED color calibration, otherwise leave unchecked.

Enable variable dot weight profiling: Check for advanced calibration.

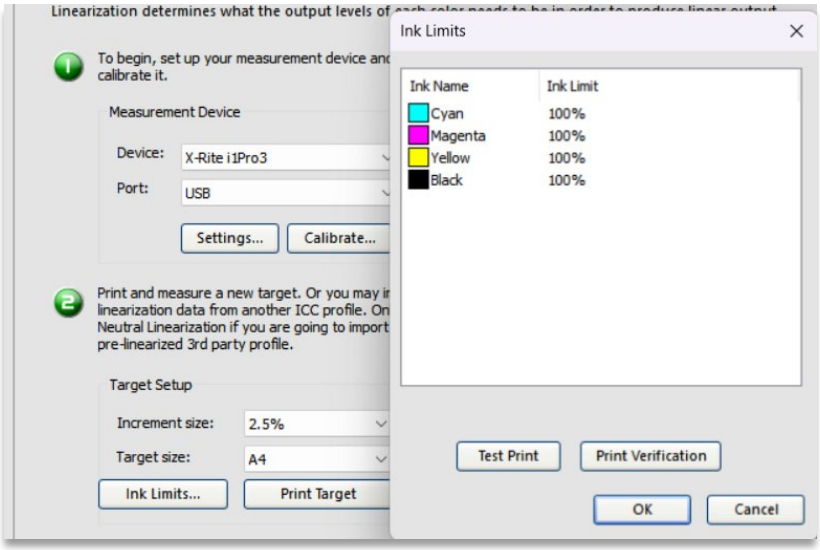
Media Display & File name: Name your profile.

Driver Options: These settings have default machine settings provided by the printer manufacturer, if you believe something should be adjusted, contact your dealer.

LINEARIZATION



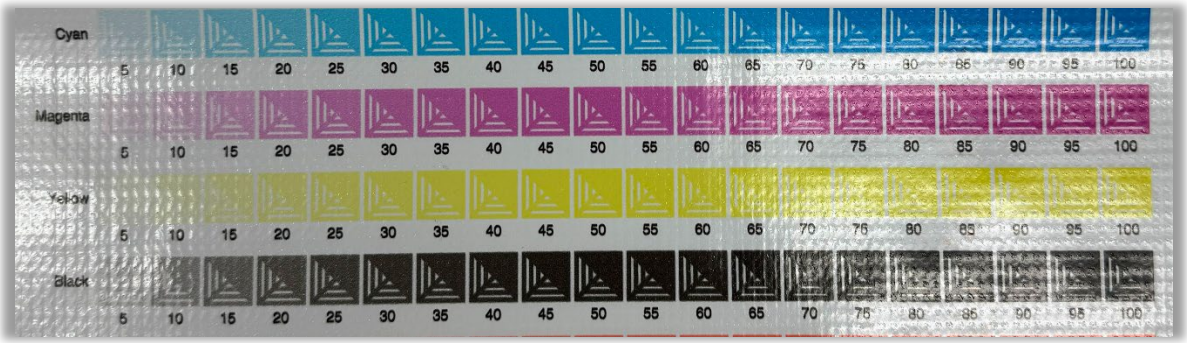
Ensure the **Device:** option (*your spectrophotometer*) is set to the correct machine & connection type in step 1.



If this is your first time profiling, leave the Increment Size & Target size in step 2. at their defaults.

Click on the "**Ink Limits…**" button, then in the pop-up window click on the "**Test Print**" option. Leave the Ink Limits window open, as you will make adjustments once you have inspected the print.

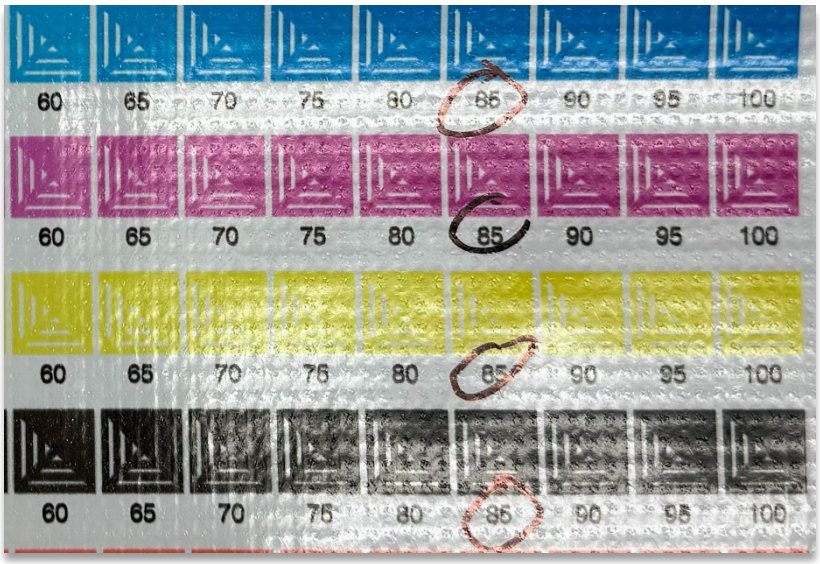
The output will look like this:

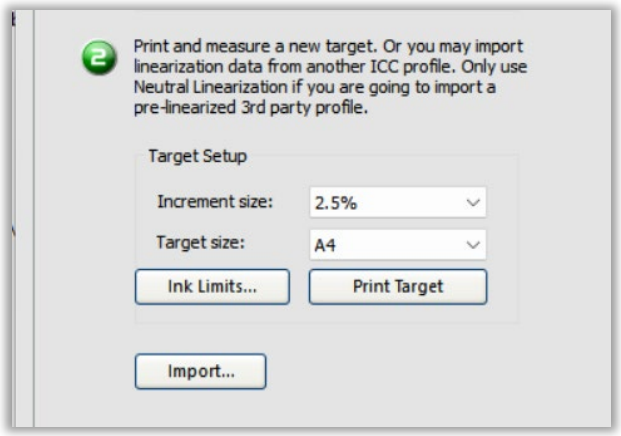


When choosing the ink limit for each color (Cyan, Magenta, Yellow, and Black), the goal is to find the point where adding more ink no longer makes the color look any darker.

However, you also need to watch the surface of the print. If the ink starts to look shiny, muddy, or raised (this is called pooling), you have gone too far. If pooling happens before the color stops getting darker, choose the highest value **before** pooling occurs.

Optional: It can be helpful to circle the value with a marker before entering the values into the Ink Limits Window.

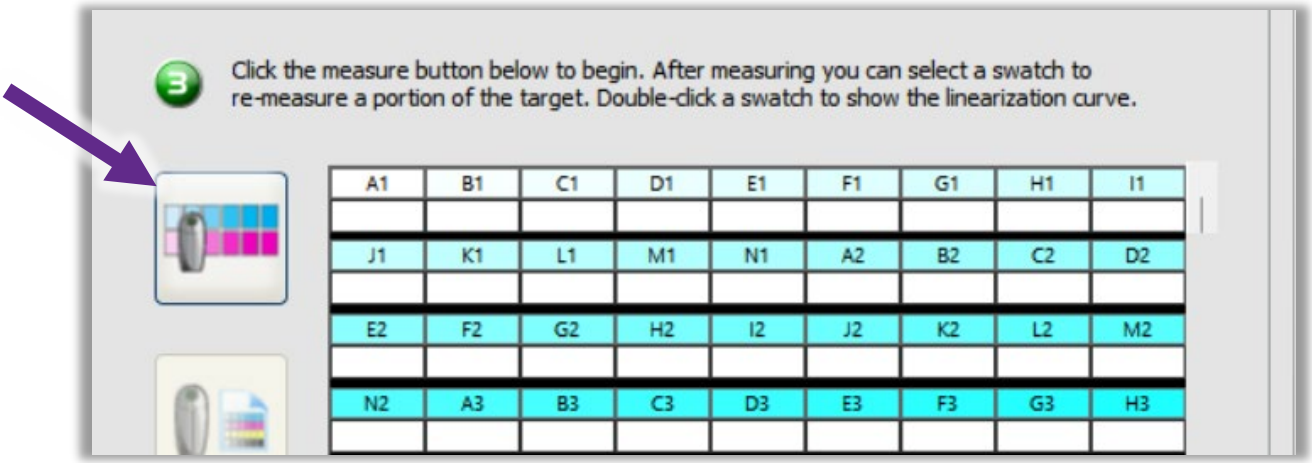




After setting the Ink Limits in the pop up window, close it and proceed to the **Print Target** option.

This step prints a calibration chart that will be physically scanned using your spectrophotometer.

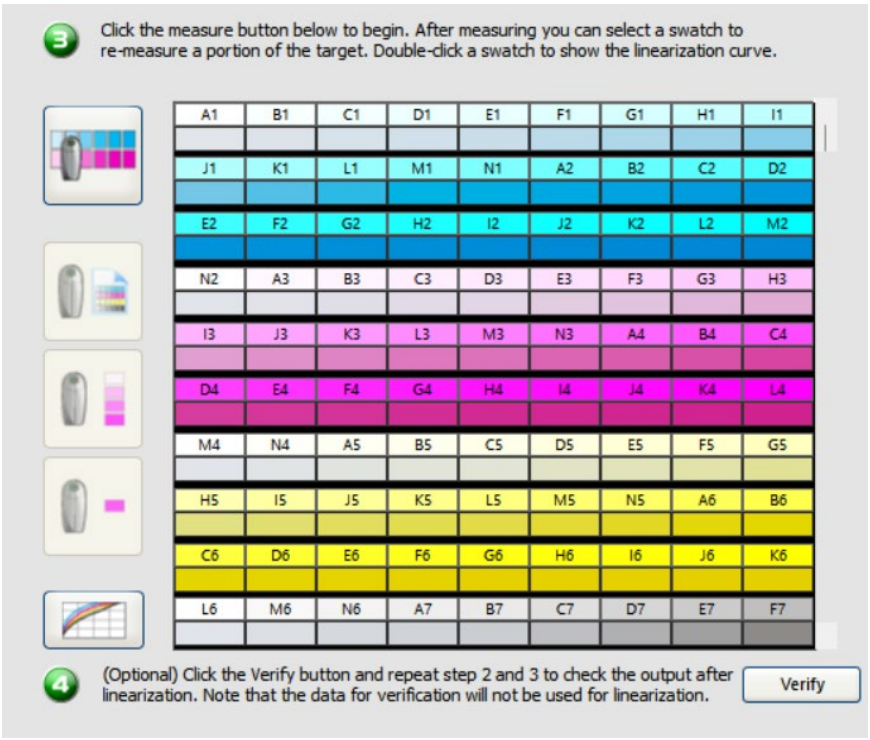
Which will output like this.



After the table is printed, set the print on your Spectrophotometers dedicated table, and click the measure button in the Color Profiling Wizard.

Scan the table from left to right, following any on-screen prompts to ready your Spectrophotometer.

Here is an example of what this might look like, but it will vary depending on your current settup.

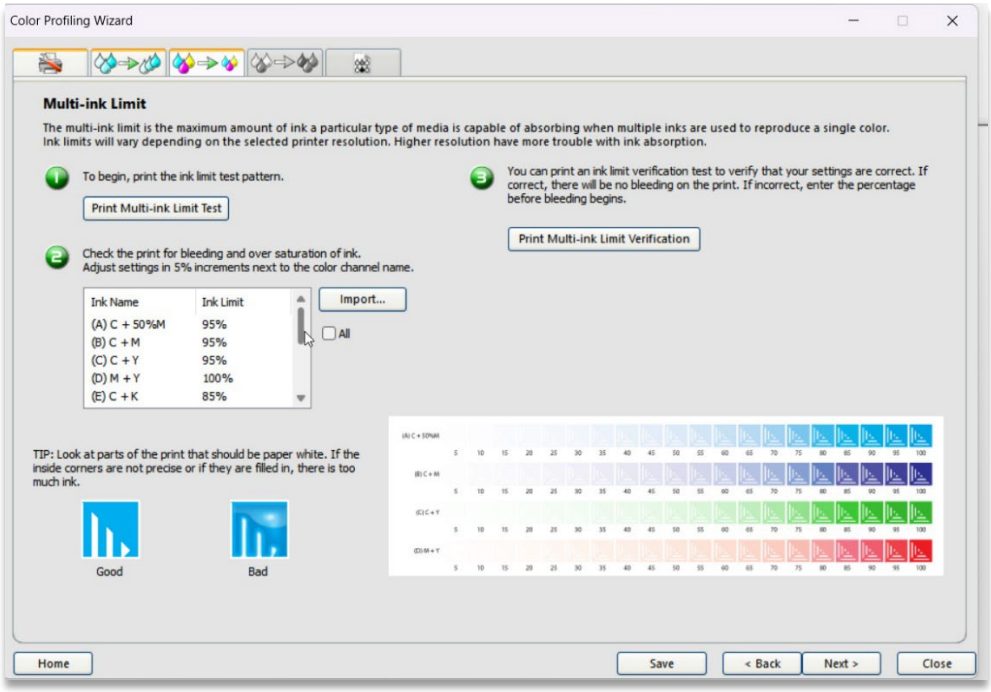


Once the chart is fully scanned, it will appear in Production Manager filled in with color. **Verify that each color section lines up correctly**. The hue may not look perfect, but the important part is that the colors are in the correct rows and columns. For example, cyan should appear in the cyan area, yellow in the yellow area, and black should not appear in the yellow or magenta sections. This confirms the chart was scanned properly.

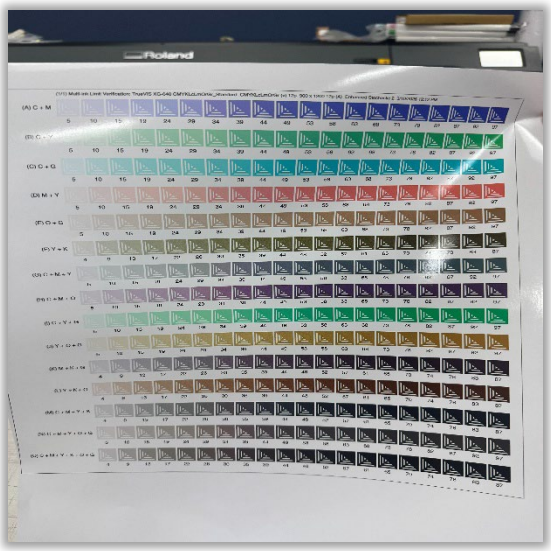
Click the "**Next**" tab at the bottom to proceed to the next step.

MULTI-INK LIMIT

Print the Multi-Ink Limit Test by clicking the "**Print Multi-ink Limit Test**" button.



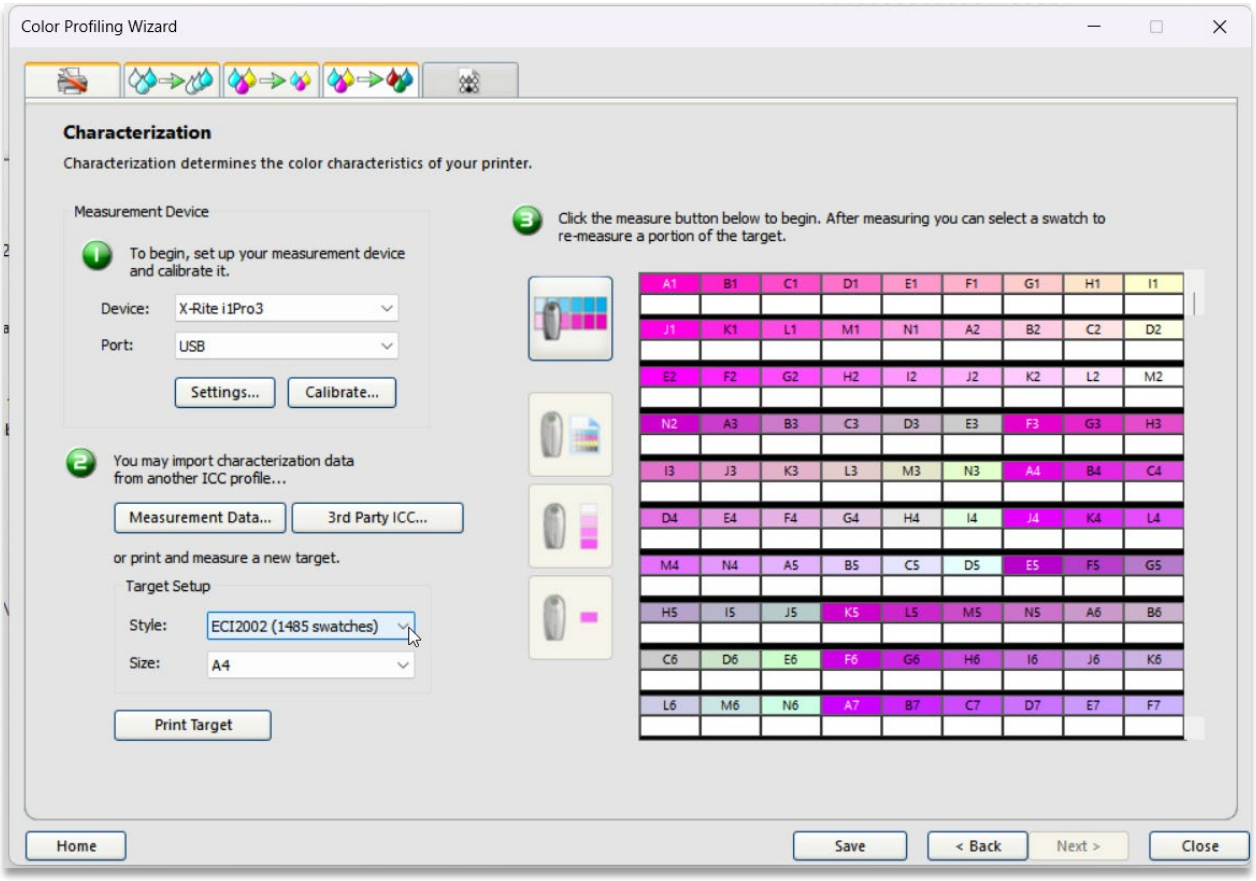
As with the first Ink Limit Test, the goal is to find the point where adding more ink no longer makes the color look any darker, while ensuring that you don't have any "pooling".



This will be a larger print. The Color Profiling Wizard is now blending different ink combinations so you can set proper limits for how those inks work together. Set your ink limits in the field in step 2.

Then, click "**next**" to continue to the next step.

CHARACTERIZATION

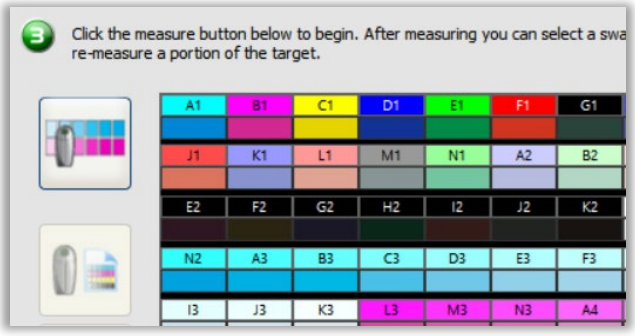


As before, check the Device & Port setup in step 1.

In Step 2, the **Style** dropdown determines how detailed, or how wide the color profile will be. Styles with more swatches create a more accurate profile with a wider range of colors, but they also require scanning more patches with the spectrophotometer, which takes additional time.

The **Size** option works the same way as before by creating a border around the swatches. In this step, selecting A3 or A4 may result in the swatches printing across multiple pages. Choosing **Full** will print the entire Swatch set on a single page. Refer to your spectrophotometer's reference table to select the most convenient print size for scanning.

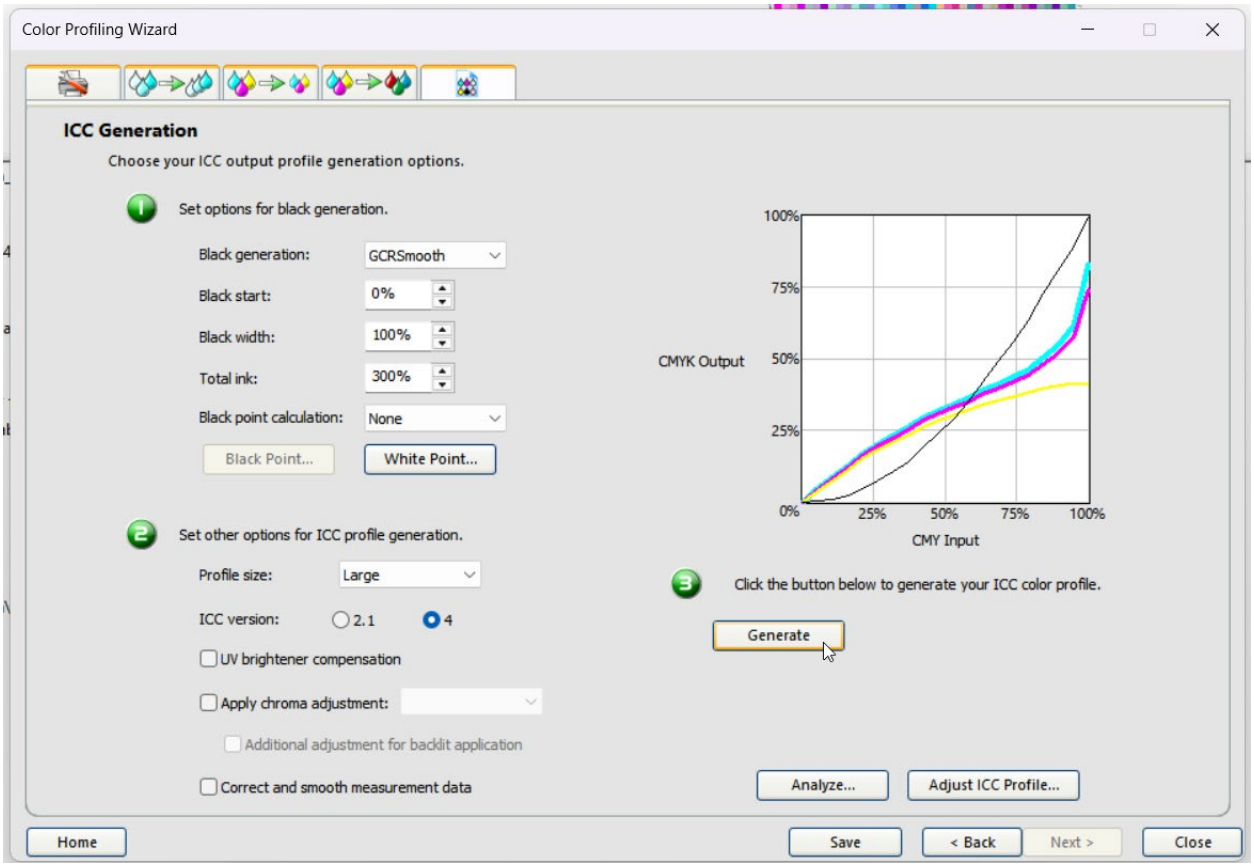
An example of what this output may look like.



Click the measure button, and scan every swatch, again ensureing that the colors “line-up” on the screen.

Then, Click the “**Next**” button to proceed to the final step!

ICC GENERATION



At this step, there are several options available, but the default settings are usually sufficient for most profiles. These controls manage how black ink is generated, ink limits, and profile detail. Unless you have a specific need to adjust them, it's recommended to leave the defaults.

Review the CMYK output curves to make sure they are smooth and generally follow the same upward path. Black will usually appear more linear. In this example, the yellow curve drops off earlier than cyan and magenta, which is normal for some materials. This is only a concern if print quality is poor, as each ink color interacts with media differently. If output is poor, something H wrong during the profiling process.

Finally, click "**Generate"** to create the profile.