Designing White Guideline

How to Design & Print Labels Using Spot Colour White on the OKI Pro1050 Label Printer

Contents

Understanding White

The OKI Pro1050's ability to print white toner on a broad range of coloured media has opened the door for creative professionals like yourself to explore the possibilities it offers. Labels printed on clear, coloured and metallic effect media, your designs will never look the same once you've experienced the power of white.

Whether printing standalone white elements or using white behind colour as a means to preserve its hue on dark media, the 5-Station Digital Label Printer is capable of creating extremely precise, controlled output.

This guide will take you through the process of designing and preparing labels that take full advantage of the Pro1050's ability to create unique and impressive and finished pieces.

Why White?

The importance of white in colour printing is often overlooked. The foundation of colour printing is based on applying Cyan, Magenta, Yellow and Black (CMYK) onto white paper. The paper's white surface reflects a wide range of colour back to your eyes.

However, as you can see in the sample above, applying colour toner directly onto coloured media creates extremely dark, dull results because only a narrow range of coloured light is reflected back to your eyes.

When white is laid down underneath colour, it provides a protective, reflective surface similar to white paper. The result is brilliant colour when printing on coloured media.

And beyond laying down 100% white to preserve hues on coloured media or to create standalone white elements, the OKI Pro1050 is able to control the amount of white toner laid down on different areas of the printed page, enabling for advanced techniques which will be explored later in this guide.

Driver Setting

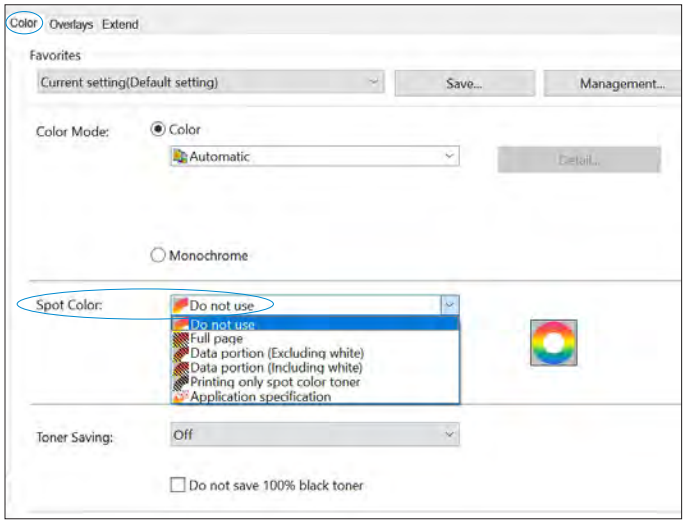
You can print through your computer's Driver, controlling settings from the dialogue box that appears when you select Print from your application's main menu.

To get the best results from your printing efforts, it's important to understand a few of the Pro1050's settings. While the Pro1050 User Guide covers the product's full settings more comprehensively, the overview below focuses on the critical areas you'll be working when using spot colour white on coloured media.

Spot colour Usage Methods

The way in which you set up your file and the Spot Colour Usage Methods setting (from here on referred to as the Spot Colour setting) are interdependent. Because of this, it's ideal to first identify the type of file you'll be printing by how white will be used to print that label.

The most common Spot colour settings you'll be using are "Prints Only Spot colour Toner", "Data Portion - Including White" and "Application Specification". The setting chosen is based on how the file is prepared and the next section of this guide will cover these options in greater detail.
It's helpful to understand how each setting differs before using them.



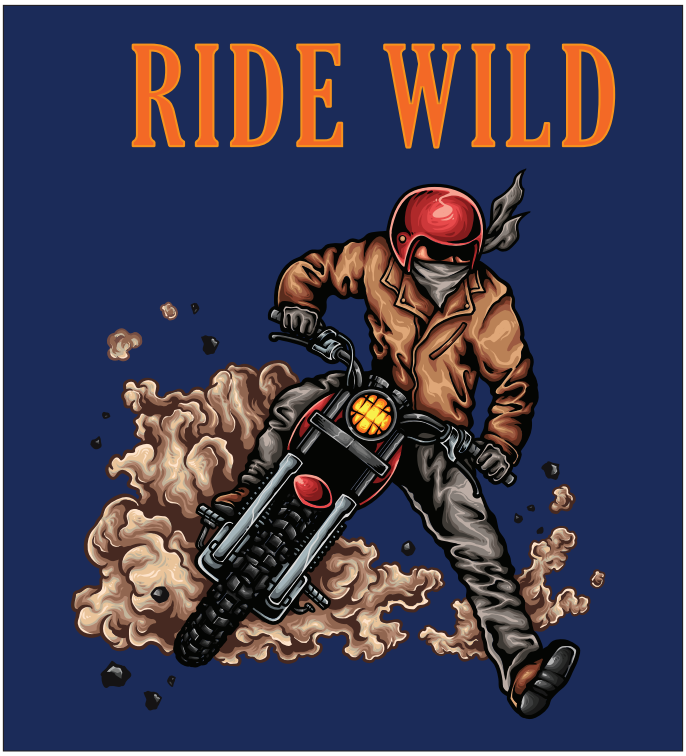
Spot Colour Usage Method Setting	Document Style	How This Setting Prints	Creation Tools	
			Software that can specify a true white (such as Adobe Illustrator, Photoshop, Indesign or CorelDraw)	Any Software
Do not Use	No white toner is printed	Prints only black and colour. *It's recommended to lift up the spot colour print cartridge manually. See "Printing Using the Specified Print Cartridge Only (Lift Up)" on page 80 in the User's Guide.*	•	•
Full page	Combination of black/ colour and White *Complete background of the label is covered with White.*	Prints 100% white behind all elements.	•	•
Print Only Spot Color Toner	Only white toner is printed (no blck/colour) *White percentages or gradients are allowed.*	All black or colour elements in the original document are printed using white toner.	•	•
Data Portion (Excluding White)	Combination of black/ colour and White *White toner is applied underneath colour elements.*	Prints 100% white behind all elements (*except true black elements, unless you disable "Don't layer white toner for 100% black " in the "Spot Color toner quantity adjustment"*), allowing printed colours to remain vibrant on dark or coloured media. *Does not print isolated white elements - white is only used behind colour.*	•	–
Data Portion (Including White)	Combination of blck/ colour and White *No subtle White is printed.*	Prints 100% white behind all elements (*except true black elements, unless you disable "Don't layer white toner for100% black " in the "Spot Color toner quantity adjustment"*), allowing printed colours to remain vibrant on dark or coloured media. *Also prints elements that are defined as the colour white in the original document.*	•	–
Application Specification	Any combination of blck/ colour and White *White in any percentages*	White only goes where it has been defined in the original document, using the spot colour name "*SpotColor_White*". *Allows colour elements to have any amount of white behind them or none at all.*	•	–

Printing Only Spot Colour Toner

Driver Setting:
Prints Only Spot colour
Toner.
Label Style:
Only white toner is printed (no black/colour) – white percentages or gradients are allowed.

How This Setting Prints:
Black or colour elements in the original label are printed using white toner. The darker the element in the original label, the more opaque the white will print. This setting causes the Pro1050 to behave like a mono printer except white toner is used instead of black.

Data Portion - Excluding White



Driver Setting:
Data Portion - Excluding White.

Label Style:
Combination of black/colour – white toner is applied under-neath colour elements.

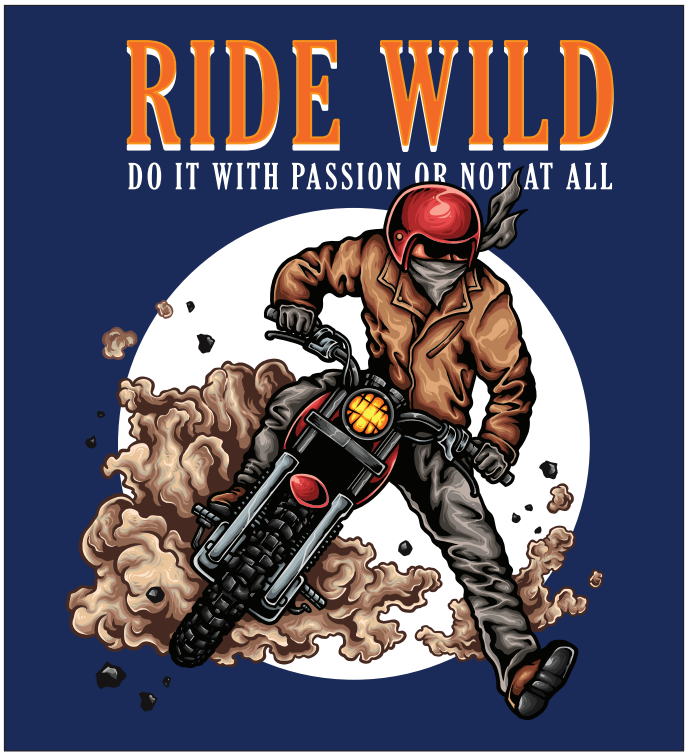
How This Setting Prints:
Prints 100% white behind all elements (except true black el-ements), allowing printed colors to remain vibrant on dark or coloured media.

Actual white elements in the original label do not receive white toner (for example, a .jpg logo with a white back-ground will only print the colour portion of the logo).

Does not print isolated white elements – white is only used behind colour.

Note: Because this setting is primarily used to avoid printing white backgrounds in logos and other images, it isn't com-monly used by creative professionals, so it won't be covered in the lessons.

Data Portion - Including White



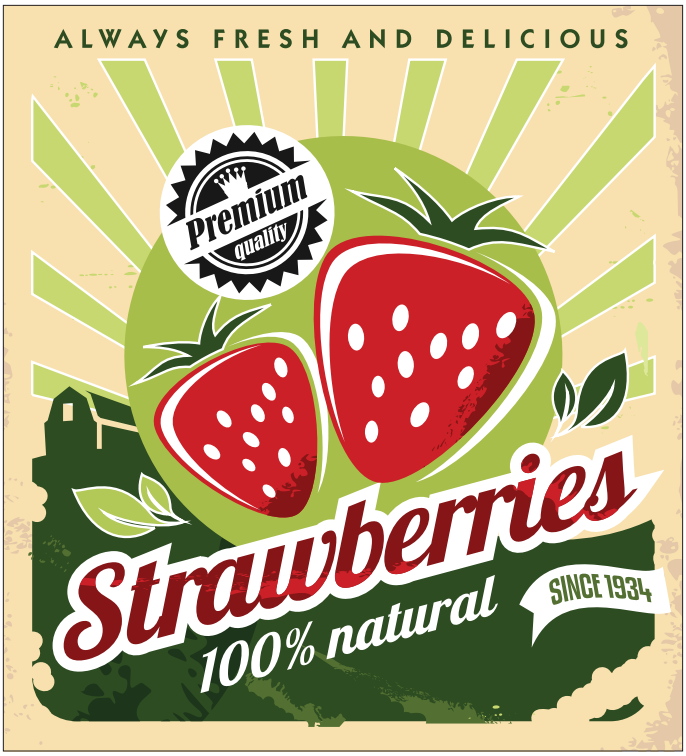
Driver Setting:
Data Portion - Including White.

Label Style:
Combination of black/colour and white (but no subtle white).
How This Setting Prints:
Prints 100% white behind all elements (except true black elements), allowing printed colors to remain vibrant on dark or coloured media.

Also prints elements that are defined as the colour white in the original label.

However, percentages of white below 100% are not possible.

Application Specification



Driver Setting:
Application Specification.

Label Style:
Any combination of black/colour and white in any percentag-es (white is defined as "*SpotColor_White*").

How This Setting Prints:
White only goes where it has been defined in the original label, using the spot colour name for OKI's white toner (*SpotColor_White*).

Subtle white effects (glows, gradients, percentages) are able to be achieved with no restrictions.

This setting allows colour elements to have any amount of white behind them or none at all, which isn't possible with any other Spot colour driver setting.

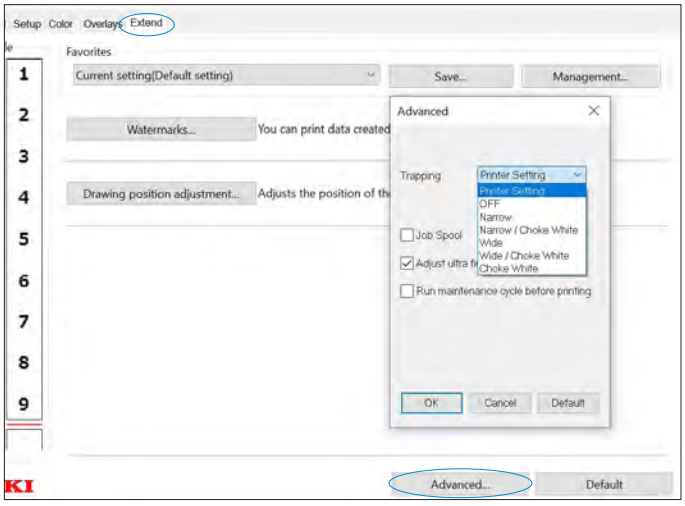
Trapping

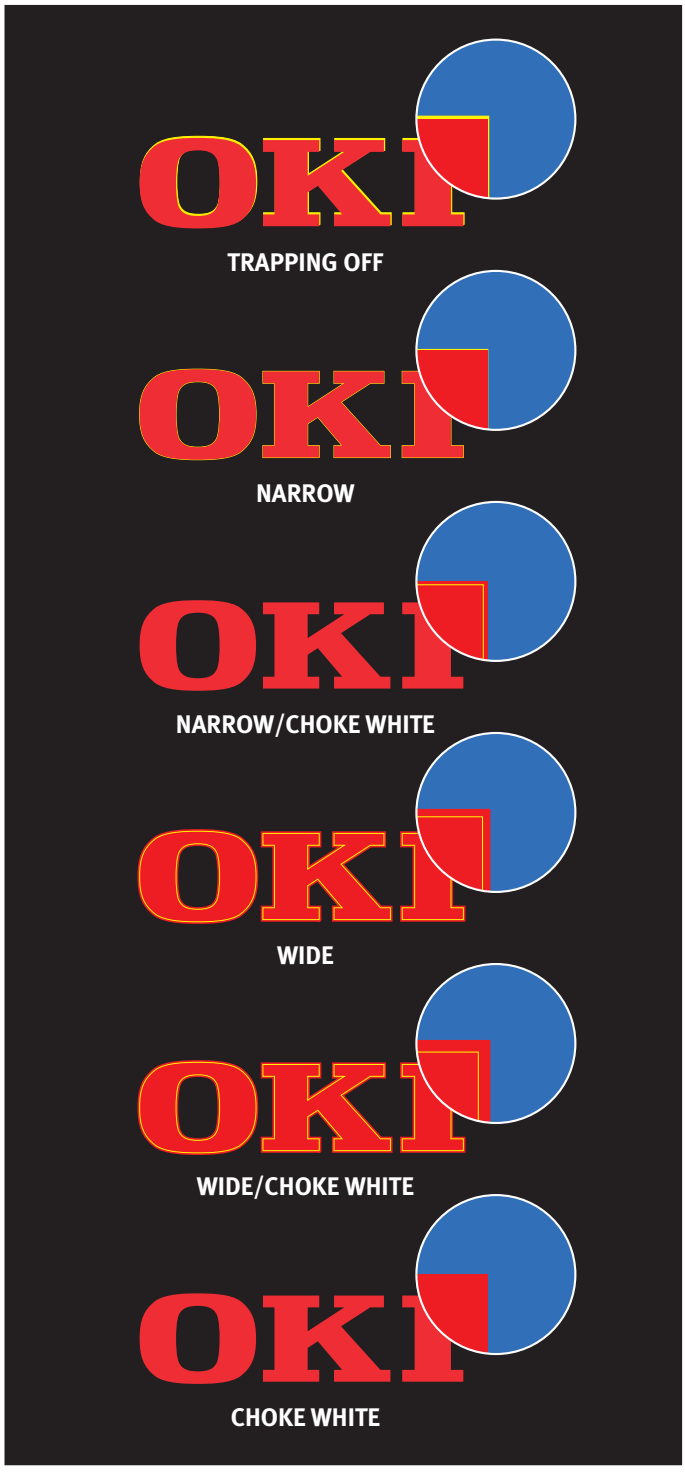
Trapping is used to prevent white edges from showing under coloured elements, and it has two components: The Spread of CMYK elements over White can be set to Off, Narrow, or Wide. Choke White Chokes or contracts the White elements, and it can be set to On or Off. A more detailed overview is included in the Trapping section of this guide.
Trapping is a feature that helps to hide unintended white edges that sometimes appear around colour objects being printed on a page. Trapping helps to resolve imperfect registration.

The concept of trapping dates back to old ink presses that needed methods to hide imperfect registration of two different coloured objects printed next to each other. For example, a text headline printed inside a colour box.

There are two approaches to trapping: Spread and Choke. Spread slightly expands CMYK elements over white, while Choke shrinks or contracts the white areas underneath in an attempt to hide their edges.

Because the Pro1050 is able to apply white toner behind coloured elements to improve their visibility on dark paper, Trapping helps to ensure that the white toner doesn't peek out from under the edges of those coloured elements.

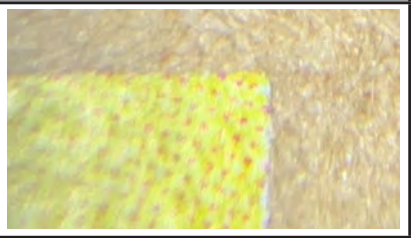
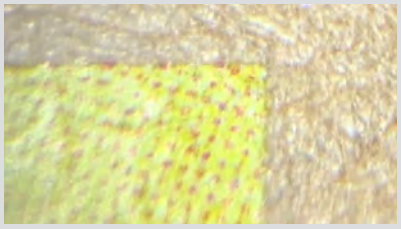
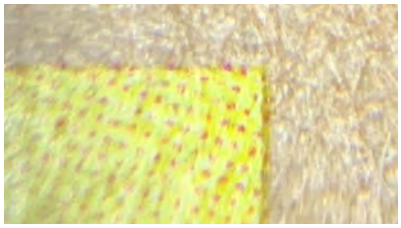
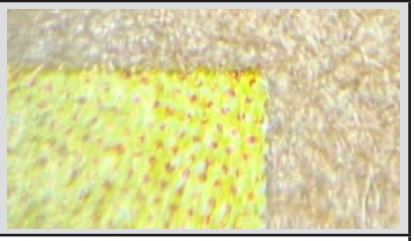
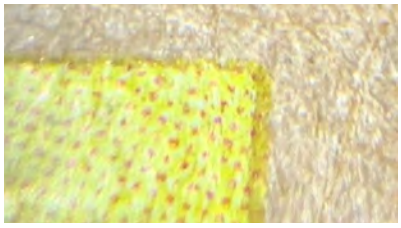
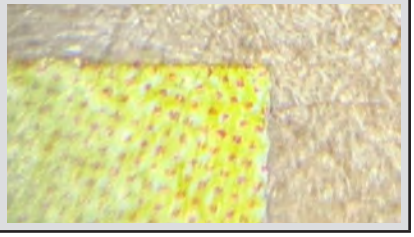




The OKI trapping feature offers different combinations of Choke and Spread:

Off	- Print without any trapping features
Narrow	- Slightly spread colour objects
Narrow/Choke White	- Slightly spread colour objects AND contract areas of white toner
Wide	- Expand colour objects more
Wide/Choke White	- Expand colour objects AND contract areas of white
Choke White	toner - Contract areas of white toner

You can use this chart for reference:

Trapping Setting	Features	Spread	Choke	Example
Off	Print without any trapping features	~	~	
Narrow	Slightly spread colour objects	●	~	
Narrow/Choke White	Slightly spread colour objects AND contract areas of white toner	●	●	
Wide	Expand colour objects more	●	~	
Wide/Choke White	Expand colour objects AND contract areas of white toner	●	●	
Choke White	Contract areas of white toner	~	●	

How to prepare and create labels

Section 1: Labels Using Only White Toner

The following sections explain how to prepare and create labels for white toner printing. For labels using white toner/varied white toner under colour toner we recommend using a vector based software application such as Adobe Illustrator or Corel Draw. This enables the most convenient and effective way of designing the labels.

If you're planning to create a label that uses only white toner, you'll be using the Driver Spot colour setting of Prints Only Spot colour Toner.

Prints Only Spot colour Toner is the simplest method of printing with white. Darker areas of your file, whether in grayscale or full colour, will be printed with more white toner,

The image at left is the original file, while the image at right shows how the file will print using the Prints Only Spot colour Toner setting on black media.

while lighter elements will be printed with less. Meanwhile, white or transparent elements, including image backgrounds, will be ignored completely.

If you're working with mostly type and vector elements, open Illustrator or InDesign and create your layout using black to represent white. Because setting up files for Prints Only Spot colour Toner doesn't require custom white swatches or channels to be defined (as you'll see in later lessons where white and colour are used together), you can even use programs like Microsoft Word to create these all-white labels.

For printing black and white photos on dark media, simply open the image file in Photoshop and select Image › Adjustments › Invert. Then, save to PDF and print using the Prints Only Spot colour Toner setting.

Section 2:
Labels Using White Toner Under Colour Toner

Using Adobe Illustrator

One of the easiest ways to apply white behind colour as well as to standalone white elements is by setting up your file for the Spot colour setting of Data Portion - Including White.
This setting doesn't work with files created in Photoshop, so we'll focus on Illustrator. Using the Data Portion - Including White setting automatically lays 100% white toner behind every element in your file (this is the data) - including the white swatch.

Note that the sample design shown doesn't include any subtle white elements – white toner is always applied at 100%, both under colour and for standalone white elements. Data Portion - Including White doesn't allow for a percentage of white to be applied, so if your design requires total control of white, you'll need to prepare your file for Application Specification which will be covered later in this guide.

- Start to create a new label sized to your media.
- Create a layer and fill it with a rectangle approximating the colour of your intended media colour.
- Name the layer "Media" and under the Layer Options, turn Print off and Lock the layer. This avoids accidentally printing the simulated media background layer – it won't even be exported to PDF.
- Create a new layer named "Other Elements" and begin creating your design using both coloured swatches as well as white. The Media layer allows you to see those white elements as they'll appear on the printed page.
- Once your design is finished, export your file to PDF X-1a.

Print from Acrobat or Adobe Reader using the Data Portion - Including White Spot colour setting. Your printed results should look like your design, with white toner automatically laid down for standalone white elements as well as behind all colour elements.

This is all that's required for simpler designs that combine both white and colour elements. If you need to achieve a greater level of control for determining where white is and isn't placed on the printed page, you'll need to move past Data Portion - Including White and onto the Application Specification Spot colour setting.

Setting up the simulated media background – turn off Print and Lock the layer.

Section 3:
Labels Using Varied White Toner Under Colour Toner

Using Adobe Illustrator

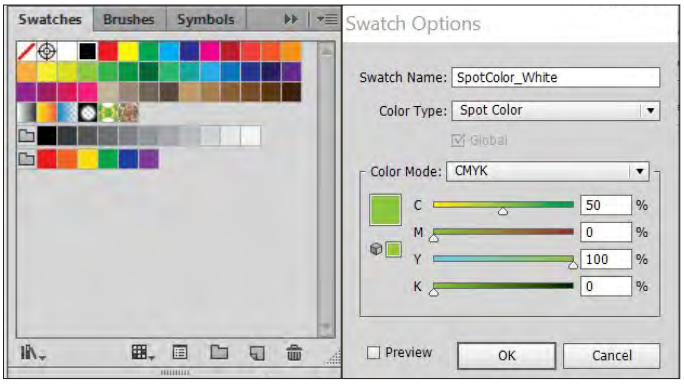
So far you've learned that the easiest way to print with only white toner is to use the Prints Only Spot colour Toner Spot colour setting. And the simplest way to combine both white and colour is to use Data Portion - Including White.
But when your design calls for a subtle use of white – gradations, tints, etc. – or requires elements to print onto the media with a percentage of white with less than 100% behind them (often no white at all), you'll need to use the Application Specification Spot colour setting to give you full control of where white does and does not go in your label.

The Application Specification setting works differently from Data Portion - Including White in that you won't be using the white swatch. Instead, you'll need to create a custom Spot colour swatch that will represent white.

Regardless of where white or coloured elements are placed within your file, white toner will only print where this custom white spot colour swatch is used.

- To create the swatch, open your Swatches palette and select a colour of your choice that you don't plan to use in your label.

- Double-click and rename the swatch SpotColor_White. Then change the colour Type to Spot colour.



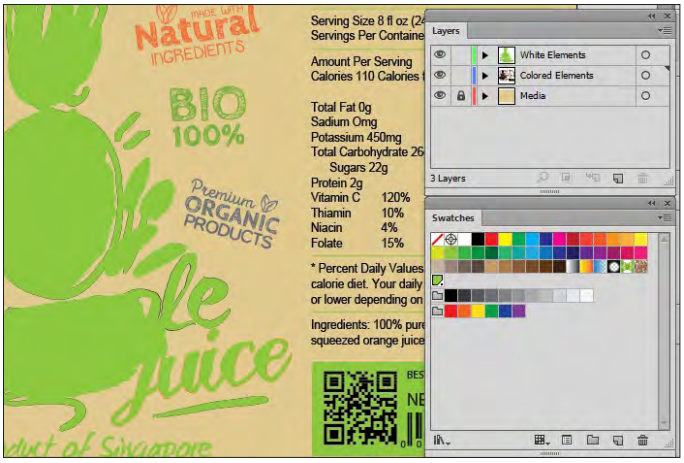
Create a spot colour swatch naming it as shown "SpotColor_White"

- Create the same Media layer as you did in the previous lesson, filling the rectangle with the approximate colour of your intended media before opening the Layer Options panel and turning Print off and Lock on for the layer.

- Then create a new layer, name it "coloured Elements", and begin laying out your design elements. Wherever you intend for a standalone white element (white without colour on top) to go, use the SpotColor_White swatch you've created.

- For this layouts be sure to include coloured element that print directly on the media (the coloured texts surrouding pineapple graphic), coloured elements that will have white printed behind them (the pineapple graphic and surrouding text), and standalone white elements (the white text, white line and white rectangle).

- Once you've finished creating your design, you'll need to create a layer that contains spot colour white elements to print under your coloured elements.



Duplicate the coloured Elements layer and rename it White Elements. Then, delete all elements except those whose colors you want to preserve with white. Convert all remaining elements' fills and strokes to the SpotColor_White swatch.

- There are many ways to do this, but the simplest is to Duplicate your coloured Elements layer and rename it "White Overprint".
- Temporarily Turn Off the Visibility of your coloured Elements layer to avoid confusion.
- Then, working in the White Overprint layer, delete everything except for the elements whose colour you want to preserve on dark media with white under printing. Once only those elements remain, change all fills and strokes to your SpotColor_White swatch.
- Next, and most importantly, under Attributes, set Overprint Fill and Overprint Stroke (when a stroke is used) to On for all of the elements on your White Overprint layer. This will prevent these white elements from knocking out the coloured elements below, instead allowing both white and colour to print.

Turn on Overprint Fill and Overprint Stroke for all fills and strokes in the White Overprint layer.

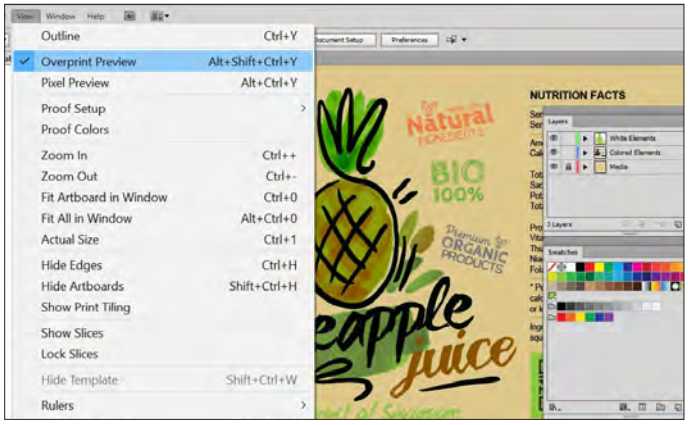
- Turn your coloured Elements layer back On, export your file to PDF X-1a.
- Print from Acrobat or Adobe Reader using the Application Specification setting under Spot colour Usage Methods.

Your results should match your original design, with white toner replacing SpotColor_White swatch.

As you begin to further explore creating Illustrator files to be printed using the Application Specification Spot colour setting, you may want to turn on View › Overprint Preview within Illustrator to get a better idea of how your final design will print. This can also help troubleshoot errors before exporting and printing.

Make sure the "White Elements" Layer is always on top of your Layers to print white properly.

Note: As the Pro1050 always prints White underneath the colours it may help to change the SpotColor_White to C0, M0, Y0, K0 and put it underneath the "Coloured Elements" Layer just for visualisation on screen. Don't forget to move back the layer "White Elements" to the top before exporting your PDF!



Turn on "Overprint Preview" gives an accurate view of the file's setup within the application before exporting and printing ("SpotColor_White" swatch is set to green n this example)

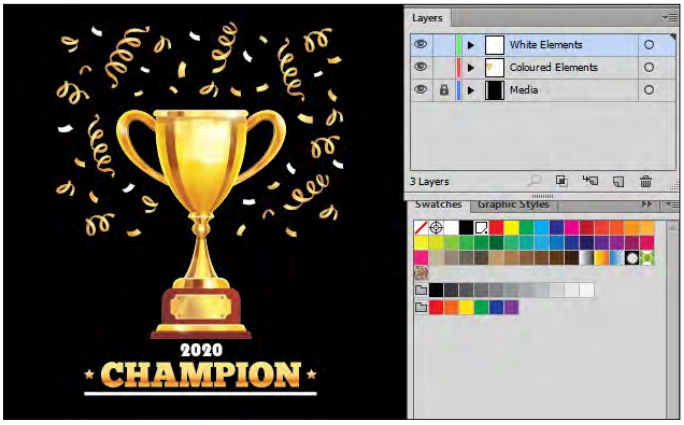
The sample file, printed with OKI Pro1050

Section 4: Labels With a Subtle Background Texture Using White Toner

Using Adobe Illustrator and Adobe Photoshop

This section will combine all techniques written above by incorporating both raster and vector elements into one file. This is necessary when you want your printed piece to include vector elements (like small shape and types) as well as subtle raster images like semi-transparent textures and photos. It make sense to work within a vector environment.

- Begin by opening Illustrator and creating a layout of type and vector elements based on the instructions in Section 3 on page 11.



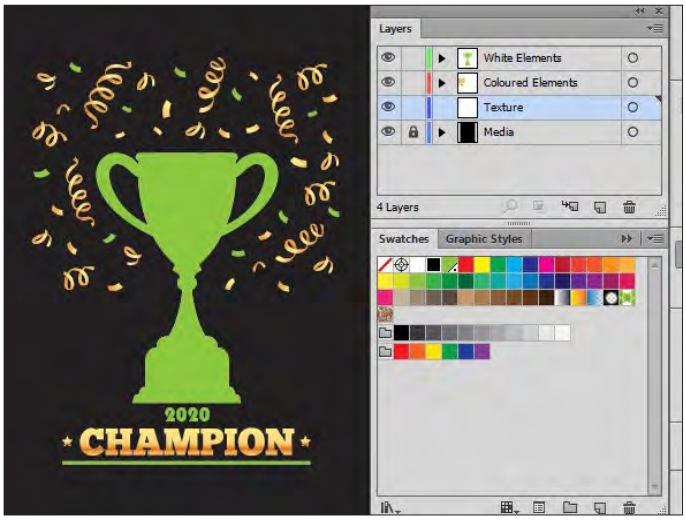
Create a layout using coloured elements as well as SpotColor_White elements

Set fills and strokes to the “SpotColor_White”

- Create your SpotColor_White swatch and use it to represent white, then create the White Overprint layer and set fills and strokes to Overprint for the appropriate elements.

- Next, open Photoshop and create a new label the same size as your illustrator layout.

- Create a new layer (Above the background layer) and create a texture on this new layer.

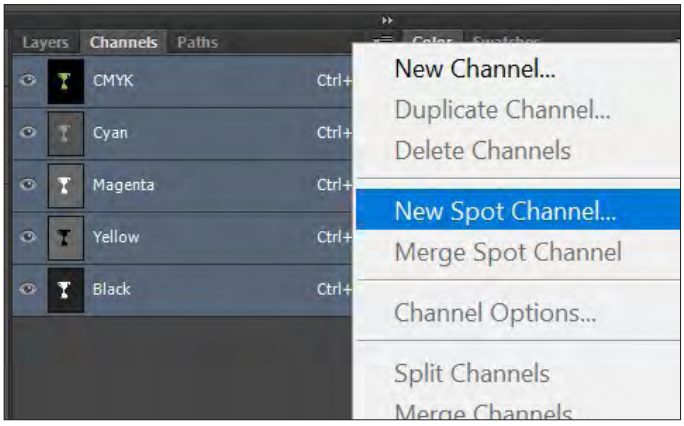


Create your texture in Photoshop, on a new layer, above the background layer.

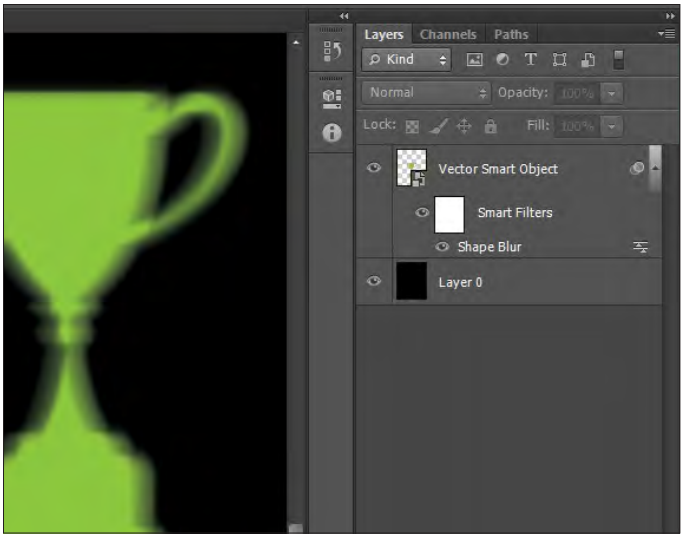
- Once your layers are set, make sure you have nothing selected.

- Then load the texture layer’s selection by Control- or Command-Clicking on the thumbnail of the layer.

- Next, go into the Channels palette and create a New Spot Channel, naming it “*SpotColor_White*“



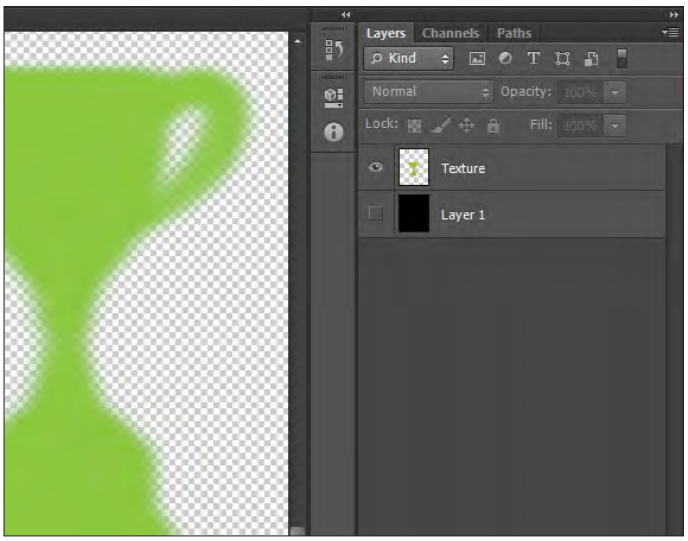
Create the New Spot Channel



Create your texture, then create the SpotColor_White Spot Alpha Channel in Photohsop.

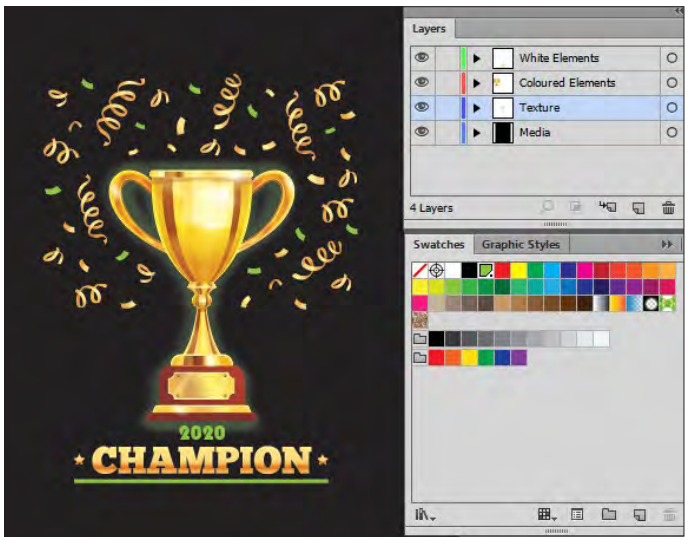
- To use only white in your texture, Turn *Off* the original texture layer after creating the Spot Alpha Channel. Or, leave the texture layer on if you'd like colour elements over white. You can even create new coloured layers to be printed directly onto the media for a more complex effect.

- Now Turn Off the Background Layer and Save as a PSD (Photoshop) file.



Create your texture, then create the SpotColor_White Spot Alpha Channel in Photoshop, turn off the background layer and save as a PSD (Photoshop) file.

- Go back to your original Illustrator label file and Create a New Layer named "Texture". Under FIle › Place, browse to the *Photoshop file* containing your texture. Once this new file is in your Illustrator file, the Spot Alpha Channel within it will take on the same colour that you've defined as your Spot Colour Swatch.



Place the texture PSD file into your original layout Illustrator file.

- As you've done previously, export your file to PDF X-1a (Read "Exporting to PDF" on page 16)

- Print from Acrobat or Adobe Reader using the "Application Specification" setting under Spot Colour Usage Methods.

Your final out put should be a seamless blend of the raster texture and vector elements.

The sample file, printed with OKI Pro1050

Section 5:
Labels Using White Toner

Using Adobe InDesign

Adobe InDesign has many of the same capabilities as Illustrator when used to design labels that incorporate white printing elements. Using InDesign, it's possible to create designs that print in only white (using Black to represent white and printing with the driver set to Prints Only Spot colour Toner) or incorporating 100% white behind colour elements as well as solid standalone white elements (using the Data Portion – Including White setting).

It's also possible to create more custom pieces that incorporate OKI's custom SpotColor_White swatch and using the Application Specification setting.

However, working with InDesign for these types of pieces becomes a challenge when elements must be set with the overprint property. InDesign allows for native elements (text, lines, and shapes created natively in InDesign) to have their fills and strokes set to Overprint, but raster and vector elements created in Photoshop and Illustrator are automatically placed into frames, and neither these frames nor their contents are able to be set to overprint from within InDesign.

The Overprint Fill and Overprint Stroke boxes will be greyed out for all placed graphic elements (the exception for this is frames filled with a solid colour).

Because of this limitation, it is not recommended to use InDesign for complex files that require elements to be set to overprint (for example, the piece demonstrated in Lesson 3).

If you do choose to work with InDesign in setting up these kinds of files, you'll need to create and/or modify any overprinted SpotColor_White elements within their native applications.

Both Overprint Fill and Overprint Stroke are unavailable in InDesign for placed objects, which limits the ability to create complex files using white elements in the application.

This means that each vector element placed within an InDesign layout that requires overprinting will need to be opened and modified in Illustrator (using the SpotColor_White swatch), and each raster element that requires overprinting will need to be opened and modified in Photoshop (using the SpotColor_White Spot Alpha Channel).

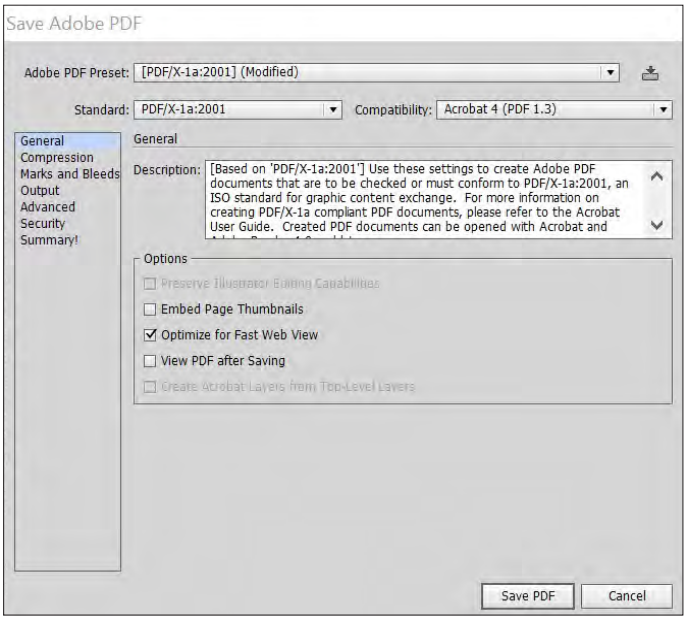
Working this way can be time-consuming and tedious, which is why InDesign is only recommended as a design tool for the simpler types of labels incorporating white. For all other files, working in Illustrator is recommended.

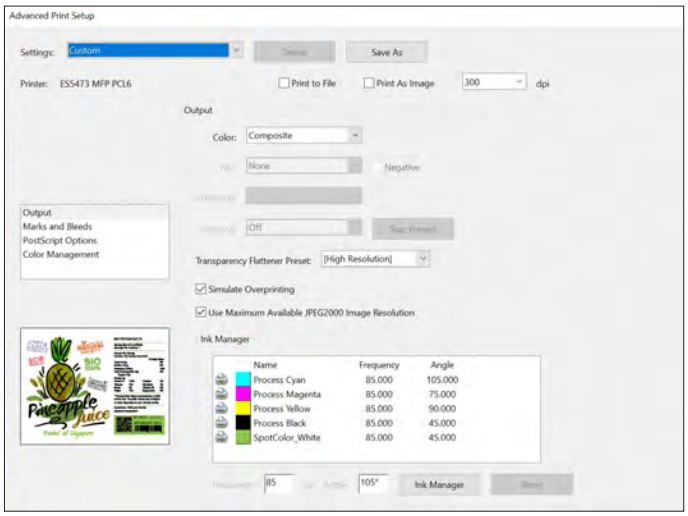
Exporting to PDF

Exporting labels from Adobe Illustrator, Photoshop, and InDesign to PDF and printing from Acrobat or Adobe Reader will streamline the printing process and reduce errors. And because Photoshop isn't able to directly print files containing spot channels, exporting to PDF is necessary when designing your label in that application.

Additionally, files using the Spot colour setting of Application Specification require PDF type X-1a (either X-1a:2001 or X-1a:2003) for the named Spot colour to be transferred correctly from the source file to the PDF.

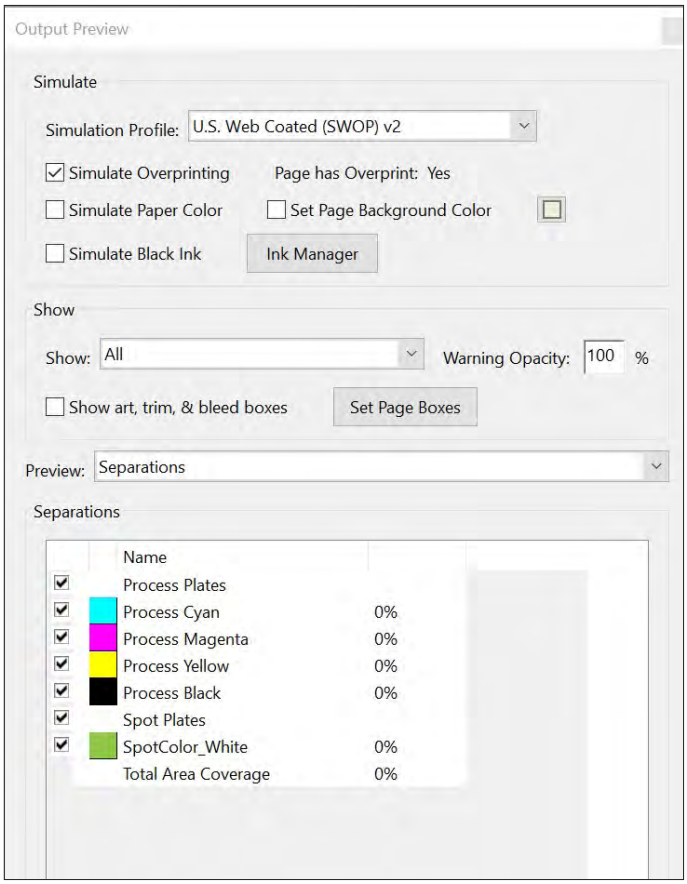
One helpful feature in Acrobat is the Output Preview mode under Print Production. This allows you Simulate Overprinting which is useful in making sure that Spot Colors are set up to overprint correctly. Acrobat Reader has a Simulate Overprint setting under Advanced Print Setup.





Another benefit of Acrobat's Output Preview is the ability to view the spot colour that you've defined in your file, which must be named SpotColor_White. Check under Separations to make sure this name is listed correctly.

You can also mouse over areas within your file to see where the Spot colour has been placed as well as the percentage used in each area.



Orange represents "SpotColor_White" in this file. Simulate Overprinting is turned off in the image at left and turned on in the image at right. The darker overlap of green and orange show where white will be printed under the graphics.

Additional Tips

Once you've mastered the basics of preparing and printing files on the Pro1050, you're more likely to encounter unexpected results. The information below will help prepare you for issues you may encounter as you create your spot colour files.

Driver

- The Application Specification option for Spot colour Usage Methods is only available through the PostScript driver. If you're not seeing Application Specification as an option, you likely have the PCL driver installed. Downloading and installing the PostScript driver will fix this.

Selection (Illustrator)

- Using the Selects Similar Objects tool in Illustrator is a big time saver when changing white elements to the Spot colour swatch and separating them onto their own layer. If you're having a hard time selecting one element of a grouped object, create a rectangle off the boundaries of your artboard, then use the eyedropper tool to match its colour to the object you want to select. With this object selected, use the Selects Similar Objects tool and make your modifications to the selected elements.

White Opacity

- Try combining the media colour with toner colour to create new colors by blending directly onto the media – for example, printing 100% Cyan (with no white behind it) onto red media creates a dark purple colour.

- Darker colors (colors that contain a percentage of Black) will print better if the black is removed and the percentage of behind them is lessened – for example, printing 0% C 100% M 100% Y 25% K on black media with 100% white behind the element will look muddier than printing 0% C 100% M100% Y 0% K (black removed) over 75% white – this is an advanced technique the requires more effort, but can greatly improve results when printing white under colour on dark media.

Trapping

- When printing designs that contain many small letters or thin elements, it may be easier to use a manual trapping method for coloured elements printed over White rather than using the Driver's methods. Try adding a .25 pt stroke of the same colour as the fill around your element and print with Trapping set to Off. This will preserve the fine lines that Choke White Trapping setting will lessen or eliminate.

Textures and Patterns

- Adding a light pattern or texture that prints directly onto the media can be a convincing effect – try a light texture the same colour as the media at a lighter opacity, and fade toward the edge of the printable page (approximately .2" from the page borders).

- For advanced raster effects (especially subtle textures) in Illustrator, create a texture with a transparent background in Photoshop, create the Spot Alpha Channel naming it appropriately, then import the PSD file into its own layer in Illustrator. The Spot colour will carry through.

- Printing a flat image directly onto the media in a percentage of white or the media colour will create a clear watermark effect.

Spot colour Swatch

- Though the earlier instructions suggest creating the Spot colour swatch in Illustrator after you've started working on your design, you can also do so immediately after you've created your label. This will save you from having to find and replace elements later.

- When using Illustrator or InDesign, it is possible to create a Spot colour swatch that's actually white instead of using a colour like Magenta – this will be less distracting when designing the file, but it also makes it harder to tell if a PDF was set up correctly for Spot colour printing.
- Overprinting the Spot colour swatch onto another Spot colour (like a Pantone colour) in Illustrator or InDesign will not work. To fix this, select all Spot colour elements besides white and under Edit › Edit Colors and select Convert to CMYK.

Spot colour Swatch *(cont)*

- Though the Pro1050 typically places White under CMYK, the instructions in Lesson 3 for the Application Specification Spot colour setting describe placing the White overprint layer on top of the colour layer – while this method may seem counter intuitive, it eliminates problems that come from compound elements (for example, a logo that contains blue text over a yellow oval) overprinting elements onto themselves – however, for simpler designs, placing the Spot colour white layer under the colour elements and having colour elements Overprint will also work.
- When printing files that use the Application Specification Spot colour setting directly from Illustrator, an additional setting must be set to ensure that elements using the custom SpotColor_White swatch which require overprinting are rendered correctly. Under the Advanced tab, set the Overprints drop down to Simulate. (the White Overprint checkbox has no effect on the custom SpotColor_White swatch)

PNG Files with Transparent Backgrounds

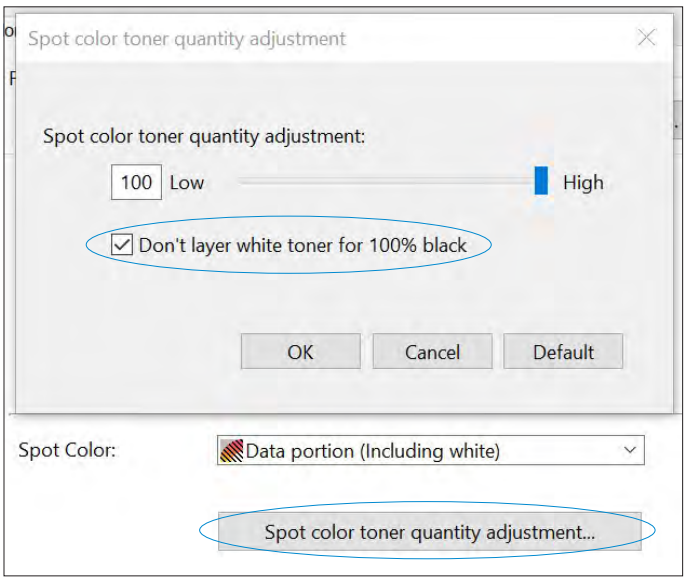
- Transparent backgrounds contained in PNG files are still seen as Data when using the Data Portion - Including White Spot colour setting. Because of this, the entire image will print with white behind it. To correct this issue, Control or Command-Click on the thumbnail(s) of each layer, then create a Spot Alpha Channel (following the instructions in Lesson 5) and print using Application Specification Spot colour setting.

Media

- Let the media breathe. Too much coverage – especially around the edges of the printable area – can take away the benefit of printing on coloured media. The best results come from keeping elements toward the center of the page and allowing the media to show through as much as your design will allow.

Spot colour Toner Quantity Adjustment

- With the Spot colour Setting "Data portion (Excluding white)" and "Data Portion (Including White)" you may want to print 100% white behind all elements, including true black elements. To do so uncheck "Don't layer white toner for 100% black" in the "Spot colour toner quantity adjustment").



Finally, be aware that printing white and colour on dark media is both a creative and technical process. It's rare that a piece comes out looking as the user expects the first time it's printed. Experiment with driver settings, printer settings, various types of media, and file setup (especially opacity) to continue to understand the process and improve your results.

OKI at a glance

OKI is a global business-to-business brand and pioneer of award-winning digital LED printer technology. Its compact, robust and leading-edge products combined with customer-centric solutions, empower businesses to create and print professional quality applications in-house. Used by organisations across a range of sectors including retail, graphic arts (print for profit), education, healthcare, hospitality & events, construction, engineering, chemical and more, OKI's printers are renowned for their innovation, reliability, unrivalled media handling capabilities and superb colour quality.

Contact Us

Please do not hesistate to contact us for more information, label samples or to request product support and training, Please contact marketing@okieurope.com.

OKI EUROPE LTD.
Blays House, Wick Road
Egham, TW20 0HJ
United Kingdom
T +44(0) 20 8219 2190
WWW.OKI.COM/EU

OKI
Open up your dreams