efi®

The Ultimate Guide for White, Clear and Multi-Layer Applications

Brilliant graphics. Stunning capabilities. Awesome profits.

It's what you get when you use multi-layer printing and white and clear inks — premium-margin applications that will ignite your print business and accelerate your bottom line.

You will be amazed at how colourful your thinking can get when you start layering white and clear ink. This guide will help you create new ways print can be used to break through and stand out in a big way.

Master a few of the cool printing techniques inside and you'll open the door to the ultimate range of premium-margin applications.

Technology meets creativity

Leveraging the printer's technology is the key to creativity. It also dictates the best way to build multi-layer files to maintain productivity. So, it's important to understand how EFI™ inkjet printers interpret white and clear inks (see table, below).

AT A GLANCE			
Flood White/ Flood Clear	Shape White/ Shape Clear	Spot White	Blockout Graphic (EFI Pro 32r, VUTEk 3r+/5r+, VUTEk h3/h5)
Pre-coat, post-coat	Prints under or over CMYK	Prints inline with CMYK	Prints: CMYK, W, K, W, CMYK
Selected at the printer by the operator. White ink matches the dimensions of the RTL file.	Pre-press often required. Under-white or over-white selected at the printer by the operator.	Pre-press often required. White prints with CMYK. Single layer images print at the same speed.	Set up at the printer. All five layers print in one pass.

Spot white mode, for example, can be used when there are white ink areas in a file that do not need to print above or below CMYK inks. In the image to the right, white ink fills in the areas while CMYK inks are printing.

Why it's cool

The artwork prints in a single layer, at full speed.

Single-layer applications

Spot white mode can also be used to print an all-white ink image. Since the white ink prints at the same resolution as CMYK, images are highly detailed. This technique replicates black and white photography.

Why it's cool

Any suitable black substrate can be used, the file prints at full speed and it only uses white ink!

Take any image in Photoshop® and convert it to a greyscale image. Copy the image into a "White_Ink" channel and invert the image. Fill the canvas with a blank white background (0% CMYK).

In Illustrator,® simply re-colour the artwork with a spot colour named "White_Ink." The spot colour can be created as any colour for best visibility.
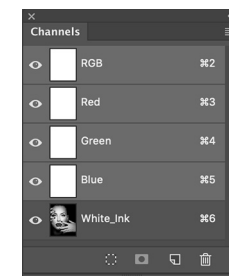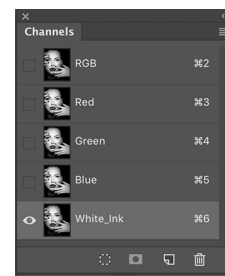
To utilise Spot White mode with a CMYK file, knock out any white ink areas of the artwork with 0% CMYK. Add "White_Ink" into those areas.
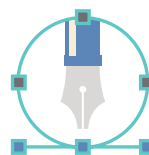
Pro tip

In Photoshop, copy the areas of the image to be printed with "White_Ink" into the "White_Ink" spot channel to retain amazing detail. In Illustrator, duplicate the shapes to be filled with "White_Ink" into a new topmost layer.

Video alert

Watch our YouTube video on creating a spot white-only image in Photoshop!

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Two-layer applications

White ink can be used to mask off areas of a coloured or metallic substrate. This creates a white base for CMYK inks. Areas left open (without white ink) allow CMYK inks to work with the underlying substrate.

From a creative angle, knowing how inks lay down can aid in the design process.

For example, CMYK inks printed on clear substrates without white ink will appear frosted and translucent. White ink can be used to create areas of solid opacity.
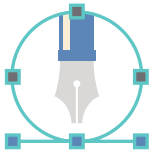

Pro tip

For an etched glass effect, use a colour break of: C=5, M=3, Y=3, K=2. Print the file as a two layer for best coverage.

Clear ink always prints on its own dedicated layer. Adding clear to a CMYK print, either as a spot or flood, will need to be set up as a two-layer file.
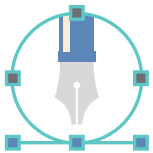
Pro tip

Spot clear channels can be created in the same way. Simply name the spot channel "Clear_Ink." White ink and clear ink channels can be part of the same Photoshop or Illustrator file. The data is separated out at the RIP and set up at the printer by the printer operator.
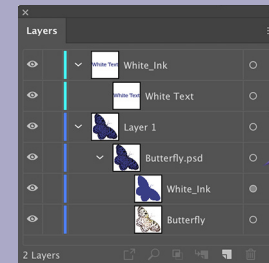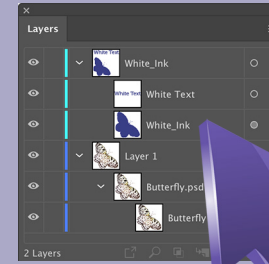
Importing Photoshop images with white ink into Illustrator is easy! White ink elements must always be on the topmost layer in Illustrator. Embed Photoshop files with white ink channels to reveal the ink data in the Layers palette. Drag the White_Ink layer to the topmost layer.

Video alert

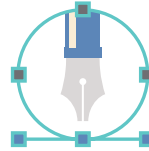Watch our YouTube video on creating shape white files in Photoshop!

Bump plate

Bump plates can be created for two-layer printing. This application can add spot colour to areas of an image. It can also be used to enhance rich blacks. Or both!

When printing on porous substrates, such as backlit fabric, this technique can be useful if select density is needed.

Two separate files are created and sent to the RIP. The two files are then combined at the printer in the Multi-Layer interface.

Pro tip

If possible, use pure primary colours for more pop. For example—in a Photoshop image that contains red, create a bump file comprised of yellow and magenta only. Delete the data in the other channels.
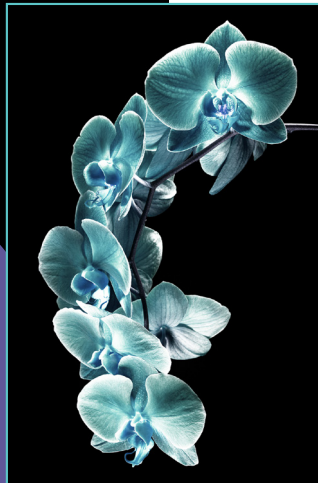
Video alert

Watch our YouTube video on creating a bump plate in Photoshop!

Three-layer applications

White ink and clear ink can be used together in three-layer printing for visual impact. Use clear ink, either as shape clear or a flood, to add translucency and gloss. Metallic substrates will show through CMYK inks, where white ink is absent.

White ink can be used to create areas of solid opacity in window graphic designs. Add clear ink to CMYK areas to create translucency.
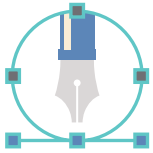
Pro tip

Follow the same two-layer instructions to create both "White_Ink" and "Clear_Ink" spot channels in Photoshop and Illustrator. Photoshop files can contain both spot channels and be imported into Illustrator. Embed and separate out the separate channel data.

Day/night backlit

This is a print mode available on all printers that contain white ink. One file is RIPped and set up by the operator in the Multi-Layer interface. The image prints CMYK colour > flood white > CMYK colour. The final composite image prints in perfect registration, all in one pass.

On clear substrates, such as glass film or cling, this allows a viewer to see an image on both sides. White ink gives the image opacity. For images printed on clear substrates intended for backlit use, the image appears normal when the lightbox is off and the second image adds colour density and pop when the lightbox is turned on. The white flood, in this instance, works as a diffuser.
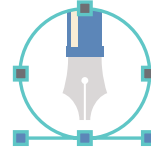
Dual day/night backlit

This technique is a variation of the day/night backlit print. By creating a different file for the back layer, the front layer's appearance is enhanced or altered when backlit. A white flood separates the two images and is designated at the printer.

Pro tip

When designing for this application, keep in mind that the back layer must come through any elements on the frontside. Solid areas in the front image work best to display hidden text.

Video alert

Watch a video of a dynamic dual day/night lightbox!

Enhanced day/night backlit

This technique is a variation of the normal day/night backlit print. By rearranging the layering of select elements in the file, this method can be used to enhance the original image for more impact. White ink is incorporated into two layers of the print, acting as the diffuser.

Understanding the printer's technology is key. Each layer can contain CMYK ink and white ink data.

In the below example, we wanted a blockout black background and intense colour in the the model's lips, nails, and eyeshadow.

The middle layer adds a second layer of colour and black. White ink fills in the white areas, to prevent oversaturation of the model's skintone. The hidden back layer completes the day/night print by adding white ink behind her lips, nails, and eyeshadow and a third layer of black.

Why it's cool

Colour can meet or exceed photographic processes. Like the day/night application, the final image is still printed as a three-layer and in perfect registration.

MaxColor backlit

This simple prepress technique prepares an image for intense LED lightboxes. The final three-layer image prints as CMYK > CMYK plus spot white ink > CMYK plus white flood.
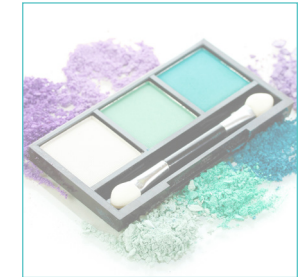
Five-layer applications

All of our current roll-to-roll printers have the built-in ability to print blockout graphics. This is a graphic that displays right-reading on both sides.

Shaped files can be used if the shape is symmetrical. The same image, or two different images, can be used as long as they are the same size.

Why it's cool

Prints all in one pass, in perfect registration. Does not require additional pre-press. Eliminates the need for specialised blockout material or lamination processes. Print on any clear material!

Video alert

Watch our YouTube video on creating a MaxColor file in Photoshop!

Multiple layer applications

Textured printing

Add texture to wallcoverings for a tactile feel. Create raised areas in a print for visual attention. Replicate materials like canvas or wood, on plain, inexpensive substrates. Laminate a raised print with a holographic film, for an embossed look. The only limits are your own creativity!

How much texture is desired determines how many layers the final print will contain. The example below is a three-layer file. The key is get ting as much ink down in the texture layer. RIP that file with Color Management turned off, for maximum ink laydown.
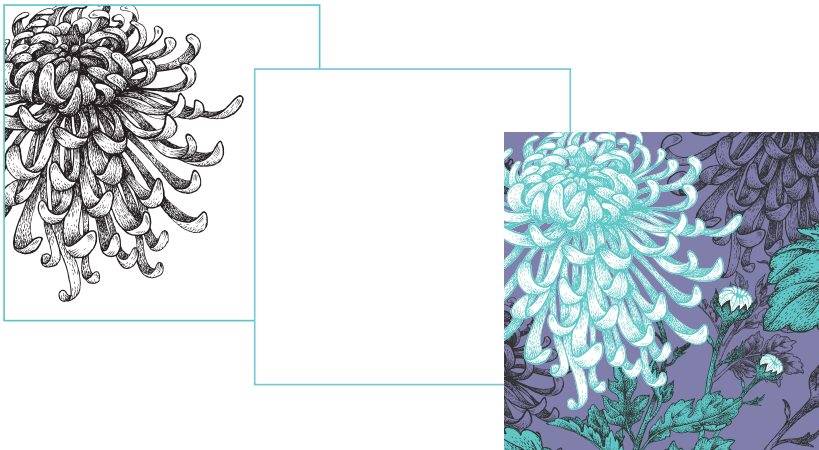
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