FIELD TECHNICAL PROCEDURE

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Printers Affected:	**All White-equipped Vutek and Wide format printers**

File Preparation for White Ink

This document provides comprehensive instructions for preparing files for use with white ink. You can use white ink in many useful and creative ways—as a solid area, or as a tint or gradation. Some spot and shape white printing require prepress preparation, but some uses do not. The prepress procedures are not complicated, but you must do them in a specific manner to ensure successful printing.

Before Starting

It is important to understand the entire file preparation process before you start, so please read through this entire document before preparing the White_Ink file.

- Read through this **entire document** before beginning any of the procedures.
- You should be familiar with the entire file preparation process before continuing.

Overview: Preparing files for white ink

Preparing files for white ink requires that you first understand the process, perform prepress preparation, and then set up and save or export the files.

This is the workflow you follow when preparing files for white ink:

1. Understand the three categories of white ink processing. For details, see Understanding the three modes of applying white ink.
2. Complete prepress work needed to create white ink data. The procedure depends on which application you are using. For details, see Prepress procedures for creating white ink data.
3. Prepare files that you want to save or export. The procedure depends on which application you are using. For details, see Preparing files for saving as PDF.
4. Save the files. When you set print options for the file, you can also export the file and save it as a preset. For details, see Saving files as PDF.

Understanding the three modes of applying white ink

There are three modes for ways to apply white ink—flood, shape, and spot white. **Shape** and **Spot White** have similar preparation, so they are discussed as one mode.

Flood mode

With flood, the dimensions of the files determine the dimensions of the area to be coated. Flood does not require prepress intervention because the operator applies the flood at the printer.

Note: When printing a flood, the flood area is larger than the image file.

Shape and spot white modes

Shape and spot white are applied to the substrate during prepress work. Preparing files for shape and spot white is the same. Whether to apply white on top of or under the CMYK is determined at the printer.

Note: Spot White mode prints CMYK ink and white ink simultaneously. In any areas where white intersects CMYK data, white and CMYK inks will blend together when printed.

Prepress procedures for creating white ink data

In normal printing, white data areas in image files are translated as <none> or the absence of ink. The white paper, or ground, serves as white in process printing.

For white ink prepress processing, you must type the name **White_Ink**. This naming convention is important. Be sure to include upper-case and underscore usage. XF automatically recognizes spot channels called **White_Ink** as data used for white ink printing.

Using Adobe Photoshop CS Series for shape and spot white

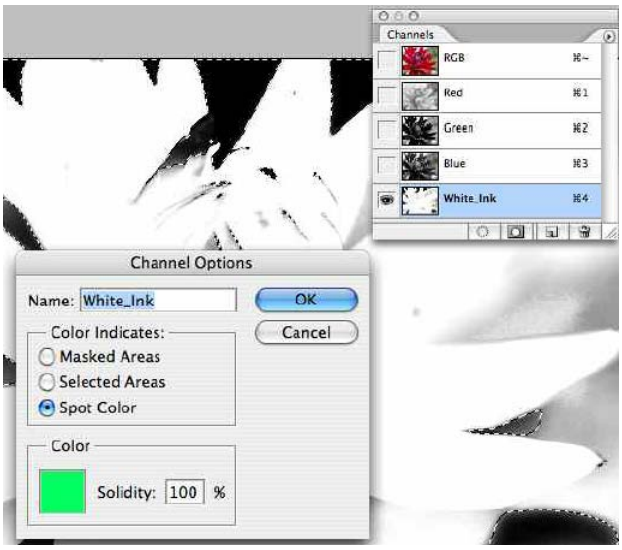
To utilize the white ink function in a Photoshop file, you must create a spot color channel. To do this, make and save a selection as a spot channel. RGB and CMYK files are acceptable.

1. Use normal selection tools (Wand, Lasso, Quick Mask, Color Range, etc.) to select the areas of the document that you want to contain white.
2. Choose **Select** > **Save Selection**. **(**See Figure 1.)
3. Name the new channel **White_Ink**. (See Figure 2).
4. Open the Channel Palette under **Window** > **Channels.**
5. Double-click the name of the new channel to open the **Channel Options** dialog box. (See Figure 3.)
6. Click Spot **Color** in the Color Indicates group box.

Figure 1: Select > Save Selection Screen

Figure 2: New Channel – White_Ink Screen

Figure 3: Channel Options – Spot Color



7. Save the document as a PDF file with spot colors checked **ON** (See **Preparing files for saving as PDF**).

Using Adobe Photoshop CS Series for white only image

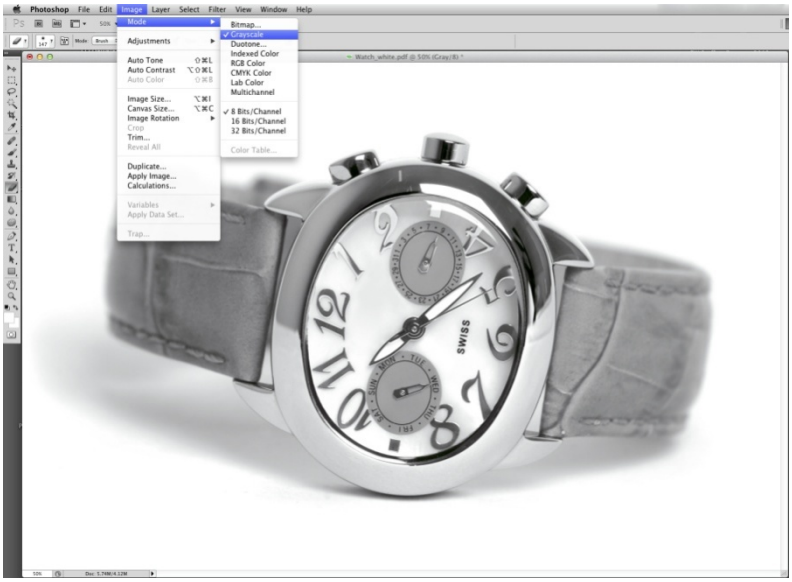
Preparing for a white-only image differs from preparing for shape and shape spot white.

1. Open an image.

   Note: RGB and CMYK files are acceptable.

2. Choose **Image**>**Mode**>**Grayscale.** (See Figure 4.)

Figure 4: Choose grayscale mode



1. Choose **Window>Channels >Channel Palette**.
2. There is a single channel called Gray.
3. Choose **Duplicate channel** from the palette menu. (See Figure 5.)
4. Name the new Spot Channel **White_Ink**. (See Figure 6.)

Figure 5: Duplicate channel

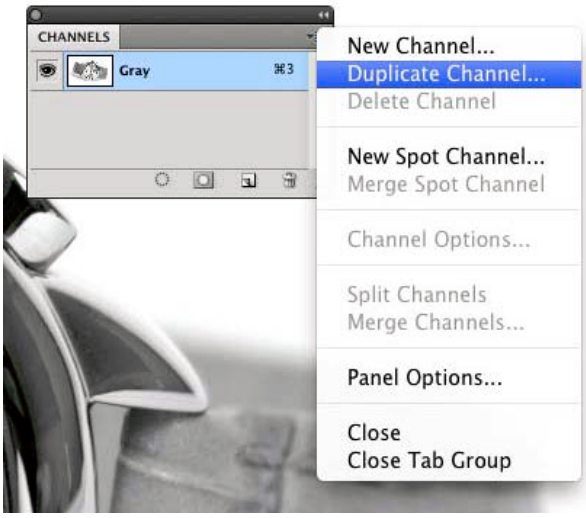
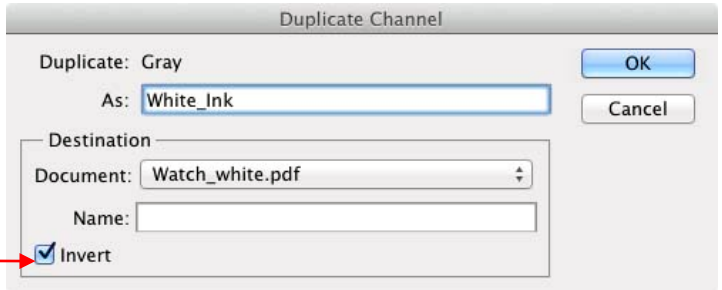


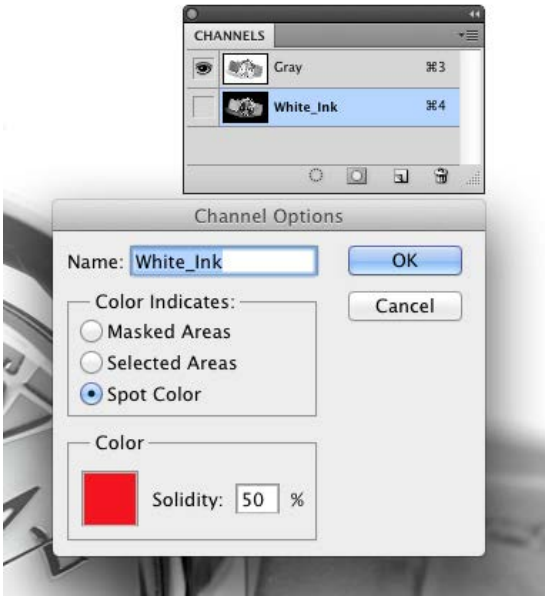
Figure 6: Name spot channel White_Ink



Check **Invert**

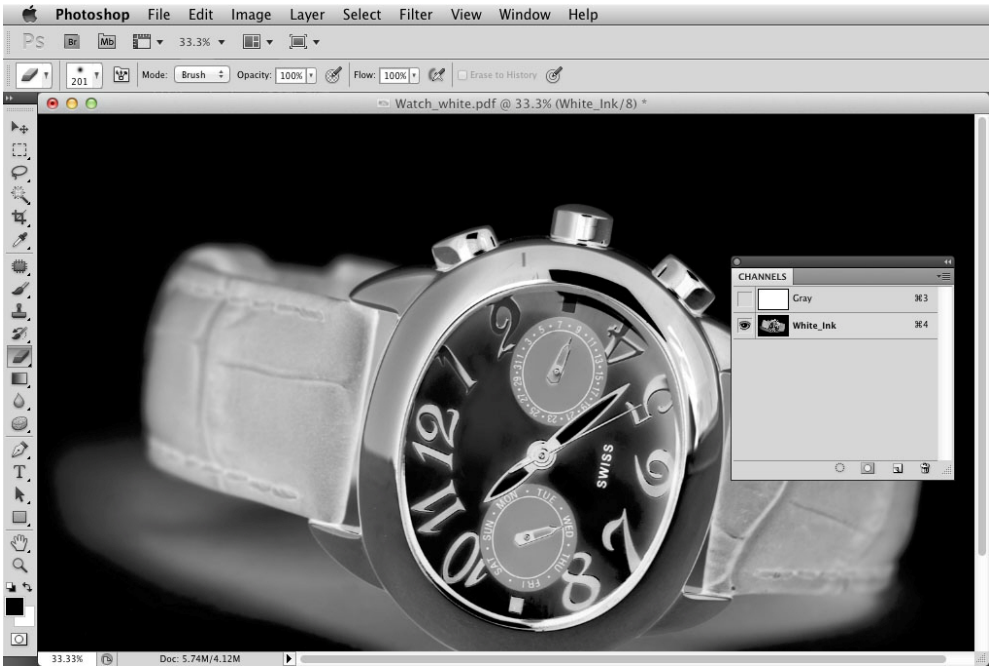
5. Click the **Invert** checkbox, and then check **OK**.
   Remember that the black/gray area of the image will print white.
6. Double-click the name of the new channel to open the **Channel Options** dialog box. Click **Spot Color** in the Color indicates pane. (See Figure 7.)

Figure 7: Channel Options



6. Click the **Gray** channel in the Channel Palette.
7. Choose **Select**>**Select All**, and then choose **Edit**>**Clear**.
   This removes the data from the Gray channel. (See Figure 8).

Figure 8: Clear the data



8. Make sure that **Spot Colors** is on, and then save the file as a PDF.

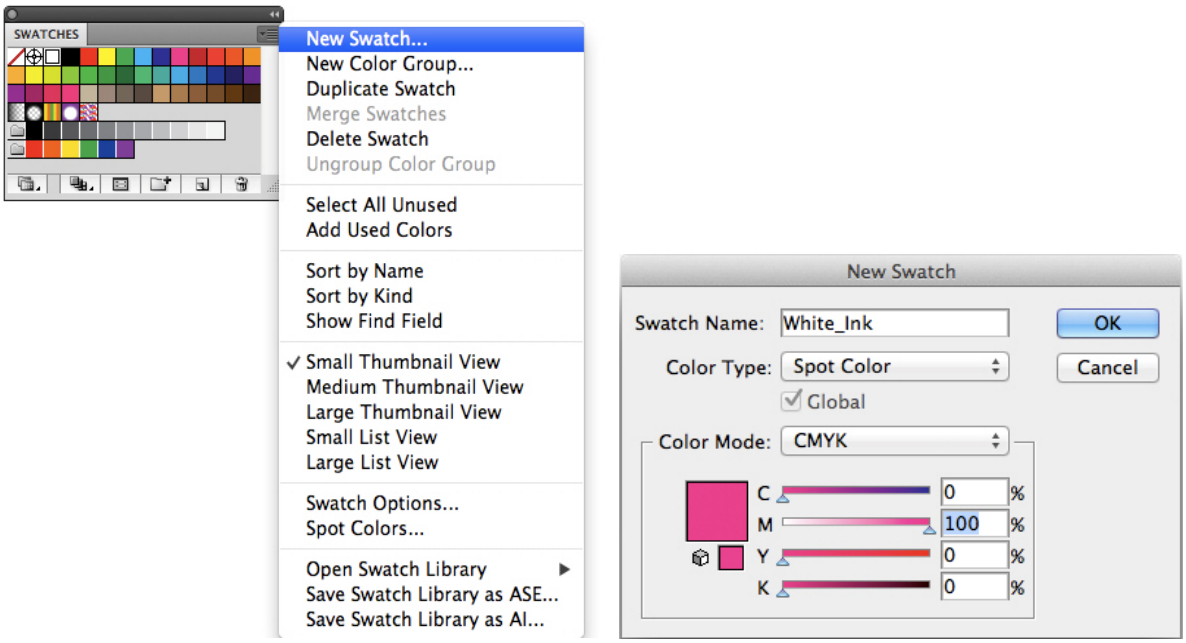
Using Adobe Illustrator CS Series for shape and spot white

If you use the white ink function in Illustrator, you must define the areas of white ink in the file.

1. Choose **Window**>**Swatches**.
2. From the swatches palette menu, choose **New Swatch**. (See Figure 9.)
3. Set Color Type to **Spot Color**, and the Mode to **CMYK**.
4. Name the new swatch **White_Ink**.
5. For easy identification, set the swatch color to a color not used in the file.

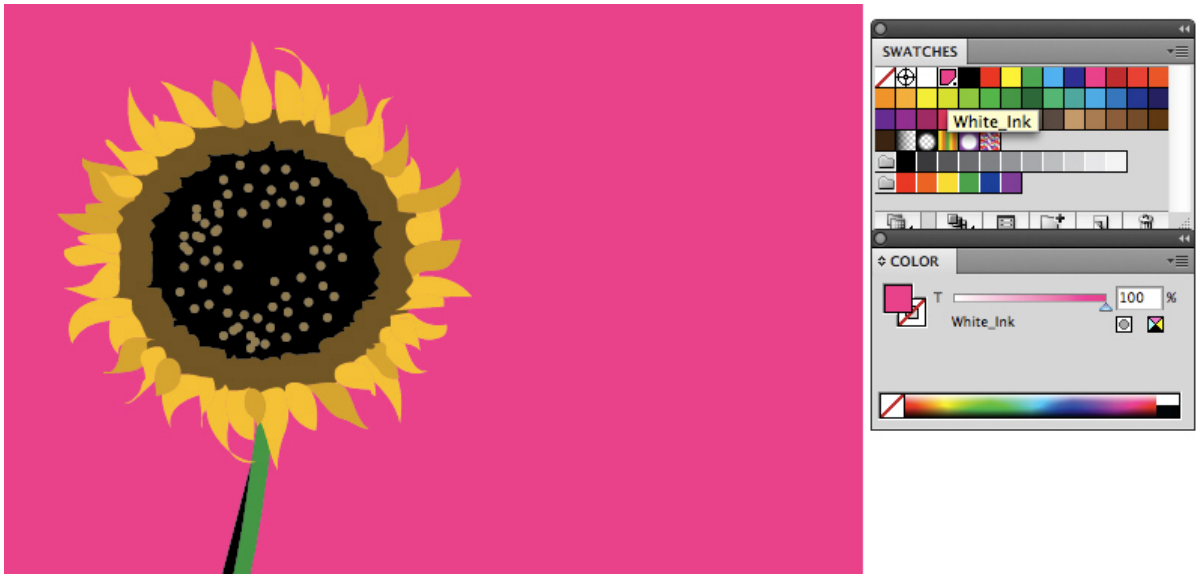
   As an example, you can use 100% Magenta. This color will translate as white ink at the RIP. (See Figure 9.)

Figure 9: New Swatch - White_Ink



6. In the file, select the shapes and elements to receive white ink coverage. (See Figure 10.)

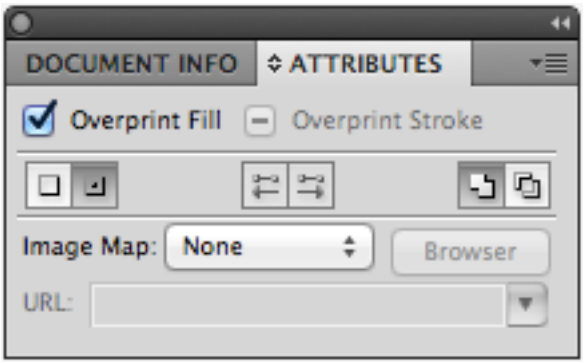
Figure 10: Apply Spot Color - White_Ink



7. With the element selected, change the fill to the **White_ink** spot color.

Important: White_Ink data must often be set to **Overprint Fill** in **Attributes.** (See Figure 11.)

Figure 11: Attributes set to Overprint Fill



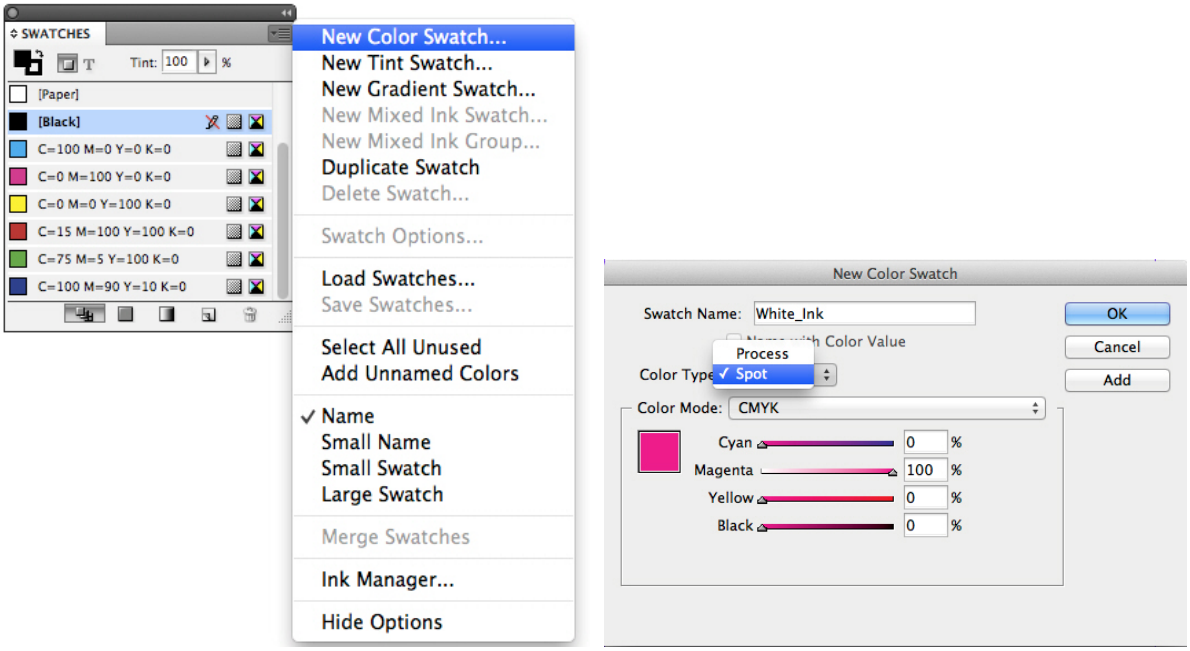
8. Save the file as a PDF file (see **Preparing files for saving as PDF**).

Using Adobe InDesign CS Series for white ink

It is usually best to create white art in Illustrator or Photoshop, save it as a PDF file, and then open it in InDesign. If there is no **White_Ink** swatch yet, the **White_Ink** swatch created in the Illustrator file imports with the file. In that instance, use the imported **White_Ink** swatch instead of creating a new one. When exporting the final PDF file for printing see the **Preparing files for saving as PDF** section of this document.

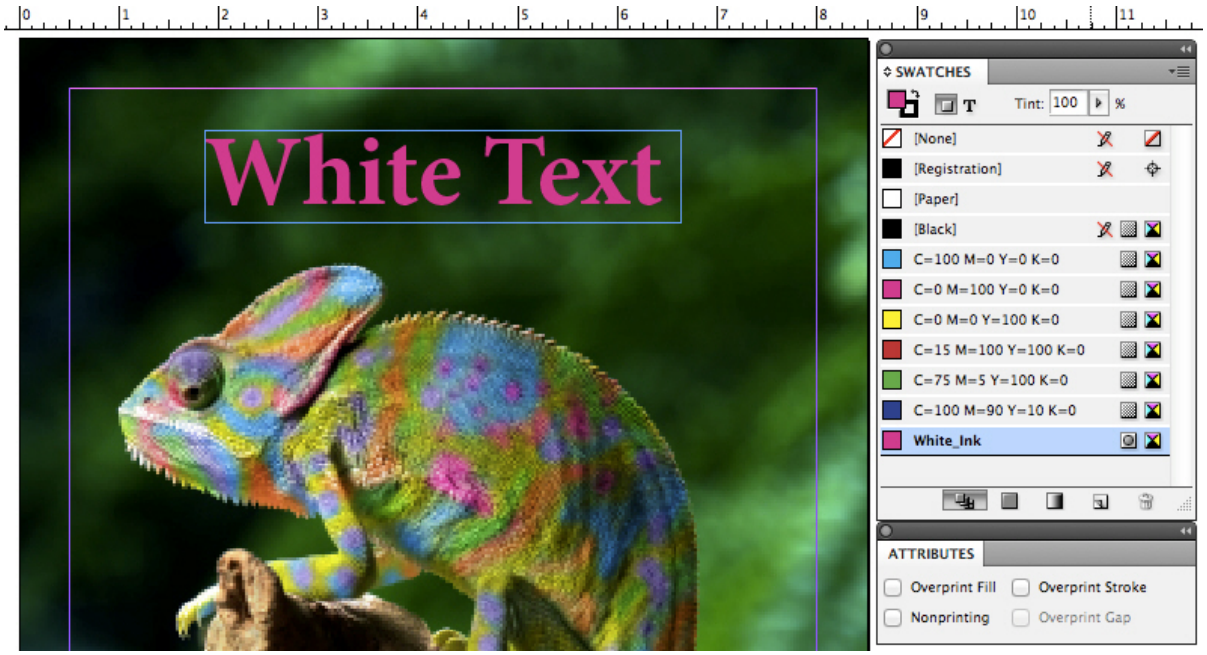
To use the white ink function in InDesign, define the areas of white ink in the file.

Figure 12: New Swatch - White_Ink



1. Click **Window>Color>Swatches** to open the **Swatches** palette. (See Figure 12.)
2. From the Swatches Palette menu, click **New Color Swatch**.
3. Choose **Spot Color** for Color Type and choose **CMYK** for Mode.
4. Name the new swatch **White_Ink**.
5. For easy identification, set the swatch color to a color not used in the file.
   As an example, we will use 100% Magenta. This color will translate as white at the RIP.
6. In the file, select the shapes and elements to be white ink coverage.

Figure 13: Apply Spot Color - White_Ink



Important: White_Ink data must often be set to **Overprint Fill** in **Attributes**. (See Figure 13.)

7. Export the file as a PDF. (See **Preparing files for saving as PDF**).

Choking white ink

It is recommended to choke white ink that is to be under graphics to keep white ink from appearing around the edges.

Using Adobe Photoshop CS Series to choke white ink

1. Select the image that will be printed with white. (See Figure 14.)

Figure 14: Select the image

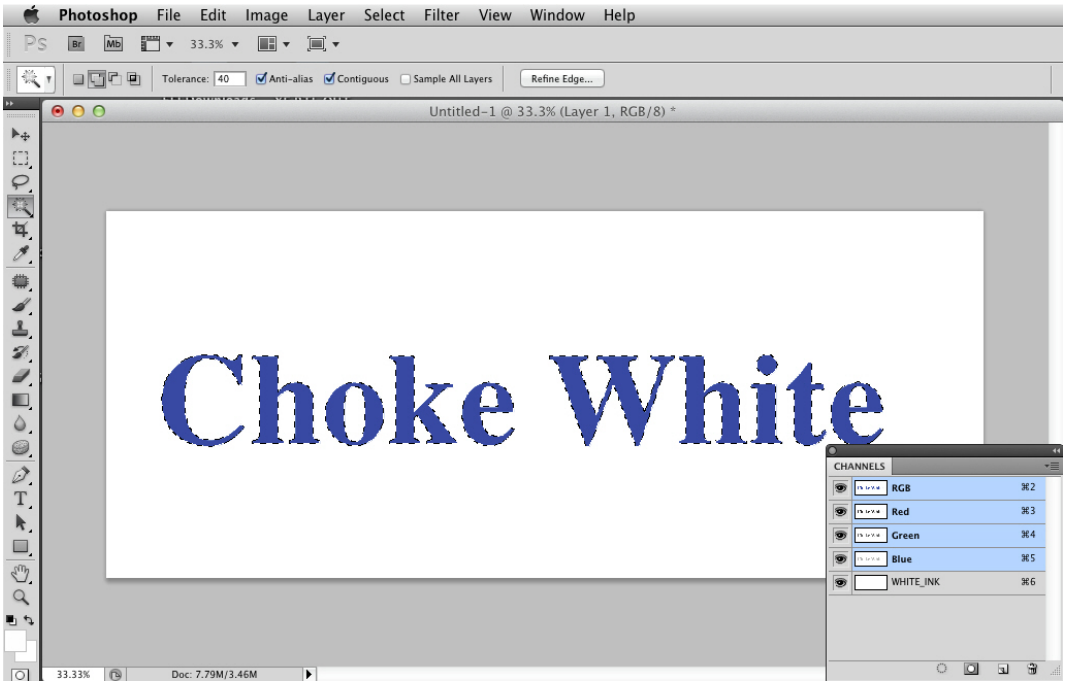
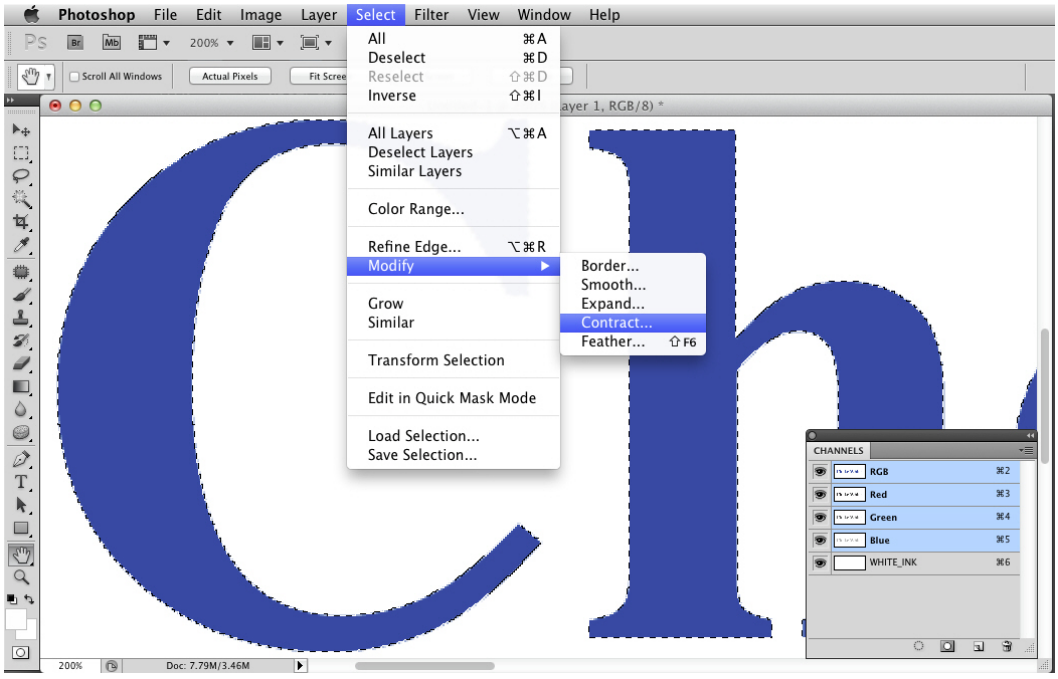


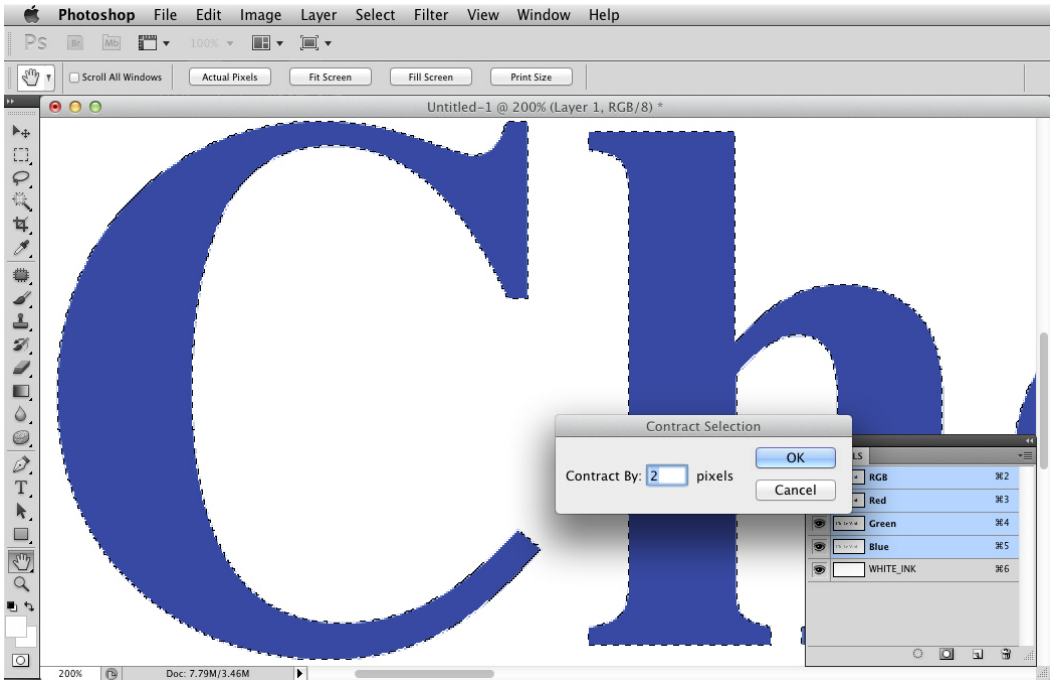
Figure 15: Contract



2. Choose **Select**>**Modify**>**Contract**. (See Figure 15.)

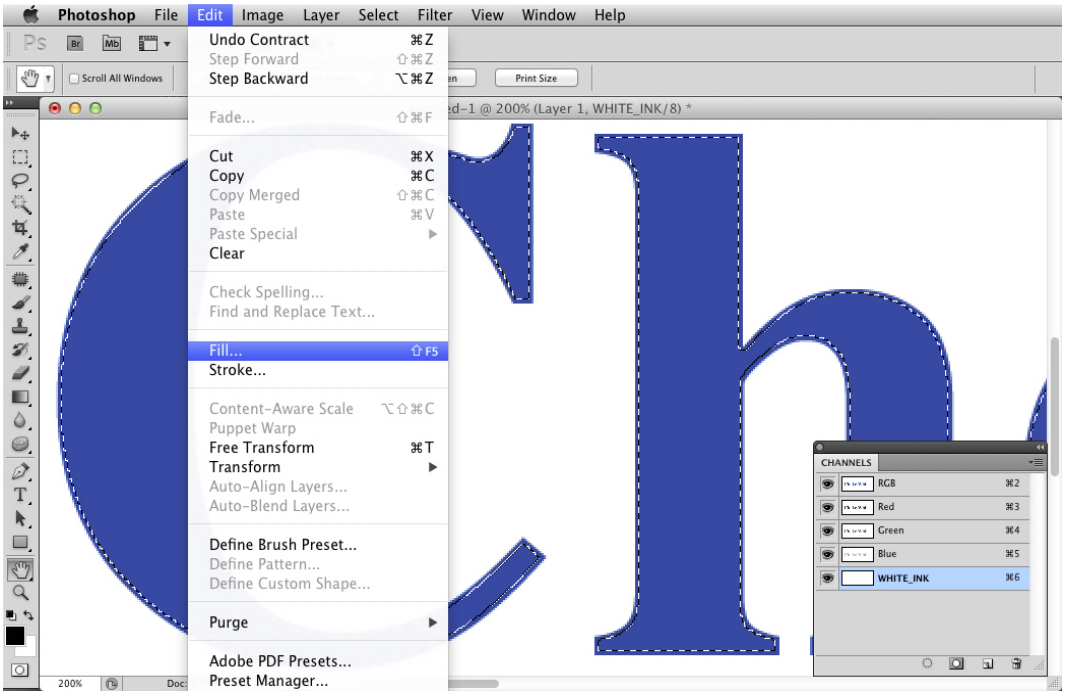
3. In the Contract Selection dialog box, enter the value 2 in the **Contract by** field. (See Figure 16.)

Figure 16: Contract by two pixels



4. Select **White_Ink** layer in the Channel menu, and then choose **Edit**>**Fill**. (See Figure 17.)

Figure 17: Edit>Fill



5. In the Fill dialog box Contents pane, choose **Black** from Fill options. (See Figure 18.)

Figure 18: Choose black fill

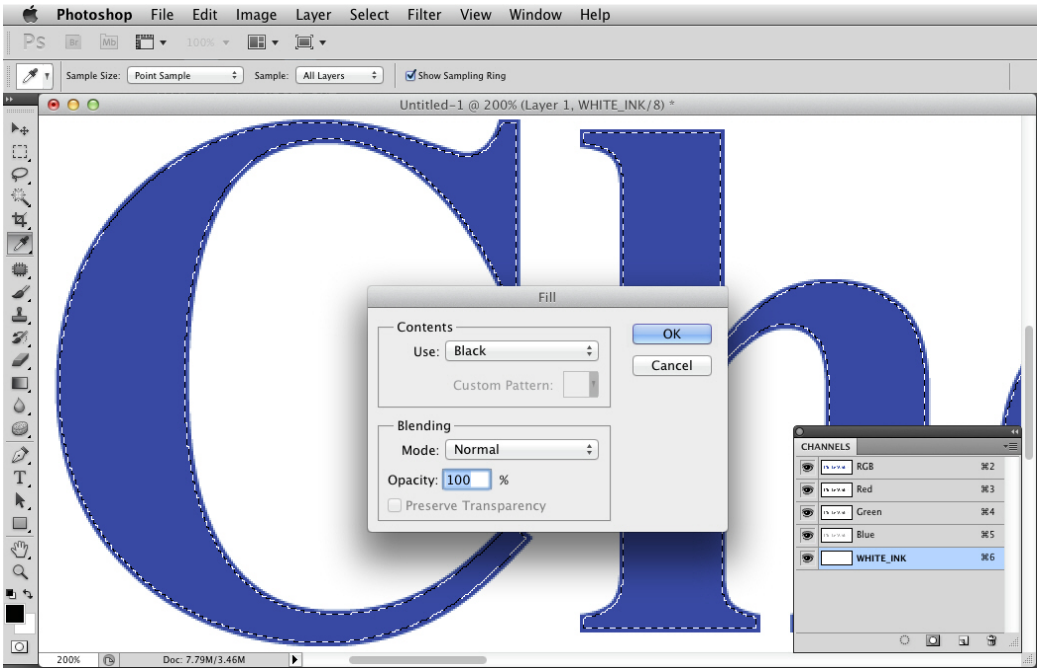
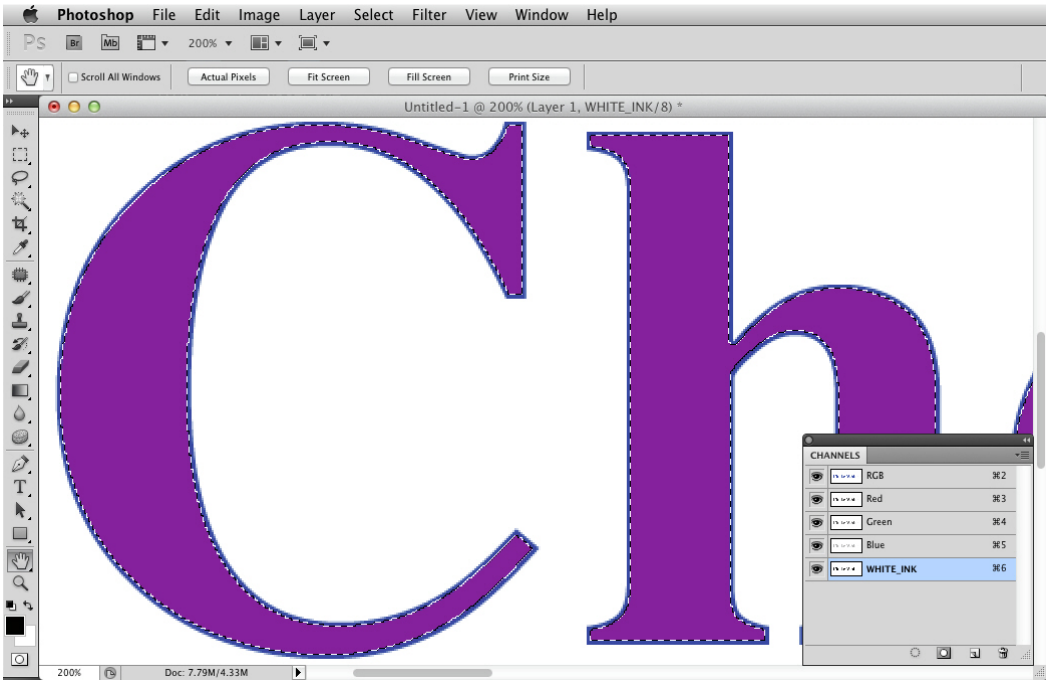


Figure 19 shows the result of the fill.

Figure 19: Fill result

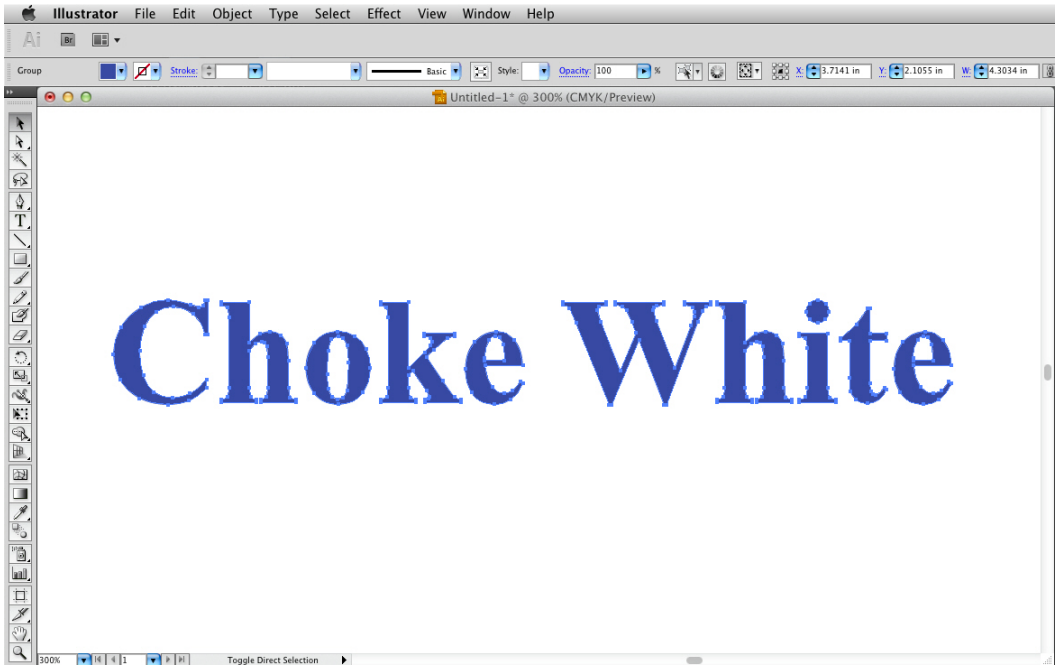


6. Save the image as a PDF (see **Preparing files for saving as PDF**).

Using Adobe Illustrator to choke white ink

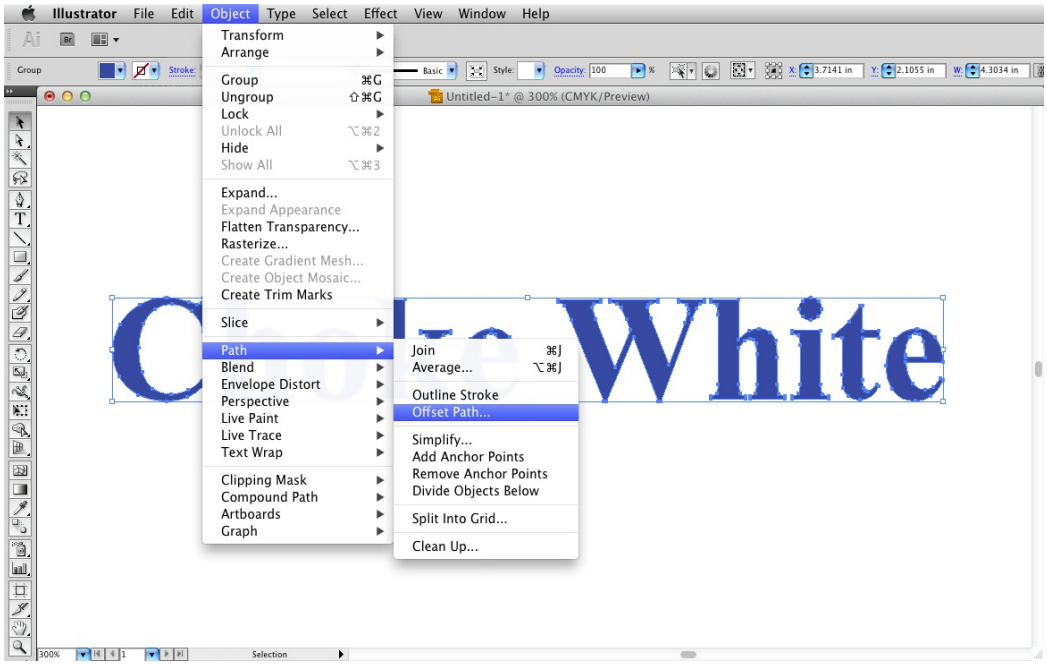
1. Select the image to be printed with white. (See Figure 20.)

Figure 20: Select image



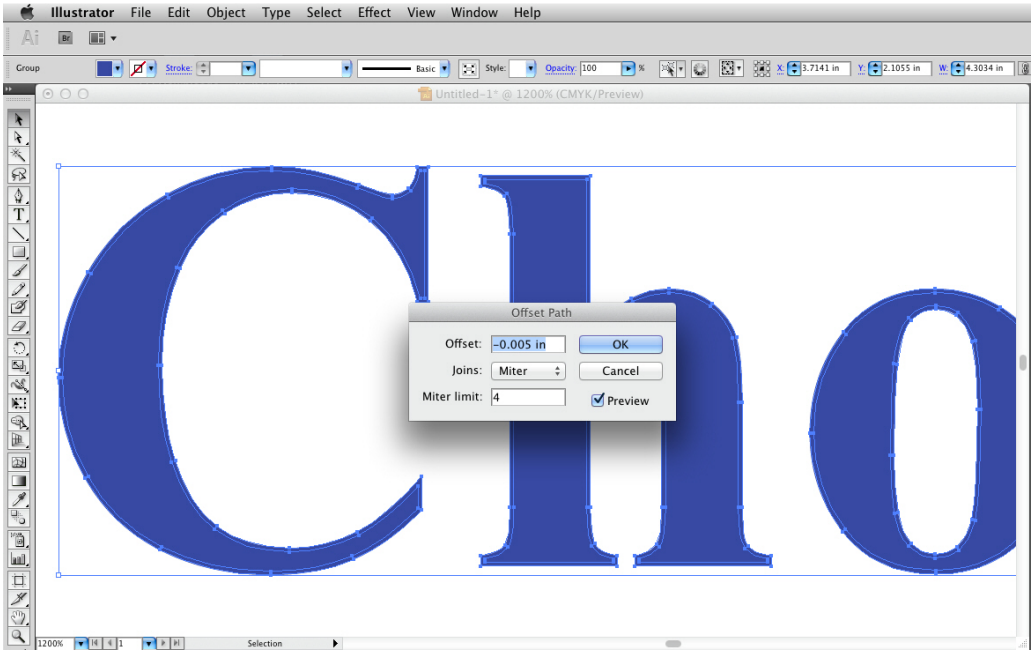
2. Choose **Object**>**Path**>**Offset Path**. (See Figure 21.)

Figure 21: Offset Path



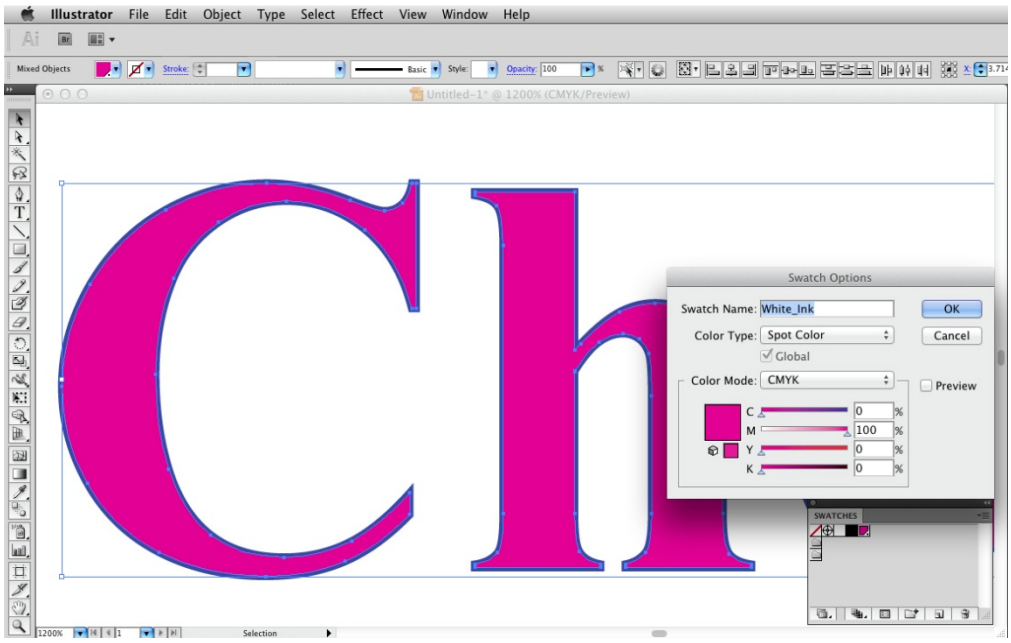
3. Set amount of path offset in the Offset Path dialog box.
   The amount can vary depending on size and scale of artwork. (See Figure 22).

Figure 22: Set amount of path offset



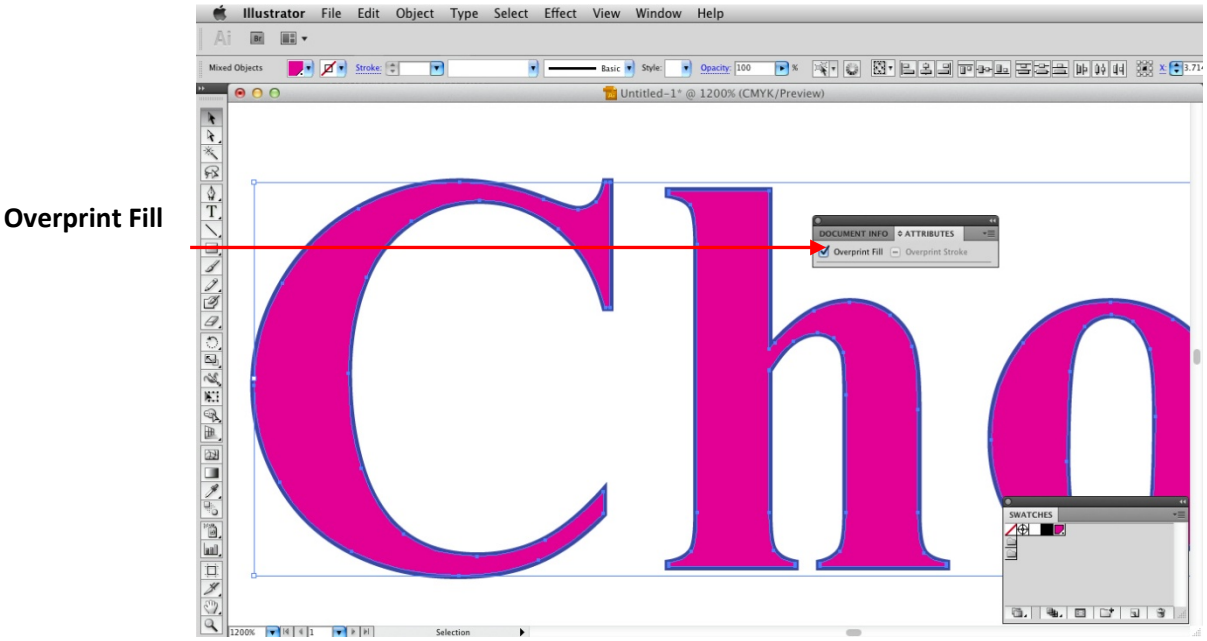
4. Enter **White_ink** in the Swatch Name field. (See Figure 23.)

Figure 23: Apply White_ink spot color swatch



5. In the Attributes tab, click **Overprint Fill**. (See Figure 24.)

Figure 24: Check Overprint Fill



6. Save the image as a PDF. (See **Preparing files for saving as PDF**.)

Preparing files for saving as PDF

The following are useful guidelines for using different applications to prepare files before you save them as a PDF.

Using Photoshop CS Series to prepare files for export

If you prepare files using Photoshop CS Series, consider the following:

- For best image quality, the suggested image dpi range at 100% of scale is 100 to 300, regardless of printer resolution. Below 100 dpi, the image quality degrades.
- Above 300 dpi the quality is not enhanced, but the file size is substantially larger.
- Do not convert Pantone spot colors (channels) to process CMYK.
- Save the file as a PDF.

Using Illustrator CS Series to prepare files for export

If you prepare files using Illustrator CS Series, consider the following:

- Include all embedded/placed/linked images.
- Convert all fonts to outlines. (This is optional.)
- Do not convert Pantone spot colors to process CMYK.
- Save the file as a PDF.

Using InDesign CS Series to prepare files for export

If you prepare files using InDesign CS Series, consider the following:

- Convert all fonts to outlines. (This is optional.)
- Export the file as a PDF.

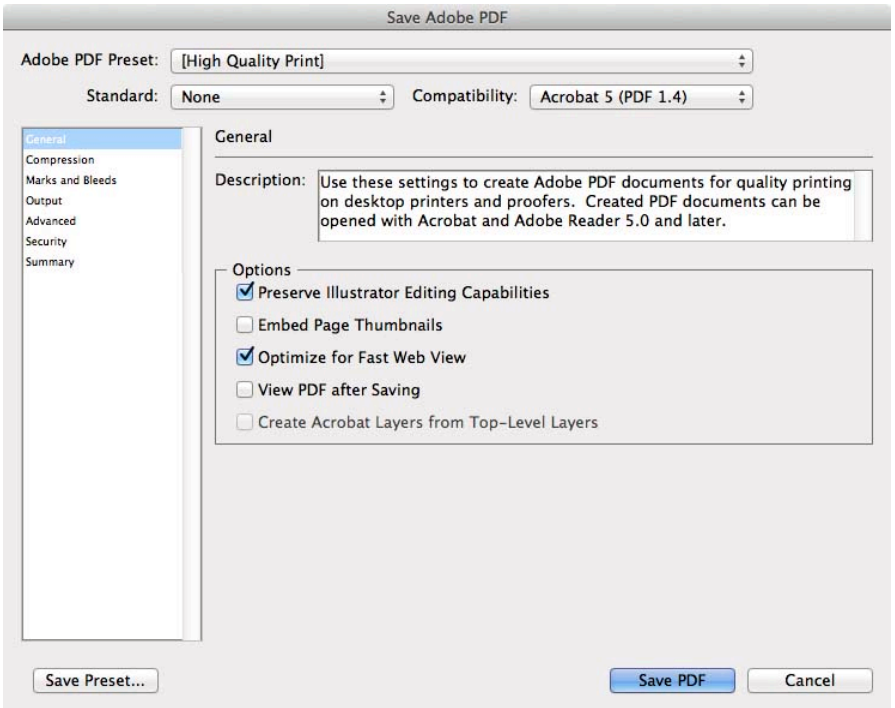
Saving files as PDF and PDF presets

Before you save files, consider the following:

- These settings are intended to save a 'RIP ready' PDF. Do not use this PDF format for editing the art after it is saved. You should make changes to the original art and re-save it using these settings. (These settings hold information regarding fonts, working color spaces and spot colors.)
- This procedure outlines creating the **Adobe PDF Preset** to avoid having to change these settings every time you save a PDF.
- When applying a preset for the first time, it is recommended that you do it from Illustrator. This preset will then be available from the entire Adobe suite.

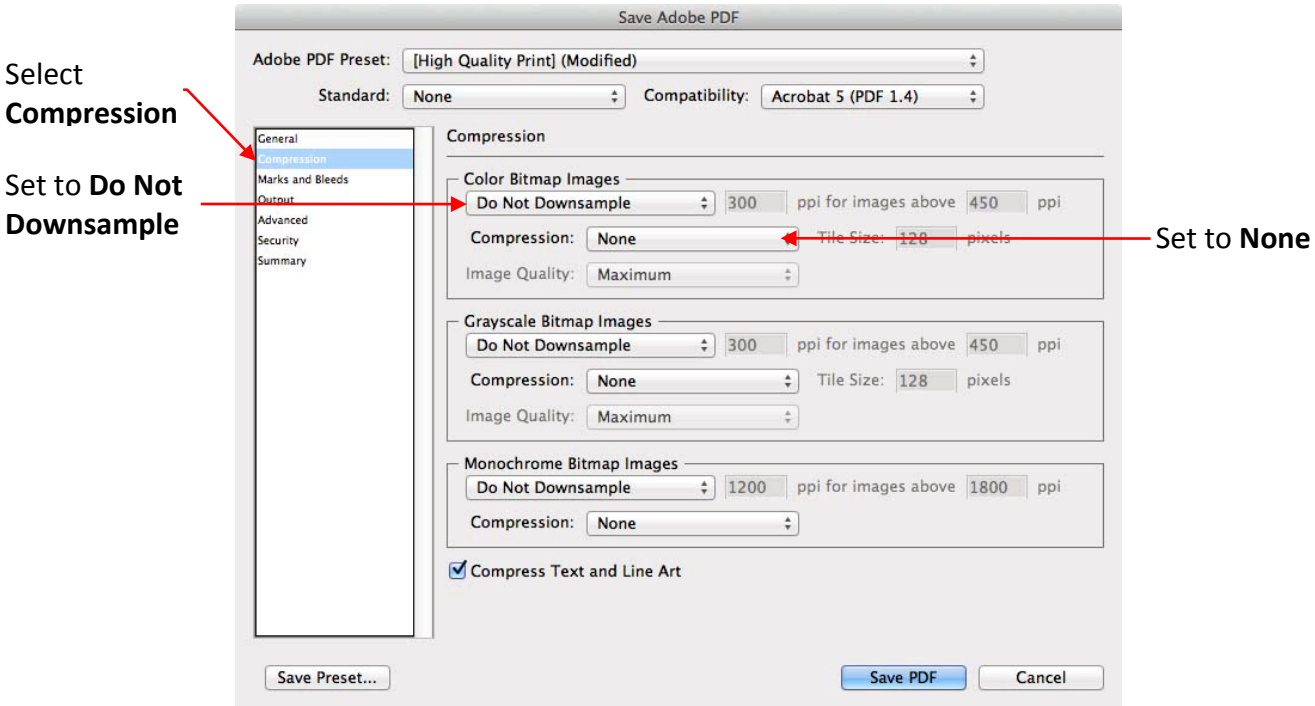
1. When you save a file, select the **High Quality Print** preset. (See Figure 25.)

Figure 25: Save Adobe PDF



2. Select **Compression** in the left menu.

Figure 26: Disable downsampling and compression



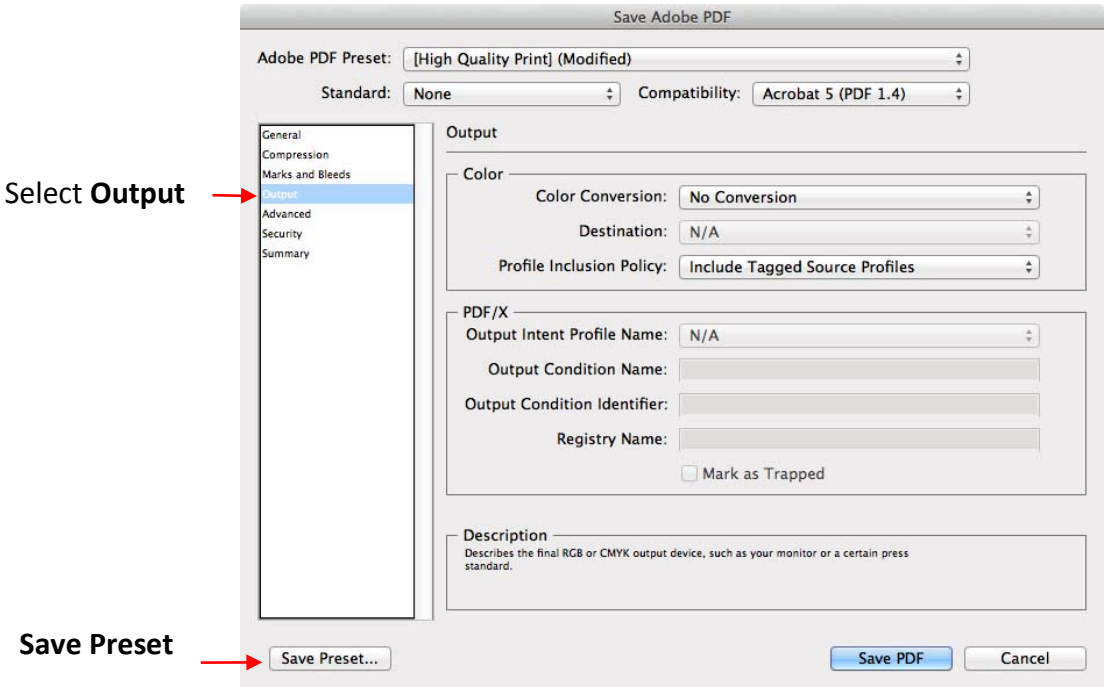
3. In the Color Bitmap Images pane, select **Do Not Downsample** and set the Compression menu to **None**. (See Figure 26.)

   This ensures that you save the highest quality PDF.

4. Select **Output** in the left menu. (See Figure 27.)

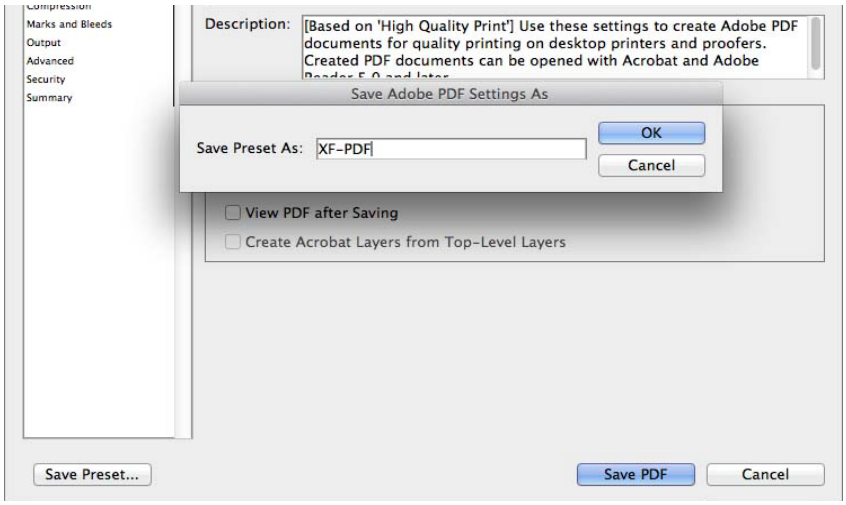
   Include, Tagged Source Profiles is selected. This will embed the working space and/or image files.

Figure 27: Select Output



5. Click **Save Preset** in the lower left corner. (See Figure 27.)
6. Name the preset **XF-PDF**, and then click **OK**. (See Figure 28.)

Figure 28: Save as XF-PDF



7. Click **Save PDF**.

This preset will now be available as an option in the **Adobe PDF Preset** menu in all Adobe programs.

Using Fiery XF to print with white ink

Overview: Printing with white ink using Fiery XF

If your printer supports white printing, you want to handle the printer's white channel as flexibly as possible.

Some printers that support white printing are the VUTEk GS-series, VUTEk QS-series, Rastek H650/652/700, Rastek T600/660/1000, EFI Jetrion 4830, Roland VersaUV LEC 300/330, Mimaki TPC-1000 or any other printer supported by Fiery XF.

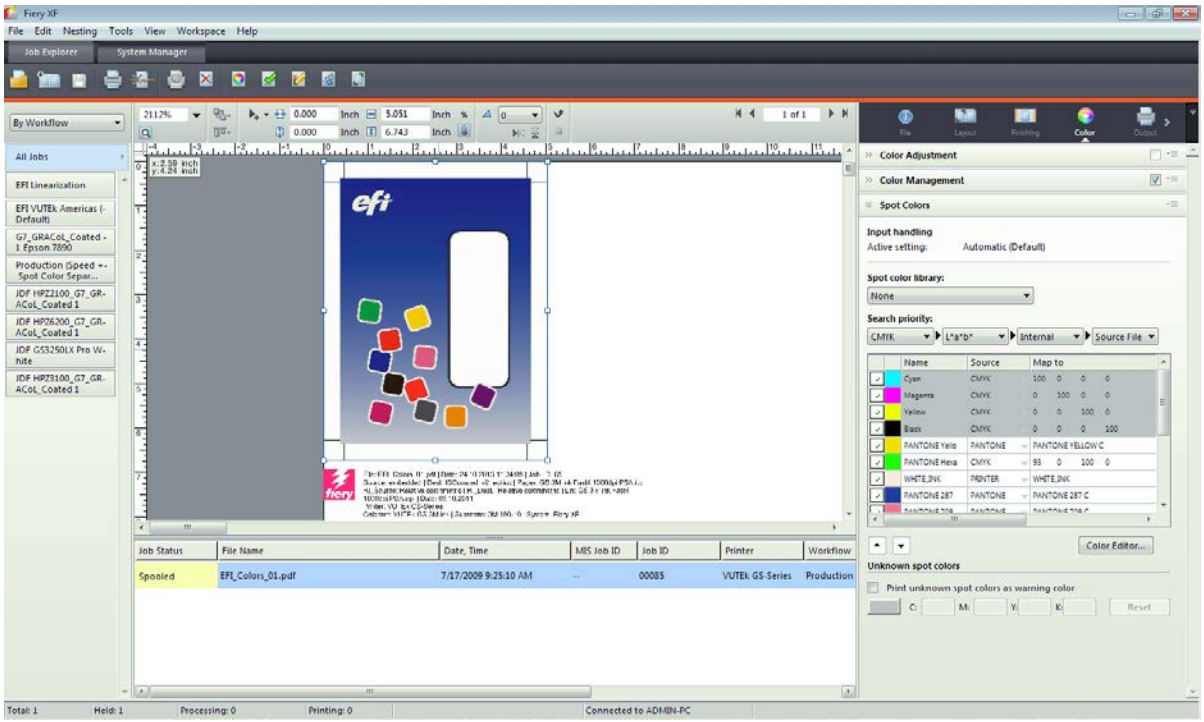
Fiery XF provides two main workflows—manual and automatic—for basic white printing.

Manually preparing XF for your white channel data

When you import a job that contains spot colors, you can route one or more of the spot color names to the printer's white channel.

This is an example that includes spot colors:

Figure 29: Spot Color example



By default, Fiery XF expects the job's white channel data to have the name **WHITE_INK**, with capital letters and an underscore in between. This name cannot be changed.

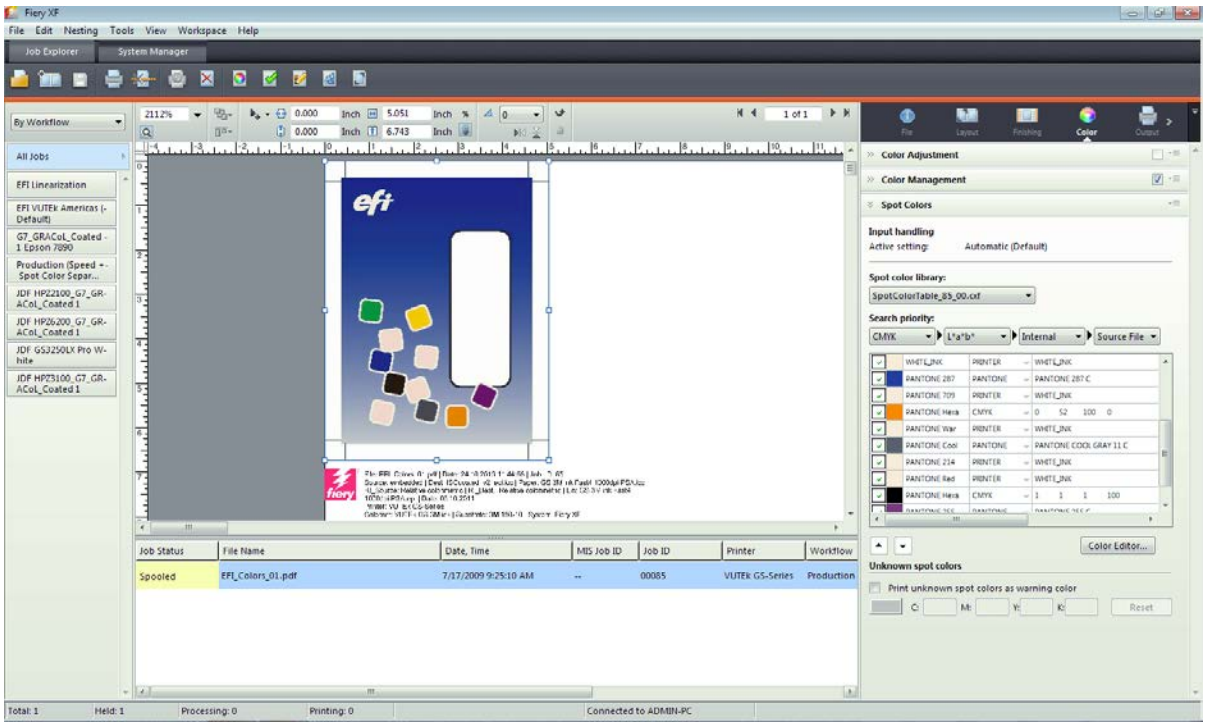
However, PrePress may have assigned another name to the white channel, or you may want to route any spot color to this channel. (This avoids going back to the DTP application and adjusting the name.) You can use the Color > Spot Colors tab to route spot color to the white ink channel.

For example, this is how to route all the "red" spot colors to the white ink channel.

1. Click the **Color -> Spot Color** tab, and then check the job's spot colors.
2. In the Source column, choose **PRINTER** for the red channel.
3. In the Map column, choose **WHITE_INK** for the red channel.
4. Click **Save.**

The updated preview shows the red spot color as white.

Figure 30: Updated Preview



Automatically preparing XF for white channel data

If you know the standard white channel name your PrePress or customer will use, you can prepare Fiery XF for these names automatically.

1. Open Color Editor, create a new spot color table, and create as many Aliases as you need.
2. Enter a name for the new spot color table. You can assign the new spot color table to a workflow now or leave it unassigned for now by not selecting a workflow. Click **OK** to save the new color table.

Figure 31: New Color Table

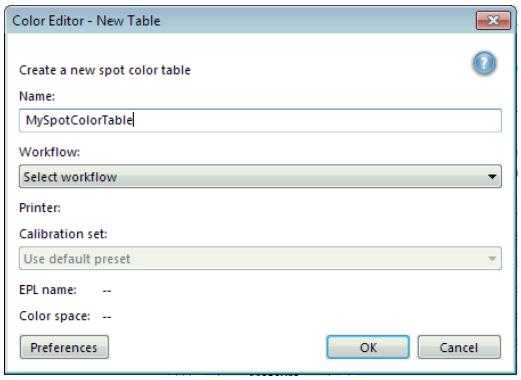
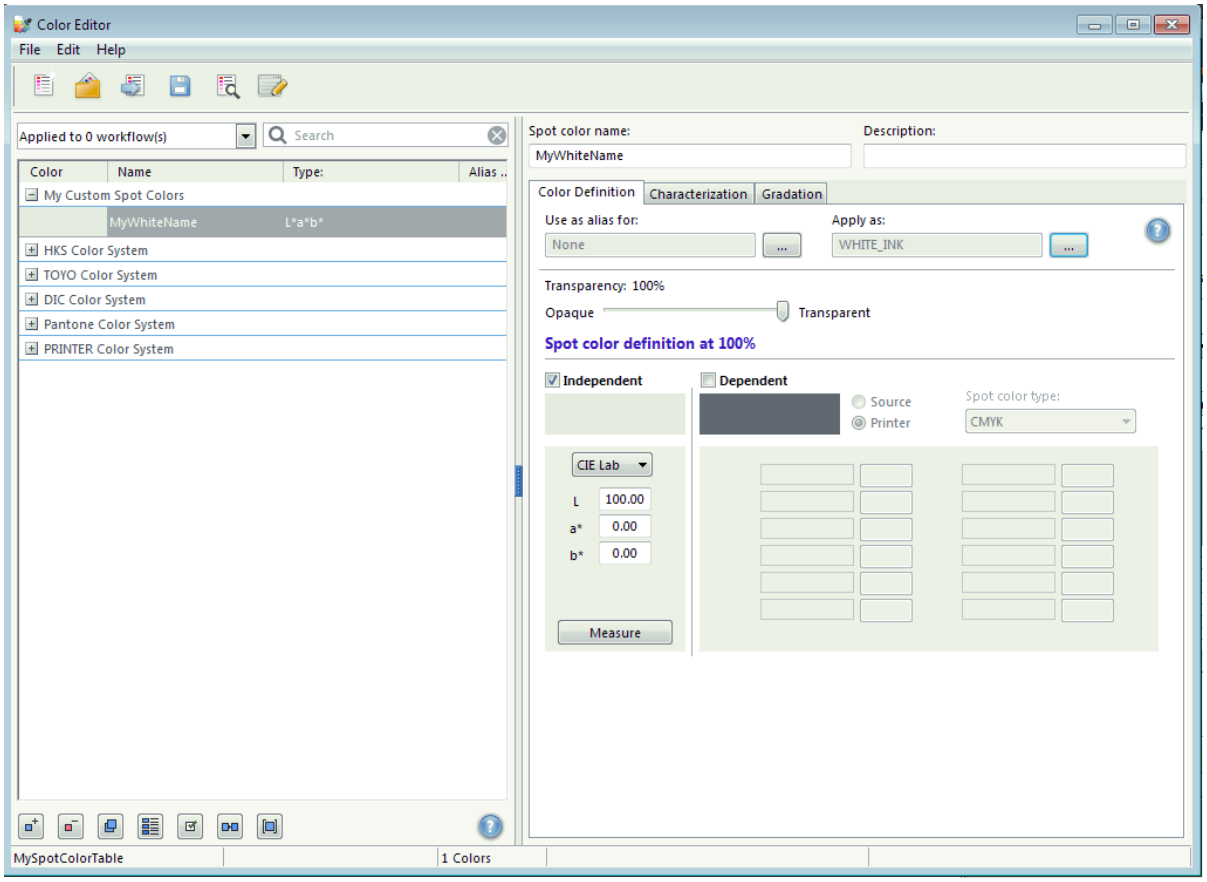


Figure 32: Color Editor

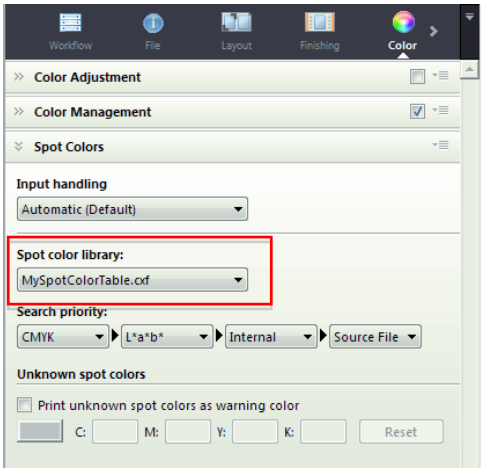


3. Enter any name that you expect for the white spot color channel, for example **MyWhiteName**.
4. Set **WHITE_INK** in the **Apply as:** combo box. (The WHITE_INK entry is usually near the bottom of the long list.)

Note: This routes the white spot color name MyWhiteName to WHITE_INK, which clarifies the purpose for Fiery XF.

5. Repeat this for other names that you want to route to WHITE_INK in the same spot color file.
6. When you are ready, save the spot color definition as a CxF file in the folder C:\ProgramData\EFI\EFI XF\Server\Profiles\Spotcolor.
7. After saving the spot color table you a dialog will be displayed allowing you to apply the spot color table to one or more workflows.
8. Close Color Editor
9. If you did not apply the spot color table to a workflow can manually apply the spot color table later in System Manager.

Figure 33: Spot Color Library



Save the workflow and repeat choosing applying the spot color table for as many workflows as you like.

When you load a job into one of these workflows, the white spot color channel is automatically routed to WHITE_INK and the job will be correctly processed and printed.

Controlling white after it is assigned

There are various options for controlling white ink within XF for EFI Inkjet printers.

Most white ink printers Fiery XF supports provide additional control over the white inks. To see the available settings, choose **Output Device -> Special**. If you do not find these settings in Fiery XF check whether the device type selected in the Device Tab includes “White” in the name. If it does not, select a device type that does include “White” in the name.

Figure 34: Including "White" in name

Setting a print mode

Set a print mode by clicking in the **Print mode:** menu.

You can choose either Spot color WHITE_INK, Inked_Image, Bounding box, Inked Image Inverse or Off. *Spot color WHITE_INK* is the default mode. Fiery XF sends

the image data in the WHITE_INK channel, or any channel assigned to WHITE_INK, to the printer.

Inked_Image automatically creates a white channel and white image data and sends it to the printer. Fiery XF analyzes the image data, and any image element that is not CMYK 0 0 0 0 (media white) will receive data in the white channel at the same position. For example, if you print a job that consists of a tree on a white background, Fiery XF generates white on top or below the tree, but not anywhere else. You do not need to go back to the DTP application to generate this layer manually. Also, if the job already includes a white channel with white image data and you select Inked_Image instead of Spot color WHITE_INK, Fiery XF combines the white image from the job's white channel and the generated white image data from "Inked image".

Inked image inverse automatically creates a white channel and white image data and sends it to the printer. Fiery XF analyzes the image data, and any image element that is CMYK 0 0 0 0 (media white) will receive data in the white channel at the same position. Also, if the job already includes a white channel with white image data and you select Inked_image inverse instead of Spot color WHITE_INK, Fiery XF combines the white image from the job's white channel and the generated white image data from "Inked image inverse".
Bounding box creates a white channel and white image data for you and fills the complete bounding box with white.

Setting white ink coverage

"White ink coverage" allows you to define the white channel's ink coverage. The default is 100%, but if you generated white data with "Inked image", "Inked image inverse" or "Bounding box", you can print white data with less than 100% white ink coverage.
In some cases you can apply more than 100% ink coverage for white.

Some printers have predefined media settings that limit white to a certain amount. For example, setting 125% white ink coverage tells Fiery XF to use 25% more ink that originally targeted by the printer manufacturer for the selected media type. In general, it is not recommended to use more than 100% white ink coverage.

Specifying spread and choke for the White ink

You can specify either a spread or choke for the white ink by entering a value in the edit box.

Printing the control strips with White ink

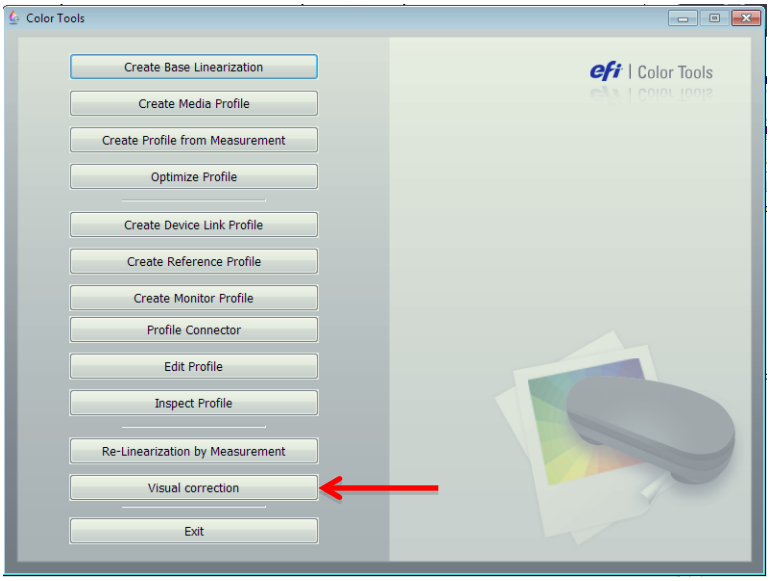
You can specify that either, or both, of the control strips print with White ink by checking the checkbox for that control strip.

Creating a curve to control the White Ink Channel

You can create a curve to control the tonality of the White Ink channel on VUTEk printers.

1. Open Color Tools and click **Visual Correction**.

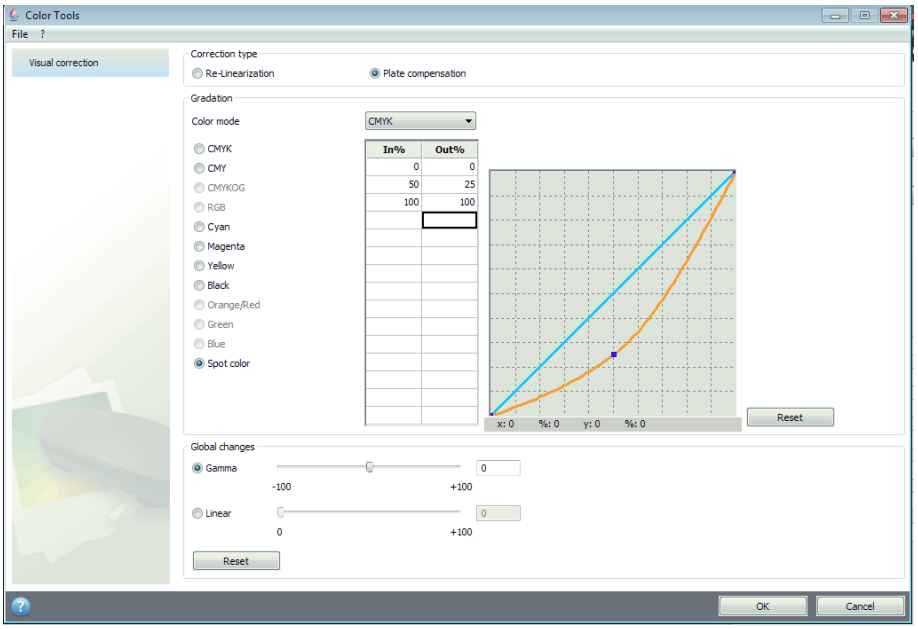
Figure 35: Visual Correction



2. Click **Plate compensation** in the "Correction type" pane.
3. Click **Spot color** in the Gradation pane.
4. Enter values for **In%** and **Out%**. (Enter the values after the entry for 100%.)
5. Click an empty cell when finished to enter the new values. Do not change any other settings in the dialog box, as this may produce unexpected results.
6. Click **OK** to save the curve. Click on Exit to close Color Tools.

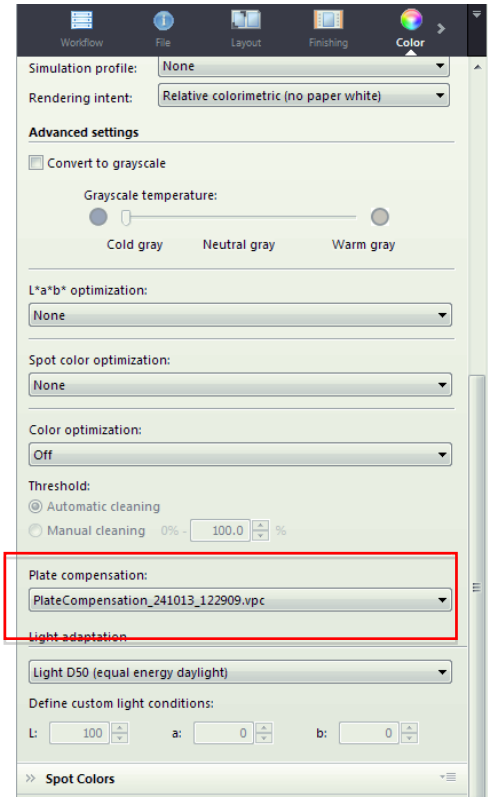
   By default, Color Tools creates the curve in the Working directory.

Figure 36: Color Tools



7. In System Manager, select the desired workflow.
8. Click the **Color** tab, and then click **Color management.**
9. From the Plate Compensation menu, choose the curve created in Color Manager. (You may have to scroll to the bottom of the dialog box to see the menu.)

Figure 37: Plate compensation



10. Save the changes.

Note: You can use a curve.