

Printing with Profiles - Adobe Illustrator

*Usage of ICC printer profiles; written for Adobe® Illustrator®
versions 11 (CS), 12 (CS2), Mac OS® and Windows®.*

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1. Introduction

This document is a guide on how to print documents from Adobe® Illustrator® using ICC profiles. It is also written to promote the use of Midox Color's Profile Service, a convenient and affordable way to obtain professional custom ICC profiles.

To be able to create an ICC profile for a printer, a testchart needs to be printed. A testchart consists of one or more image files containing a number of patches. The print(s) from a testchart can be measured using a spectrophotometer and these measurements can then be used to create the profile. Midox Color has several testcharts available for creating ICC printer profiles, which are free to download from the Midox Color website:

<http://www.midox.nl/en/downloads.html>

or:

<http://www.midox-color.com/downloads.html>

For most users, who print directly from an application to a printer on their computer, an RGB profile is the correct choice. This is because most printer drivers - for Mac OS® and Windows® - are created to handle RGB data. Midox Color has two testcharts for creating RGB profiles, of which TC9.18 is most used for professional photo output. TC2.83 is less accurate (created from fewer patches), but still gives high quality results, ideal for evaluation prints on cheaper materials. Testcharts currently available:

RGB TC2.83

For creating RGB profiles using the TC2.83 standard.
Patch amount: 283

RGB TC9.18

For creating professional RGB profiles using the TC9.18 standard.
Patch amount: 918

CMYK TC3.5

For creating CMYK profiles using the TC3.5 standard.
Patch amount: 432

CMYK ECI2002

For creating professional CMYK profiles using the ECI2002 standard.
Patch amount: 1485

All testcharts come in multiple lay-outs and can be used for paper sizes as small as A6; (4x6 inch / 10x15 cm borderless). Not sure which testchart to choose? Or would you like to create printer profiles for Hexachrome, CMYK-RB, CMYK-RG or a custom multicolor setup? Please contact Midox Color.

Note: All profiles created by Midox Color comply with ICC Specification Version 4 (or Version 2 if requested).

2. Preparation

2.1 Color Settings in Illustrator

Before you open any files, please check the color settings in the application. To open the Color Settings dialog in Illustrator, choose from the menu or use the keyboard shortcut:

Windows: **Edit > Color Settings...**

Shift ⬆ + Ctrl + K

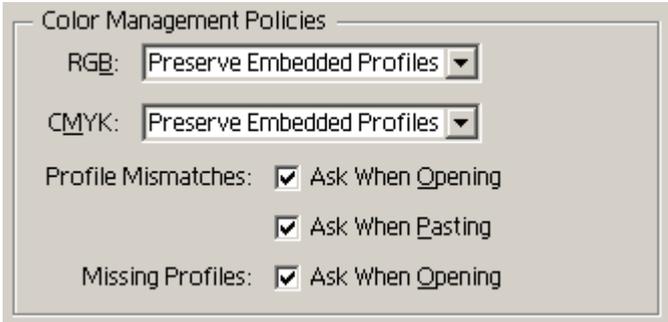
Mac OS: **Edit > Color Settings...**

Shift ⬆ + Command ⌘ + K

Being cautious it's wise to save your current settings; in the upper right corner of this dialog you'll find buttons to **Save...** settings. If you already saved the desired settings from Photoshop®, select the preset from the list of settings or click **Load...** and browse to the CSF file. Enable **Advanced Mode** to view all settings.

Please check the following settings:

Color Management Policies



Color Management Policies

RGB:

CMYK:

Profile Mismatches: Ask When Opening
 Ask When Pasting

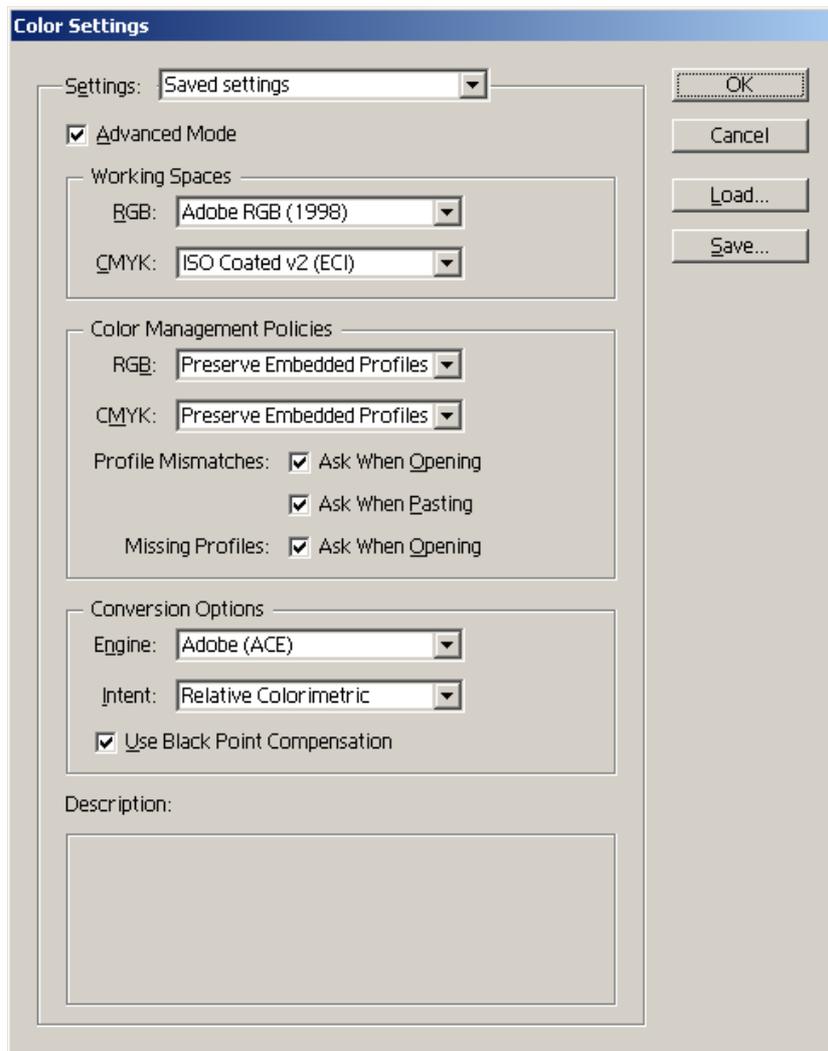
Missing Profiles: Ask When Opening

For all options please choose: **Preserve Embedded Profiles**.

Also enable **Ask When Opening** (2x) and **Ask When Pasting**.

Midox Color recommends using these settings in this section of the dialog. It makes sure Illustrator handles files predictably. Whether profiles are embedded or not, Illustrator will always present you with options when needed. All other settings in this dialog can be set to fit your own workflow or as described below.

The following settings are commonly used in workflows complying with **ISO 12647-2**:



Please keep in mind, that the settings for Working Spaces and Conversion Options are used, when converting an image to the working space when opening the file, when converting an image to a different mode (RGB or CMYK), and for translating color values in the Color Picker. When creating a new document, the working space will be assigned to the new document. So when choosing Working Spaces and Conversion Options, it's best to select the ones you use most frequent for your work.

To add **ISO Coated v2 (ECI)** or another working space profile to the list of available profiles, please add the ICC file to your profile folder, as described in **Where to place an ICC or ICM file** (page 7). The file (ISOcoated_v2_eci.icc) can be obtained from the ECI website, www.eci.org:

Description: http://eci.org/eci/en/041_offset.php
 Downloads: http://eci.org/eci/en/060_downloads.php
 Actual file: http://eci.org/eci/downloads/ECI-en/icc_profiles_from_eci/ECI_Offset_2007.zip

Note: Do not select your monitor profile as RGB working space.

2.2 About the printer

A printer profile is created for a certain printer plus printing materials, but also for the software used to drive the printer. This guide focuses on printing directly from an application to a printer using an installed printer driver. A printer driver can have numerous settings that influence how the printer produces color. Later on in this guide you will be prompted to select the correct settings. These settings should be the same as when the testchart was printed, from which the chosen ICC printer profile was created. Please focus on these two main issues, when selecting the printer settings:

1 - Disabling any form of automatic color correction.

This is mainly colormanagement and automatic image enhancement inside the printer driver. This needs to be disabled, because Adobe will manage colors. You'll find the settings among the settings/properties/preferences of your printer located with the paper type settings and/or on a separate tab called **Color**, **Color Options** or **Color Management**. All depends on your make and type of printer and the driver installed. The particular setting(s) may be called:

No Color Adjustment	<i>(on)</i>
Disable ICM	<i>(on)</i>
ICM	<i>(off)</i>
ColorSync	<i>(off)</i>
PhotoEnhance	<i>(off)</i>
Colorsmart	<i>(off)</i>

In some cases you have to enable options like **Colormanagement**, **Color Adjustment** or **ICM** to be able to choose **No Colormanagement**, **No Color Adjustment** or **Disable ICM**. Or you may be able to choose an option called **Managed by application** or **Application managed colors**. Please refer to the printer's manual or the internet to discover how to switch off colormanagement and/or automatic color adjustment for your printer.

2 - Choosing the right paper settings.

Select the paper type settings the profile was created for. The paper type settings control how the printer will dose it's colors. In some cases there are additional options to control this. For example color correction controls or ink volume control for overall ink usage or individual inks.

2.3 Rendering intent

When printing documents using an ICC printer profile, you have the option of choosing a rendering intent. There are four options to choose from. **Saturation** will preserve saturation as much as possible and is rarely used for printing photographic images. **Absolute Colorimetric** is used for proof printing, which is not covered in this manual. **Relative Colorimetric** is used to print colors as consistent as possible while correcting for difference in white point. All colors will appear just right, when the print is viewed under a light source the profile was created for. This is D50 by default (5000° Kelvin), but can be another light source. **Perceptual** is a rendering intent often used for photographic images. Colors from the source document will be converted proportionally into the destination print space. This way relations between different colors are kept intact as much as possible.

Midox Color recommends using **Relative Colorimetric with Black Point Compensation** as default and **Perceptual** as a safe alternative. Some (exaggerated) examples where a perceptual rendering intent is desirable:



Original - flowers



Relative Colorimetric

An array of bright colors that doesn't exist in the destination space is converted to the same color.



Perceptual

Same array of bright colors that doesn't exist in the destination space is now converted to multiple colors.



Original - stones in shadow



Relative Colorimetric

An array of dark colors that doesn't exist in the destination space is converted to the same color.



Perceptual

Same array of dark colors that doesn't exist in the destination space is now converted to multiple colors.

2.4 Where to place an ICC or ICM file

Before you can select a profile from any list of available profiles in Adobe applications, you have to copy or move the ICC or ICM file to the correct location on your system, using Finder™, Explorer or another filebrowser. In some cases, you may need to restart the application in order to see the profile in the list. Below you'll find the paths where ICC files can be placed. Midox Color recommends using the common profile folder for your operating system, marked with ←.

Path operating systems:

Mac OS X:	/Library/ColorSync/Profiles	←
or:	/System/Library/ColorSync/Profiles	
or:	/Users/your_username_here/Library/ColorSync/Profiles	
Mac OS 8 or 9:	System Folder > ColorSync Profiles	←
Windows XP:	C:\windows\system32\spool\drivers\color	←
Windows 2000:	C:\winnt\system32\spool\drivers\color	←
Windows NT:	C:\winnt\system32\color	←
Windows 95/98/ME:	C:\windows\system\color	←

Path Adobe applications:

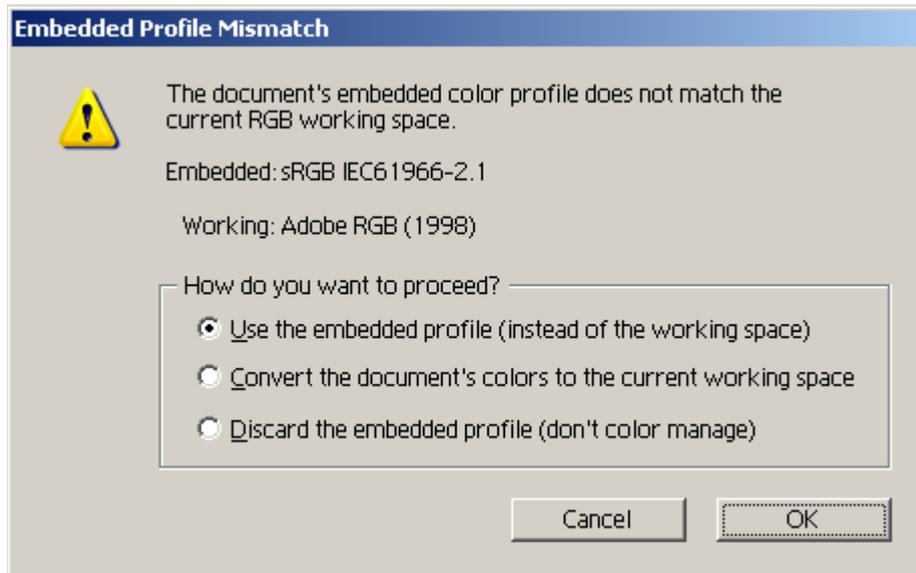
Windows:	C:\Program Files\Common Files\Adobe\Color\Profiles
or:	C:\Program Files\Common Files\Adobe\Color\Profiles\Recommended
Mac OS X:	/Library/Application Support/Adobe/Color/Profiles
or:	/Library/Application Support/Adobe/Color/Profiles/Recommended
Mac OS 8 or 9:	System Folder > Application Support > Adobe > Color > Profiles
or:	Sys... > Application Support > Adobe > Color > Profiles > Recommended

3. Printing with ICC printer profiles

3.1 Open a document

Open a document in Illustrator. If the document has an embedded profile, same as the current working space, there will be no color warning. Proceed with **Print** (page 9).

If the document has an embedded profile that doesn't match with the current working space, all versions will give the following dialog:



Here choose:

- **Use the embedded profile**

Click **OK**.

Note: Did you create a new document, then the document will be assigned the current working space. If the document has no profile embedded, Illustrator will present a warning dialog, where the appropriate profile can be assigned. In the following example an Adobe RGB (1998) document is used.

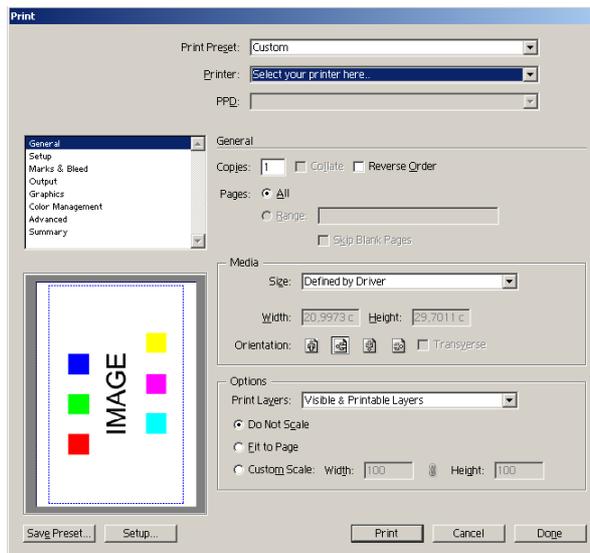
3.2 Print

In Illustrator choose **File > Print...** from the menu or use the keyboard shortcut:

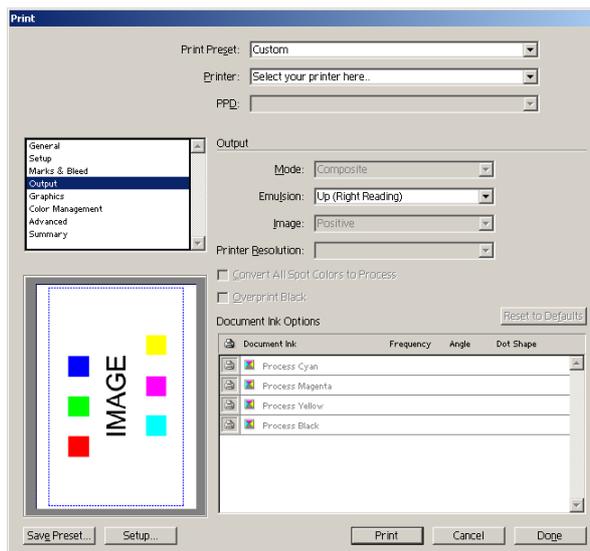
Ctrl + P (Windows)

Command ⌘ + P (Mac OS)

In the print dialog, please start with selecting the right **Printer** from the pull-down menu. Select settings for format, orientation and size for the current print job:

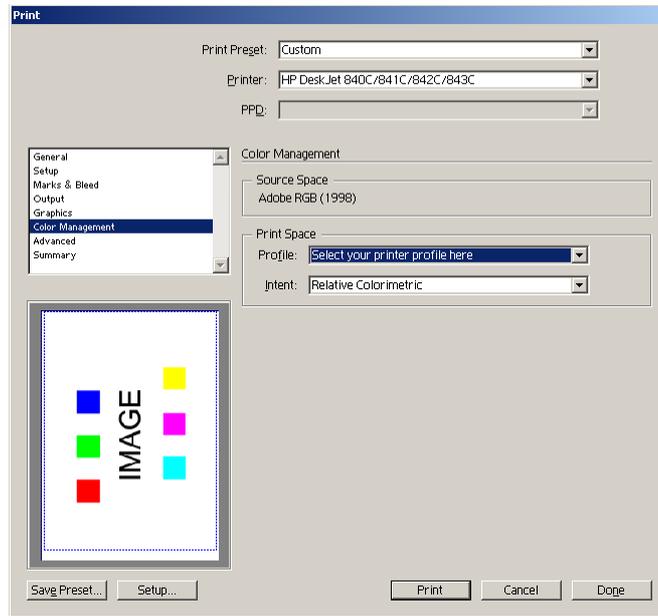


Please leave the Output section set to Composite:



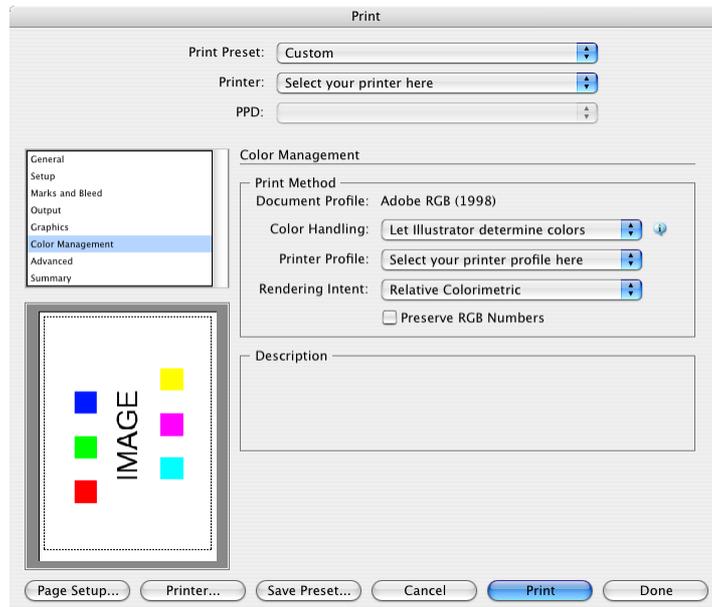
Version 11 (CS), at the **Print Space** section on the **Color Management** tab:

Profile: select **your printer profile** from the list
Intent: choose between **Relative Colorimetric** or **Perceptual**



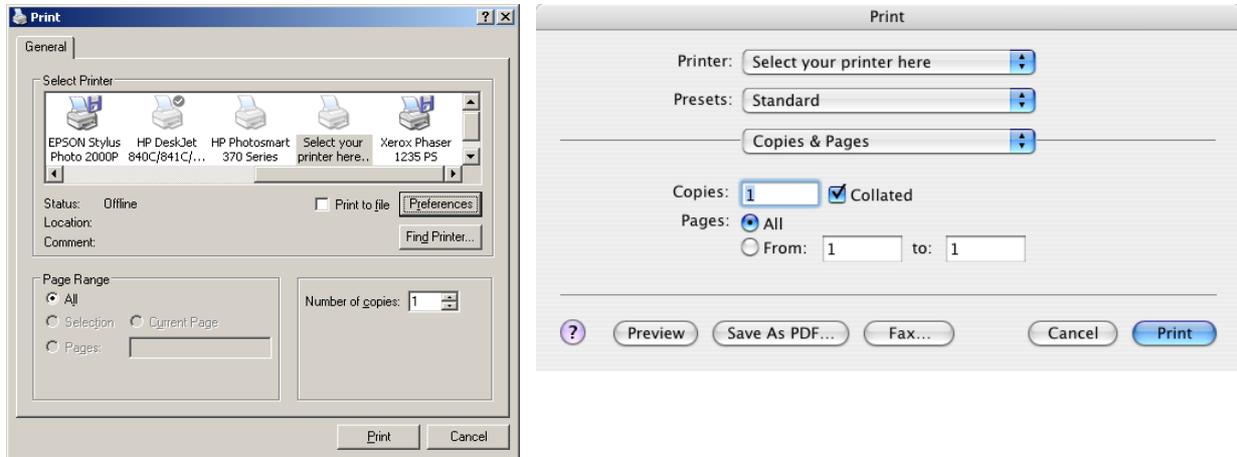
Version 12 (CS2), at the **Print Method** section on the **Color Management** tab:

Color Handling: select **Let Illustrator Determine Colors**
Printer Profile: select **your printer profile** from the list
Rendering Intent: choose between **Relative Colorimetric** or **Perceptual**
(Do not enable Preserve Numbers)



Finally **Mac OS** users click on **Printer...** and enter the printer settings tabs from the bottom pull-down menu, which first reads **Copies & Pages**.

Windows users click on **Setup...** opening the Print setup window and click **Preferences** to open the settings dialog of the selected printer.



The appearance and available options of the following dialogs and tabs depend on your operating system and installed printer driver. Please select all color-related settings the chosen ICC printer profile was created for.

Load the settings you **saved or noted** when printing the testchart.

Did you have to adjust one or more settings for the current job, after loading saved settings; i.e. the paper format? Then please check all color-related settings. Changing some settings may cause default settings to become active.

If you don't know which settings were used, then please **disable** the printer's **colormanagement** and/or **automatic color correction** and choose paper type settings that best describe the materials you are using.

See also [About the printer](#) (page 5).

Mac OS: The ColorSync-tab can be left in it's default setting, as ColorSync will not be used. On OS X, any printer's settings can be saved as a preset. The print dialog has a pull-down menu, where presets can be loaded or saved. If you load an existing preset and then change some of the settings for a particular job, then please save or save a new preset.

Windows: In the printer settings dialog, you may need to enter **Advanced...** to find all relevant settings. One set of custom printer settings can be saved by setting a printer's **Printing Preferences...** These will then become the default settings for that particular printer. Additional presets can only be saved when the printer driver offers this function.

Click **Print** to go back to the Illustrator Print dialog and click **Print** to print the document.

4. Copyright

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Author: M.G. van Dijk

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Midox Color

Dirk Costerplein 184
2624 TX Delft

The Netherlands
Europe

www: www.midox.nl
e-mail: info@midox.nl
phone: +31 (0)70 71 10 353

bankaccount: 4226675
IBAN: NL88 PSTB 0004 2266 75
BIC: PSTBNL21

K.v.K.: 27275184 (Chamber of Commerce registration number)
VAT: NL145683928B01

